Serbia, Ukraine, North Macedonia

Data Collection Survey of Supporting Start-ups in Europe

Final Report

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Japan International Cooperation Agency (JICA)

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List of Abbreviations

4S	Smart Specialisation Strategy Serbia
AI	Artificial Intelligence
AP	Acceleration Program
BEIS	Department for Business, Energy and Industrial Strategy
CEFTA	Central European Free Trade Agreement
CPI	Consumer Price Index
CVC	Corporate Venture Capital
DBNM	Development Bank of North Macedonia
DSI	Digital Serbia Initiative
EBRD	European Bank of Reconstruction and Development
EC	European Commission
EEPO	Entrepreneurship and Export Promotion Office
EFTA	European Free Trade Association
EIB	European Investment Bank
EIC	European Innovation Council
EICA	European Innovation Council Accelerator
ENEF	Enterprise Expansion Fund
ENIF	Enterprise Innovation Fund
EU	European Union
FDI	Foreign Direct Investment
FITD	Fund for Innovation and Technological Development
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit （German Agency for International Cooperation GmbH）
HR	Human Resource
ICT	Information and Communication Technology
IFC	International Finance Corporation
IIA	Israel Innovation Authority
IMF	International Monetary Fund
IPO	Initial Public Offering
JETRO	Japan External Trade Organization
JST	Japan Science and Technology Agency
KfW	Kreditanstalt für Wiederaufbau (the German Reconstruction Finance Corporation)

KG	Key Stone Group
KPI	Kyiv Polytechnic Institute
Ministry of DX	Ministry of Digital Transformation
MKD	North Macedonia
MVP	Minimum Viable Product
NEDO	New Energy and Industrial Technology Development Organization
NE	ST Network-Education-Startup-Technology
NEXI	Nippon Export and Investment Insurance
NINJA	Next Innovation with Japan （JICA's Acceleration Program)
OECD	Organisation for Economic Co-operation and Development
PE	Private Equity
RSD	Serbian Dinar (Currency)
SAIGE	Serbia Acerating Innovation and entrepreneurship Project
SBA	Small Business Administration
SBIR	Small Business Innovation Research
SCU	Sikorsky Challenge Ukraine
SCU	South Central Ventures
SDGs	Sustainable Development Goals
SME	Small and Medium Enterprises
SRB	Serbia
STTR	Small Business Technology Transfer
SU	Start-up company
TABA	Technical and Business Assistance Program
TTO	Technology Transfer Office
UAH	Ukrainian Hryvni (Currency)
UKR	Ukraine
UKRI	UK Research and Innovation
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USF	Ukraine Startup Fund
UVCA	Ukrainian Venture Capital & Private Equity Association
UX/UI	User Experience/User Interface
VC	Venture Capital
VCIP	Venture Capital Investment Programme

VMRO-DPMNE	Internal Macedonian Revolutionary Organization – Democratic Party for Macedonian National Unity
WBEDIF	West Balkan Enterprise Development and Innovation Facility Office
WBSA	Western Balkan Startup Alliance
WDI	World Development Indicators
WNISEF	Western NIS Enterprise Fund

1. Overview of the of the survey

1.1. Background

1.1.1. Background in the beginning of the survey

The development of start-ups (SUs) and the creation of a start-up ecosystem (the "ecosystem") have the potential to build resilient social systems in six Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia), Moldova and Ukraine (“the region"), and further contribution to high-quality growth is expected.

New industries are beginning to emerge in the region, particularly in the information and communication technology (ICT) field, and each country is beginning to recognize the economic importance of SUs. Industrial development and job creation in the region are essential to achieve high-quality growth.

It is required to create new industries along with support for existing major industries affected by COVID-19, since the regional economy is mainly supported by service industries such as the tourism industry.

New industries such as SUs will contribute to improve the revenue structure that depends on remittances from migrant workers and the outflow of human resources (WDI, 2019). Moreover, it would make a good impact to improve the unemployment rate that are relatively high especially among the younger generation in the region. In Ukraine, North Macedonia and Serbia, the significance of the ICT sector and the development of SUs are particularly high in terms of economic policy, and future growth is expected. However, the development of SUs and ecosystems in the region, as represented by ICT, are still facing many challenges. For example, the OECD has pointed out that there is a lack of public support for small and medium-sized enterprises (SMEs) including SUs. It also reports that the investments from venture capital ("VC") and angel investors are limited in the region (OECD, SME Policy Index: Western Balkans and Turkey 2019). In response to the above-mentioned issues, the EU provides financial support and advisory services to SUs in the region through the EU4Business and the West Balkan Enterprise Development and Innovation Facility based on the framework of the Look East Partnership. However, investment from foreign investors in the region is limited, and access to funds by SUs is still recognized as an issue. Although the region has high growth potential due to its population size, low labor costs compared with Eastern European countries, and its proximity to Europe, Japan's direct investment in the region is less than 1% of the total in Europe, and its recognition in Japan is not sufficient. For the above circumstances, it is expected to support SUs and creating ecosystems in the region will be contributed to the development of the region.

1.1.2. Since the Russian invasion of Ukraine

The military invasion of Ukraine by Russia began on February 24, 2022, and the situation in Ukraine has changed dramatically since the survey began. In particular, the economic and industrial impact has been significant, and the Ukrainian ecosystem has been forced to change, and the issues and needs for ecosystem support in the region have also changed significantly since the start of the survey. Although the end of the invasion was not yet in sight at the time of writing this report, the current situation at the time of writing this report is described separately from the pre-invasion situation (see Section 3.1.5 for the post-invasion situation).

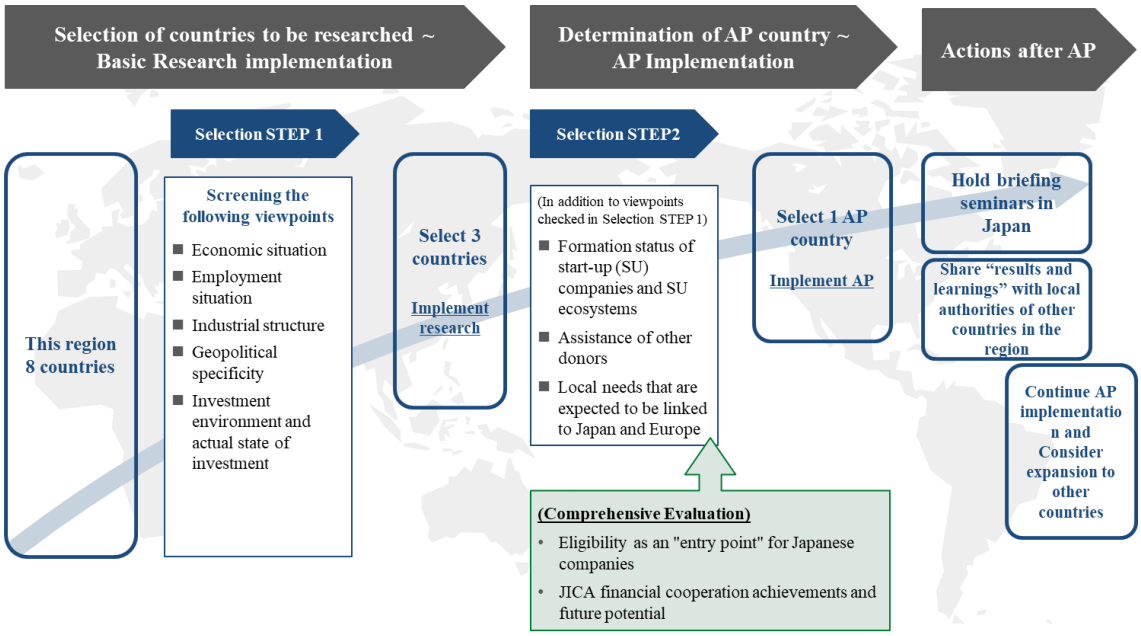
1.2. Purpose of the Survey

This survey aims at grasping the current status, circumstances and issues of SUs and the ecosystem in the selected countries including the investment situation from European-affiliated funds. Furthermore, this survey will implement an acceleration program (AP) to collect and analyze information for considering the cooperation approach needed to create the ecosystem in the selected countries.

1.3. Method of the Survey

The Survey mainly consists of three parts; 1) Basic Research for selected three countries, 2) Implementation of an acceleration program, and 3) Actions after AP, showing in Figure 1.

Figure 1 Operation flow (overall overview)



Source: The survey team

1.3.1. Selected countries

The survey team compared the following indicators of eight countries in the region: the economic conditions such as GDP, GDP growth rate, and CPI growth rate, the World Bank's Doing Business Ranking, the NEXI's Country Risk Index[1], the Portulans Institute's Network Readiness Index[2]. Indicators also include the number of VC firms, the amount of VC funding, and the ease of doing business for Japanese companies, which will help to see the scale of the ecosystem in the region. The number of Japanese companies in each country, number of foreign direct investment (FDI), and the number of trade agreements in force are compared. Among the indicators, special emphasis will be placed on Doing Business Ranking, country risk, Network Readiness Index, number of VC firms and funding amount, and number of Japanese companies in the region. In order to make Project NINJA a model case for the first time in the region, the selection is also considering industrial structure, geopolitical particularities, and business environment, including SU support environment and foreign investment restrictions in each country.

In this survey, Ukraine, Serbia, and North Macedonia were selected based on the indicators in Figure 2 and above−mentioned considering points.

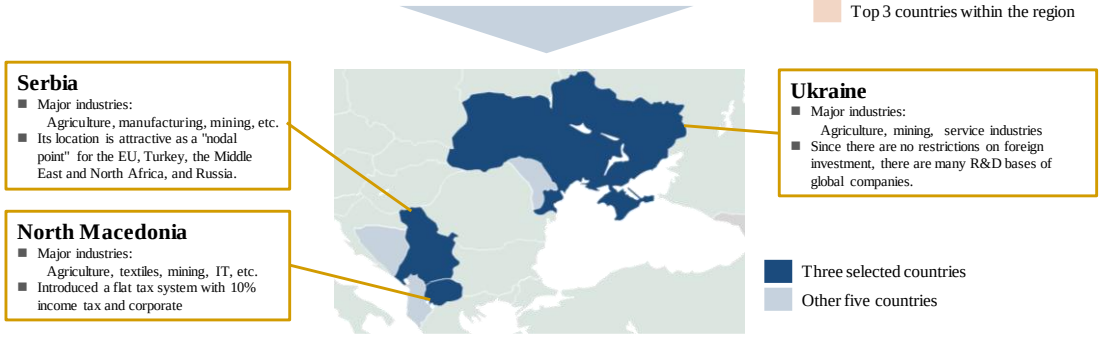
[1]Nippon Export and Investment Insurance（NEXI）website, country/ region category（February 2021）https://www.nexi.go.jp/cover/en/categorytable;
Country risk are established by NEXI based on the assessment by the OECD Country Risk Experts Group using information on debt payment status, economic and financial conditions, etc.

[2] Portulans institute(2020)The Network Readiness Index 2020 Accelerating Digital Transformation in a post-COVID Global Economy, https://enterprise.press/wp-content/uploads/2020/11/NRI-2020-Final-Report.pdf

Figure 2 Indicators and three selected countries

Important indicators

Country name	GDP (million USD)	GDP Growth rate (%)	Population (10,000)	CPI growth rate (%)	Unemp-loyment rate (%)	Doing Business Global Ranking	Country Risk (A-H) ※1	Network Readiness Index Global Ranking ※2	VC Number	VC Money raised Amount (USD)	Number of Japanese descent enterprises	FDI (million USD)	Number of effective trade agreements
	2019	2019	2019	2019	2020	2020	2020	2020	2020	2020	2019	2019	2020
Albania	15,279	2.24	285	1.41	12.80	82	F	78	4	8,975,665	3	8,811	4
Bosnia and Herzegovina	20,164	2.68	330	0.56	18.40	90	H	87	4	161,045	12	8,755	4
Kosovo	7,926	4.17	179	-	-	57	G	-	-	-	-	-	1
Montenegro	5,543	4.06	62	0.37	14.80	50	H	58	13	-	4	5,652	5
North Macedonia	12,547	3.20	208	0.77	16.40	17	F	67	13	10,286,160	1	6,350	5
Serbia	51,475	4.25	694	1.85	12.70	44	E	52	36	30,083,812	24	48,464	6
Moldova	11,969	3.58	266	4.81	5.40	48	H	71	2	63,067	6	4,792	8
Ukraine	153,781	3.23	4,439	7.89	8.90	64	G	64	154	84,972,000	37	48,906	18

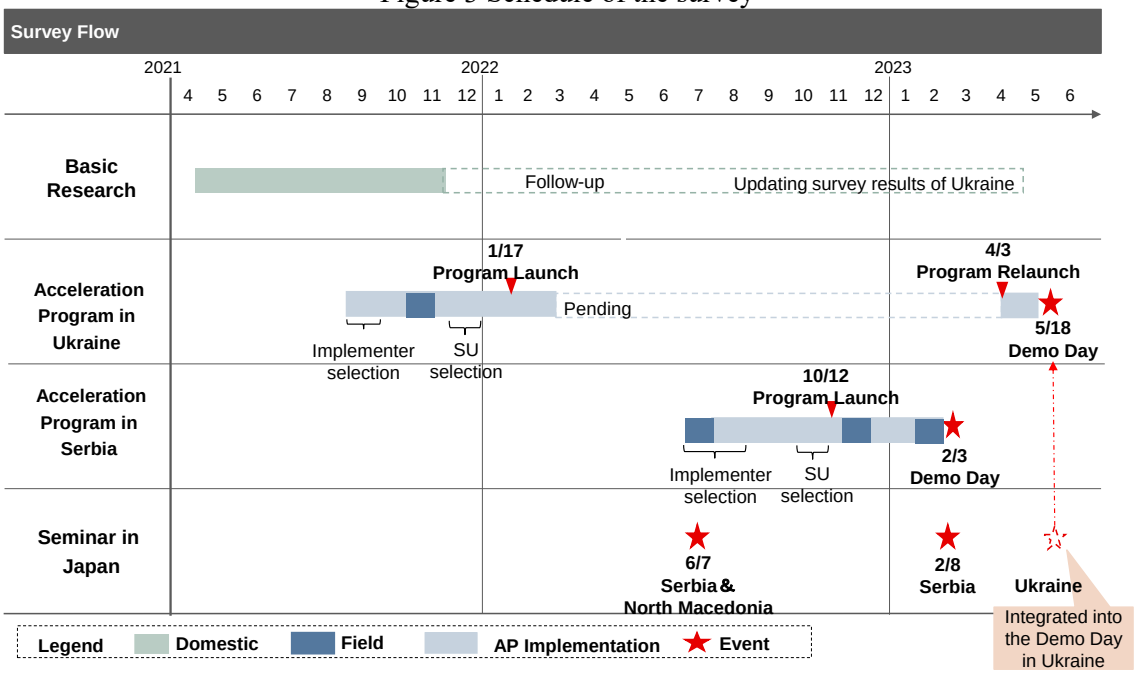


Source: The survey team

1.4. Schedule of the Survey

The survey was conducted according to the following schedule.

Figure 3 Schedule of the survey



Source: The survey team

2. Support measures for SUs in developed countries

In considering support measures for SUs in the selected countries, the current status of the external environment, financial support, and the creation of opportunities for enterprise promotion required to build SUs and ecosystems in developed countries are investigated.

Various players from industry, academia, and government, such as SUs, investors, and research institutes, are necessary to build an ecosystem. However, the matching of seeds (science and technology) and needs (customers and social issues) is uncertain due to the accelerated global technological development and diversification of needs, and the R&D investment by companies tends to be lower than the socially desirable level if it is left to the market. Therefore, the government should provide funds through subsidies, etc., although firms are the main players in innovation creation. Therefore, this chapter summarizes government support measures (mainly support for the commercialization of R&D technologies) for to create disruptive innovations by SUs, taking Japan, the United States (U.S.), Israel, Europe, and the United Kingdom as case studies.

2.1. Japan

2.1.1. Japanese version of Small Business Innovation Research

In Japan, there are a number of public support programs for SUs, including small-scale ones. For SMEs, there is the Small Business Innovation Research (SBIR) program[3], which has been in operation since 1999, based on the U.S. SBIR program. This SBIR program was substantially reformed in 2021, and the applicable law was changed from the Small and Medium Enterprise Management Enhancement Law to the Law Concerning the Stimulation of Science, Technology and Innovation Creation, which focuses more on innovation creation. The U.S. SBIR is described in detail in (2.2.1) below, but the major differences between the U.S. and Japanese one are as follows. In the U.S., the content of support is consistent regardless of the adopting ministry, whereas in Japan, each ministry implements its own individual program.

Figure 4 Comparison of SBIR in Japan and U.S.

	Japan	U.S.
Starting year	1999 (Renewal in 2021)	1982
Budget	Cabinet approves spending targets for participating ministries	Mandatory contribution of 2.5% of the budget of participating ministries
Program	● Research and development with designated subsidies: Subsidies provided by participating ministries and agencies based on national policy needs, with issues set (starting in 2021) ● Commercialization support measures: Financing at special interest rates for SBIR-adopted projects, reduction and exemption of patent fees, and expansion of the amount of debt guarantees	● Adopt a three-phase approach from development to commercialization, regardless of the adopted ministry. ● Non-financial support with a focus on upskilling and successful commercialisation on the enterprise side

Source: Developed by the survey team based on various websites

[3] Organization for Small & Medium Enterprises and Regional Innovation, Japan "About SBIR" https://sbir.smrj.go.jp/

2.1.4.1. New Energy and Industrial Technology Development Organization (NEDO) "Research and Development on New Energy Technology for Discovering Technology Seeds and Commercializing Developed Technologies Project"

Among the SU support projects using the Japanese version of SBIR, the New Energy and Industrial Technology Development Organization (NEDO)'s R&D Startup Support Project is an important cross-sectoral support research project. The objective of this project is to create and nurture R&D-oriented SUs by promoting a consistent policy approach from the discovery of technological seeds possessed by Japanese companies, universities, and research institutes to their commercialization, thereby revitalizing the economy and creating new industries and jobs.

This project is broadly divided into the following four programs.

Figure 5 NEDO R&D on New Energy Technology for Discovering Technology Seeds and Commercializing Developed Technologies Project

Name of Progarm	Purpose	Amount of support / Support period	Support from external organizations
TCP: **T**echnology **C**ommercialization **P**rogram	Building a business plan	■ No financial support / within 1 year	Accompanying support such as advice from mentors, matching opportunities, and training programs
NEP: **N**EDO **E**ntrepreneurs **P**rogram	Implementation of PoC	■ NEP A: Less than 5 million yen / within 6 months ■ NEP B: Up to 30 million yen / 12 months	Advice from a mentor
STS: **S**eed-stage **T**echnology-based **S**tartups	Strengthen fund procurement and technology seeds	■ STS Up to 70 million yen (subsidy rate: 2/3) 1.5 years ■ STS2 Up to 200 million yen (subsidy rate: 2/3) within 2 years	Hands-on, investment by certified VCs, etc.
PCA: **P**roduct **C**ommercialization **A**lliance	Commercialization in a few years	■ Up to 250 million yen (subsidy rate: 2/3) within about 7 months	Investment by VCs and business companies, collaborative research by research institutions, etc.

Source: Developed by the survey team based on the website[4]

The core of the above programs is the STS program, which aims to overcome the "valley of death" that R&D-oriented SUs face after their establishment. In addition, the selected company will receive hands-on support from the certified VCs.

This project was designed and introduced with two objectives: to incorporate VC screening into the application process and increase the reliability of the screening process, and at the same time to support the VC industry, which was still in its infancy when this project was launched. It has also contributed to the development of the VC industry[5]. Such schemes in which private VCs and the government collaborate to provide support can also be seen in the ICT Innovation Creation Challenge Program (i-challenge) of the Ministry of Internal Affairs and Communications (no applications for FY2021) and the University-Based New Industry Creation Program (START) of the Ministry of Education, Culture, Sports, Science and Technology and the Japan Science and Technology Agency (JST).

[4] NEDO, NEDO R&D SU supporting projects, https://www.nedo.go.jp/activities/ZZJP_100091.html

[5] Kita, Kunimatsu (2019) "Towards the Realization of the Strongest Startup Grants: A Comparative Study of Funding Programs for Startups in Japan, the United States, and Europe（in Japanese.

2.1.2. J-Startup [6]

J-Startup, for which the Ministry of Economy, Trade and Industry(METI), the Japan External Trade Organization(JETRO), and NEDO serve as secretariats, provides support for the expansion of SUs that have already been commercialized into the global market. This is a public-private partnership initiative supported by private companies and organizations called supporters and the government. Out of about 10,000 SUs active in Japan, J-Startup selects and concentrates support by certifying companies with appropriate mission, originality, and growth potential that match one of the three themes of Deep Tech type, Platform type, and SDGs type as J-Startup companies. In the selection process, top VCs, accelerators, and those in charge of innovation of large companies, who are nominated by METI and the secretariat as those who have experience in SU support and have sufficient experience and achievements, serve as nominators of the companies, and outside experts serve as judges, so that companies with higher marketability are certified.

The support is mainly non-financial, utilizing the respective resources of the government and private sector.

Figure 6 Examples of Support for J-Startup Companies

Examples of intensive support by the government	Examples of intensive support by supporters
● Use of J-Startup logo (branding as a selected company) ● Special website, PR through domestic and international media ● Participation in Government Overseas Missions ● Support for participation in large-scale overseas and domestic events - Preferential treatment and simplification of procedures for various subsidies and other support measures ● Business matching (individual connection to executives of large companies, ministries, etc.) ● Active use of the regulatory sandbox ● Response to other requests regarding regulations, etc.	● Provision of business space and preferential rates (offices, factory space, training facilities, showrooms, etc.) ● Cooperation in demonstration experiments using robots, products and components, infrastructure networks, etc. ● Provision of verification environment and analysis equipment ● Preference for acceleration programs and manufacturing support programs ● Advice from experts and personnel with know-how ● Introduction of our own customers and affiliated companies, etc.

Source: Developed by the survey team based on the website[6]

In addition, as an initiative for overseas development and domestic ecosystem revitalization, the following initiatives are being conducted (except for J-Startup tour, other than J-Startup certified companies can also utilize)

- J-Startup Tour: Secure exhibition space as J-Startup pavilion to global exhibition
- JETRO Global Acceleration Hub: Provides local information, mentoring, and community building support for Japanese companies entering the overseas market through contact points established in developed regions, and collaborates with foreign companies aiming to enter the Japanese market by conducting market research and supporting the preparation of business plans.
- Startup Visa: Easing of residency requirements for overseas entrepreneurs in municipalities accredited by Japan, allowing them to obtain residency status for starting a business 6 months earlier than the current status

2.1.3. Implications from Japan's Support Programs

Some of Japan's public support projects are leveraging private sector resources to reduce the burden and risk on both sides, and also play a role in stimulating the private market, leading to synergies in ecosystem creation. The Japanese version of SBIR was renewed more than 20 years after its inception, and while it has created horizontal cooperation that did not exist in the past in both R&D support and SU support, and has made it easier for companies to access support measures, it has also become a system that tests the technological capabilities of companies, such as J-Startup, which provides selective and intensive support.

[6] J-Startup"About" https://www.j-startup.go.jp/

2.2. The United States

2.2.1. SBIR and STTR

The SBIR program was established under the Small Business Innovation Development Act of 1982 (P.L. 97-219) to enhance the role of innovative small businesses in federally funded research and development. The program has been reauthorized in each of the numerous legislative changes since then, and current law extends the program through 2022.

Small Business Technology Transfer Programs (STTR) was established as a pilot program by the Small Business Technology Transfer Act of 1992 (Public Law 102-564, Title II) with the goal of bridging the gap between basic science results and innovation commercialization. It is modeled after the SBIR program.

The Small Business Administration (SBA) oversees the SBIR, a cooperative program of 11 federal departments and agencies that provides financial support to small businesses to commercialize their research and development. Participating ministries are required to allocate at least 3.2% of their extramural research and development budgets to SMEs. If their proposal is selected, they can receive support for each phase of their research and development.

SMEs and non-profit research institutions need to collaborate when applying for STTR.

Figure7 SBIR Program Overview [7]

Objective	■ To promote technological innovation ■ Meeting the research and development needs of the federal government. ■ Promoting the participation of women and socially and economically disadvantaged people in innovation and entrepreneurship. ■ Facilitating the commercialization by the private sector of innovations derived from federal research and development funding In the case of the STTR program. ■ Promote technology transfer through joint research and development between SMEs and research institutions
Budget	US$3.28 billion (FY2019, of which US$1.8 billion is from the Department of Defense and US$1.15 billion is from the Department of Health and Human Services)
Goals and program period for each phase, etc.	<Phase 1> Concept Development Goal: To establish technical superiority, feasibility, and commercial viability and to determine quality of performance prior to Phase 2 support. Program duration: 6 months (SBIR), 1 year (STTR) Grant amount: US$ 50,000 - 250,000 <Phase 2> Prototype Development Goal: To continue Phase 1 research and development Program duration: Up to 2 years Grant amount: US$750,000 x 2 years ＜Phase 3＞ Commercialization Goal: To pursue commercialization. Some jurisdictions have non-SBIR/STTR funding opportunities for products and services intended for government use Subsidy amount: None

[7] SBA website"About SBIR", https://www.sbir.gov/about

Figure 8 Difference between SBIR and STTR

	SBIR	STTR
External Partners	unrestricted	Need to partner with non-profit research institutions
Principal researcher and R&D personnel	More than 50% belong to SMEs	Both non-profit research institutions and companies are acceptable.
relevant (applicable) information (items)	Up to 33% (Phase I) or 50% (Phase II) can be re-committed	40% (SMEs) 30% (research institutions) or more engaged
Procurement from VC	acceptable	not allowed
Number of ministries and agencies Participating	11	5

Source: Developed by the survey team based on the website[7]

SBIR/STTR provides not only financial support, but also training programs such as I-Corps™ (innovation Corps Program) and Train the trainer, and opportunities to receive consulting services from external private companies that provide commercialization support such as TABA (Technical and Business Assistance Program). In addition, the SBA has funding programs not only for SMEs, but also for accelerators, incubators, and other organizations that provide commercialization support. The major programs are listed below.

- Growth Accelerator Fund Competition (GAFAC): aims to provide funding to accelerators and incubators to support to highly skilled SUs, including support for company formation and raising awareness of SBIR and STTR programs
- SBIR Catalyst: provides funding to organizations in underserved areas to build new partnerships of business support organizations and strengthen existing alliances among stakeholders (including public, private, nonprofit, and academic partners)
- Federal and State Technology (FAST) Partnership Program: provides one year of funding for organizations to implement state and local programs that focus on technical and business assistance, outreach, and funding to increase the competitiveness of SBIR/STTR applicant companies.

2.2.2. Implications from the U.S. Support Program

Funding programs in other countries have also been influenced by the U.S. SBIR in their institutional design and operation, and it can be said to be the prototype of programs aimed at creating innovation. By having each ministry contribute R&D funds, it becomes easier to support issue-based entrepreneurship. It would also be helpful to provide not only subsidy support as a source of funds for Proof of Concept (PoC), but also support for commercialization, such as human resource development and consulting from external organizations, which SUs actually need. At the same time, it is also noteworthy that the government invests funds in accelerators, incubators, and partner-building support related to ecosystem building, in addition to programs targeting SMEs.

2.3. Israel

2.3.1. Israel Innovation Authority

Israel is said to have the highest number of SUs per capita in the world, and the government considers innovation to be one of its most valuable natural resources. In 1984 the Law for the Promotion of Industrial Research and Development was enacted, and an environment in which the government and the private sector shared the risk of companies investing in R&D was created. Since then, tax incentives for R&D and support for immigration for R&D purposes have been implemented. However, the massive influx of highly educated engineers and other professionals

has made the development of R&D-oriented SUs an important issue in securing employment for R&D personnel. Since R&D funding was insufficient and the ecosystem was not mature, the Yozma Program was established in 1993 with the aim of attracting research funding from abroad and fostering the domestic VC market. This program was a government-led VC development program, and under the condition that foreign VCs participate in the program, the government encouraged the establishment of VCs in Israel by sharing the risk and providing incentives to purchase the equity at a low price through the government's matching fund-like support. As a result, a large number of VCs were established in Israel, and funding from abroad increased. Although this program is now closed, it played a very significant role in the formation of the Israeli ecosystem.

The Israeli Innovation Authority (IIA), which was established in 2016 by reorganizing the Office of the Chief Scientific Officer of the Ministry of Economy, plays a central role in SU support policy in Israel. This Authority is the organization responsible for innovation policy in general, and the departments that primarily focus on SUs are the Startup Bureau and the Growth Bureau. The Startup Bureau provides support to SUs with funding of less than $10 million in the pre-seed and early stage, while the Growth Bureau mainly provides support to SUs in the growth stage and beyond.

Figure 9 Israel Innovation Authority support measures (extract)[8]

Controlling office	Controlling program	Program features
Startup Bureau	Incubators Incentive Program	● Programs that participate through designated incubators (18 institutions as of 2021) ● 85% of the funds will be contributed by the government and the remaining 15% by the incubator so that the burden on the SU will be zero
	Innovation Labs Program - Incentive Program	● Programs that support unique infrastructure and expertise to prove technical feasibility ● Support through the Innovation Lab, an open innovation model operated by industry-leading companies ● The authority will cover a portion of the cost of building the infrastructure and operating the lab, as well as subsidizing the cost of the activities. ● Entrepreneurs can use the program before establishing a company, which allows them to reach out to the network of companies operating the lab, and also gives the companies operating the lab the opportunity to create their own value, which has the potential for open innovation.
	Tnufa (Ideation) Incentive Program	● Program to support proof of concept and feasibility studies for early-stage projects ● Targeted at the earliest stages, with a maximum of two years of support ● There is no requirement to establish a startup to apply for the program, and individual entrepreneurs are allowed to apply
	Early-Stage Companies Incentive Program	● For start-up stage companies with less than $10 million in funding and less than $1 million in sales in the previous year ● They can participate in the risks associated with the company's development process, but not in its future profits or success. Companies commit to repay the subsidies received from the authorities with royalties from product sales
Growth Bureau	Incentive Programs for Innovation with Government Entities	● Partnerships with other government departments to provide funding for high-risk projects, supplemental support to regulatory agencies that are part of the regulatory requirements of the pilot program, access to state-owned test sites and facilities, and the overall economic impact of applying the technology to further areas of the regional innovation ecosystem A program that allows a country to focus its efforts on
	Generic R&D Incentive Program for Large Companies	● Programs to encourage long-term research and development by generic companies

The IIA has an International Relations Department that works with foreign and multilateral governments to support research and development through the EU Research and Innovation Framework Program, bilateral funds and bilateral support programs. It organizes meetings and matchmaking between foreign companies and leading experts in the fields of investment, business and research, as well as facilitating participation in exhibitions and conferences. Another feature of the center is that it offers many support programs for bilateral collaborative research.

2.3.2. Implications from Israel's support program

The characteristics of the R&D-oriented SU support programs in Israel include the large scale of SU-specific programs, the establishment of systematic support programs according to the development stage of SUs, and the fact that many programs are based on collaboration with other actors, such as governments and multinational companies, so that the technology of the country can be developed. In addition, there are a number of programs that are based on collaboration with other actors such as governments and multinational companies.

In addition, in order to stabilize the employment of researchers and to develop the domestic VC market, it has started to attract foreign investment and still maintains the measures to promote

[8] Israel innovation authority website"Our Program" https://innovationisrael.org.il/en/

foreign companies and investment for SU, which is considered to be a leading example for countries that need to promote investment for their own countries and develop their own VC markets. It is expected to be a leading example for countries that need to promote investment at home and develop their own VC markets.

2.4. European Union (EU)

2.4.1. EIC Accelerator (Horizon 2020)[9]

In January 2014, the European Commission, the EU's policy executive, launched Horizon 2020, a policy framework to promote research and innovation in the EU, which is now in its second phase. The budget for the first phase of Horizon 2020 has increased significantly from EUR 80 billion in the first phase to EUR 95.5 billion over the seven-year period from 2021 to 2027. Within the Horizon 2020 framework, there are three pillars: Science Excellence (supporting cutting-edge research), Global Challenges and European Industrial Competitiveness (addressing social issues) and Innovative Europe (supporting market creation). The EIC Accelerator (EICA), which is part of Innovative Europe, is a program specifically aimed at SMEs. This program is provided by the European Innovative Council.

EICA's predecessor, the SME Instrument, which was run by the European Commission, was the largest funding program for SUs in the EU, focusing on the practical and commercialization of research and technology. This was due to the impact of the Lehman Shock when the program was first designed. At the time, financial institutions were not funding SUs and other high-risk companies, so the European Commission had to invest actively.

EICA is a program for small and medium-sized enterprises (SMEs), especially for SUs. It consists of two types of grants: EIC Accelerator Open, which is open to companies in any field and does not specify a specific issue, and EIC Accelerator Challenge, which targets a specific issue. There are also two main types of grants.

- Grants of up to €2.5 million for business development costs
- Up to €15 million investment (direct equity investment) managed by the EIC Fund for corporate scale-up and other related costs

In addition to financial support, opportunities for coaching, mentoring, and access to investors and other companies will be provided to companies selected for the program.

The program is always open for applications. After sharing a video pitch and presentation via the web platform and answering a short questionnaire about the technology and organization, there is usually a response within four weeks regarding eligibility of the application. If the application meets EICA's basic criteria, a formal application must be submitted by the closest deadline, and if the application meets all criteria, the final step in the selection process is a face-to-face interview with EIC judges to determine eligibility.

A unique feature of the program is that applications that meet the criteria and are evaluated positively by the EIC judges, but are not selected, will be awarded a "Seal of Excellence" to help secure funding from other sources. In order to qualify for the Seal of Excellence, companies must agree to share some basic information about their application with other funding and support agencies.

2.4.2. Implications from European support program

The European programs are characterized by the follows; costs are very large, SUs are always invited to apply, and the fact that funding opportunities are provided to non-selected projects. In the fact that a non-selected project can easily access funding by financial institutions if project

[9] European Innovation Council website“EIC Accelerator” https://eic.ec.europa.eu/eic-funding-opportunities/eic-accelerator_en

meets the application criteria and has been approved by the jury, promotes both technology development and industrial support.

2.5. the United Kingdom (UK)

2.5.1. Smart Grant Program

Innovate UK is a sub-organization of UK Research and Innovation (UKRI), an external body of the Department for Business, Energy and Industrial Strategy (BEIS). Innovate UK, a consolidated and restructured a range of SME programs that were run separately by regional development agencies in2011. The program for SUs is called Smart Grants. In fact, large companies can also apply, but nearly half of the selected companies are SMEs that have been established for five years or less.

- Type 1: Feasibility study and prototyping
  - Subsidy rate: Up to 70%
  - Project cost: £25,000 - £500,000
  - Project duration: typically 6 to 18 months
- Type 2: Development of products, etc. that are close to commercialization (equivalent to mass production prototypes)
  - Subsidy rate: Up to 45 %
  - Project cost: £25,000 - £2,000,000
  - Project duration: typically 19 to 36 months

The program is managed by two full-time staff members and eight program-support staff members, and the review process is based on application documents only, which is a highly automated system. Five external experts are in charge of reviewing the applications, and each of them scores the applications in average order from the top to the bottom until the budget consumption.

It is not easy for many SUs to raise funds that are not covered by grants, but if they are not able to raise funds after being selected as grant candidates, they will not be funded by Smart Grant. However, as Smart Grant is a high-profile and credible programs, Innovative UK makes it easier for companies to access funding from financial institutions and VCs by sending out offer letters to candidate companies.

Smart Grant is the largest cross-sectoral funding programs in the UK and therefore attracts a large number of applications from all sectors of technology. On the other hand, many government departments in the UK have their own grant budgets, but these are not as large or well known as Smart Grants, and in some cases do not receive a sufficient number or quality of applications. Therefore, Innovate UK has established a system to share Smart Grant application information with other government departments, making it easier for non-selected companies to receive funding from other government departments if they show promise. In fact, there have been cases where Smart Grant applications have led to applicants being approached by other ministries and agencies and selected for other programs, and Innovate UK's information has become a seed for related programs.

2.5.2. Implications from UK support program

It makes easier for companies to apply for subsidies by using the program's name as collateral. Besides, the fact that there is a system that allows companies to collaborate with other ministries and agencies on information on the seeds of technology, including information on companies that have not been selected for the Smart Grant program, means that the program naturally acts as a public-private matching platform. This is rarely seen in the policies of other countries, and we believe that it has the potential to be used in other countries as well.

3. Current Status and Challenges Concerning Startup Companies in the selected countries

This chapter provides an overview of SUs, ecosystems, and related measures in the three selected countries based on the literature review and interviews with relevant stakeholders. The definition of SUs in open information provided in this chapter differs depending on the stakeholders in the ecosystem, making it difficult to be consistent. However, for the purposes of this survey, an SU is defined as "a newly-established company that creates new value through innovative ideas and originality and has an impact on society.

The following definitions will be used to describe the ecosystem players in this chapter.

- **Incubators and accelerators:** People, organizations, and programs that support SUs and entrepreneurs and promote business growth. For the purposes of this survey, incubators are organizations that provide support for a relatively long period of time to SUs in the pre-seed stage or immediately after their establishment, while accelerators provide support for a relatively short period of time, ranging from a few weeks to a few months, to SUs in the post-seed stage. Accelerators are organizations that provide intensive support to SUs in a relatively short period of time, ranging from a few weeks to a few months. If there is a designation used by the surveyed organizations to describe themselves, it will be referred.
- **Angel investors:** Individual investors who invest mainly in SUs.
- **Venture Capital Fund (VC):** An investment firm or fund that invests in SUs and also provides management consulting services.
- **Corporate Venture Capital Fund (CVC):** An operating company that conducts VC business with its own funds.
- **Private Equity Fund (PE):** An investment fund that invests in SUs that are at a relatively late stage of growth and exits (IPO, sale to another company, etc.) after increasing the corporate value.

In addition, the following definitions will be used for the stages of the companies described below.

<Seed Stage>

- **Pre-Seed:** A Pre-Seed round is a pre-institutional seed round that either has no institutional investors or is a very low amount, often below $150k.
- **Seed:** Seed rounds are among the first rounds of funding a company will receive, generally while the company is young and working to gain traction. Round sizes range between $10k–$2M, though larger seed rounds have become more common in recent years. A seed round typically comes after an angel round (if applicable) and before a company's Series A round.

<Early Stage>

- **Series A and Series B** rounds are funding rounds for earlier stage companies and range on average between $1M–$30M.

<Growth Stage>

- **Series C** rounds and onwards are for later stage and more established companies. These rounds are usually $10M+ and are often much larger.

3.1. Ukraine

Ukraine is a republic located in Eastern Europe sharing borders with Russia, and the capital city is Kyiv. Ukraine has an area of 603,700 km² (1.6 times larger than Japan) and a population of 41.59 million (excluding Crimea). It is the second largest population and third largest land area among the former Soviet Union. In 1991, Ukraine has become independent from the Soviet Union. However, Ukraine often faces serious challenges between Russia and Europe, despite its basic stance of leaving Russian Federation and joining Europe. In particular, "Crimean Crisis", in which the Russian Armed Forces occupied the Crimea Peninsula, occurred in 2014, made the Ukraine-Rosia relationship further worsen, spilling over to the outbreak of the "Eastern Ukraine Conflict" in the eastern part of Ukraine, where many Russian citizens live[10].

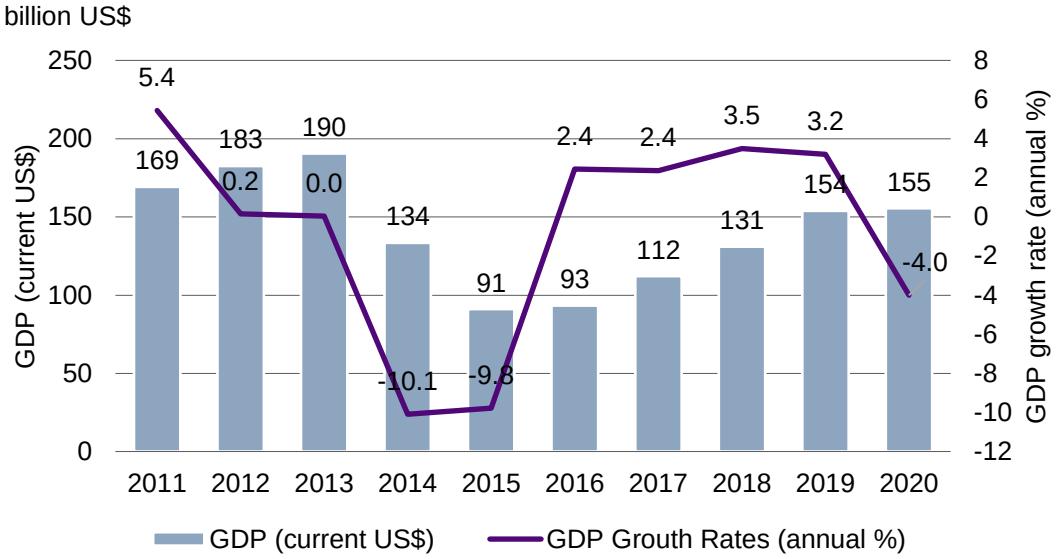
Ethnic groups include Ukrainians (77.8%), Russians (17.3%), Belarus (0.6%), Moldovans, Crimean Tartars, and Jews. The official language is Ukrainian, but there are some regions where Russian language is prevalent, mainly in the eastern and southern regions although the Ukraine government is moving to eliminate the influence of Russian language[11]. Religions include Orthodox and Eastern Catholics in Ukraine, Catholics in Rome, Muslims and Jews[12].

After its independence from the Soviet Union, the economy has been disrupted, but since the 2000s, the economy began to grow as a result of expansion of steel exports and domestic demand. Having experienced the economic downturn due to the Lehman Shock in 2008 and underpinning the economic activity by the development of infrastructure such as roads and airports for European Football Championship in 2012, which was co-hosted with Poland, the economic situation has deteriorated significantly due to the Crimean crisis in 2014 and Eastern Ukraine Conflict. As the economy began to recover gradually with financial assistance from the IMF, the World Bank, the EU, etc., however, it again deteriorated due to the impact of the COVID-19 pandemic.

Under such circumstances, relations with Russia had been tense, especially since late 2021, and on 24 February 2022, Russia began an invasion of Ukraine, and the war has continued to the present.

[10] Ministry of Foreign Affairs, Basic Data of Ukraine, https://www.mofa.go.jp/mofaj/area/ukraine/data.html.
[11] The Tokyo Shimbun, January 17, 2020, https://www.tokyo-np.co.jp/article/26601.
[12] Ministry of Foreign Affairs, Basic Data of Ukraine, https://www.mofa.go.jp/mofaj/area/ukraine/data.html.

Figure 10 GDP and GDP Growth Rates in Ukraine



Source: Prepared by survey team based on World Development Indicators, World Bank

Agriculture and mining are the main and traditional industries in Ukraine. As it is known as the "Breadbasket of Europe", agriculture accounts for 11.4% of GDP and 49.1% of exports that is the largest sector. In addition, since natural resources such as coal and iron ore are abundant, the mining industry accounts for 6.0% of GDP, 19.5% of exports, and 9.4% of FDI13. Recently, the ICT industry has made remarkable progress with the background of active and advanced science education in the fields of nuclear development, nuclear power generation, and aerospace during the Soviet era14.

In diplomatic relations, the Crimean crisis has caused Ukraine to leave Russia, and Ukraine has started to strengthen the relation with the United States and Europe, by showing its interest to join the EU and NATO. In other regions, Ukraine has concluded free trade agreements (FTAs) with Canada and been engaged similarly in negotiations with Turkey and Israel. Relations with Asia are not as active as those with Europe and the United States, but Ukraine is gradually taking an eastward diplomacy stance, by securing a natural gas supply from Central Asia.

3.1.1. Current status of startups and ecosystem

3.1.1.1. Definition and current status of startups

<Definition>

In Ukraine, legal enterprise size categories are defined in the 2012 Commercial Code of Ukraine Art. 55. Enterprises are classified into four categories (micro, small, medium, and large) depending on the number of employees and annual income. However, the above definition of enterprise size does not take into account the speed of business expansion or financing methods that focus more on VCs and angel investors, which are generally seen as characteristics of SUs. The Ukraine government's SU support policy appears to be in line with the definition of enterprise size. For example, the Strategy for Small and Medium-sized Enterprise Development in Ukraine

[13] Figures are based on Ukraine Investment Promotion Office (2021) Ukraine Invest Guide, https://ukraineinvest.gov.ua/guide/. Only the percentage of mining GDP quoted from State Statistics Service of Ukraine (2020) Statistical Publication, www.iaastat.kiev.ua.

[14] The Embassy of Japan in Ukraine Website, https://www.ua.emb-japan.go.jp/jpn/info_ua/overview/4economy.html.

until 2020 announced in 2017 shows the direction of support without clearly distinguishing between SME and SU.

Figure 11 SME Definition in Ukraine

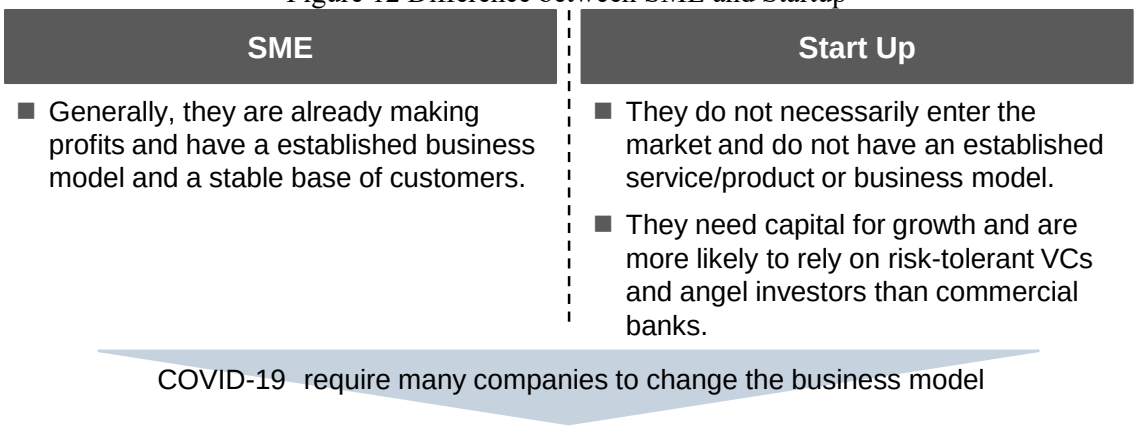
	Micro	Small	Medium	Large
Employment	≤ 10 employees	≤ 50 employees	All enterprises that do not fall into the category of small and large enterprises	≥ 250 employees
Annual income	≤ EUR 2 million	≤ EUR 10 million		≥ EUR 50 million

Source: Commercial Code of Ukraine Art. 55, as of March 2012.[15]

Whereas private SU ecosystem agencies clearly distinguish between them. According to them, the significant difference is that SMEs are companies that run established businesses on a relatively small scale, while SUs are companies in the earlier stage of establishing products, services, and business models.

Interestingly, it has also been pointed out that the definition between SME and startup has been getting close due to the effect of COVID-19. Suppose that SU is defined as a company whose business model is not established concretely, the effect of COVID-19 has been forcing Ukraine's companies to be in the transition of their business model dramatically. Although SMEs have originally been recognized to have established businesses model, many companies in Ukraine seemed to possess the essence of SU nowadays. One can see that each definition would change depending on how long the impact of COVID-19 will continue and how fundamental changes will be brought to the Ukrainian economy.

Figure 12 Difference between SME and Startup



Source: Developed by the survey team based on interviews with ecosystem stakeholders

<Current status of Ukrainian startups>

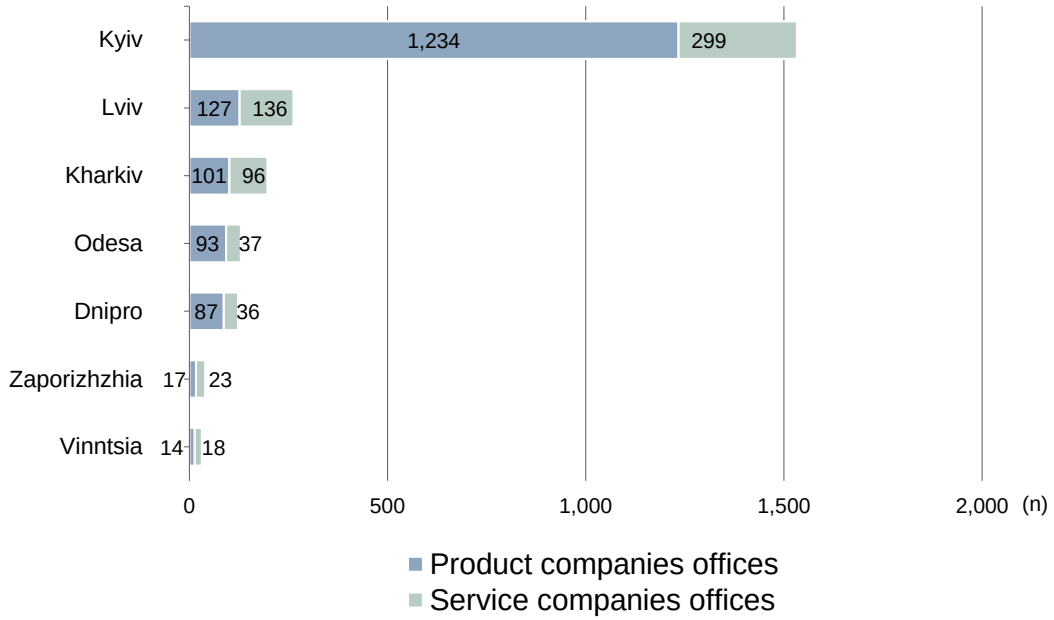
The ICT industry in Ukraine has established itself as a global position, which produces unicorn companies such as Grammarly and Gitlab. IT clusters and various supportive policy and events are also substantial, and the number of SUs and investment amount have increased remarkably in

[15] Cited from OECD, ETF, European Union and EBRD (2020) "Chapter 12. Ukraine: Small Business Act country profile," SME Policy Index: Eastern Partner Countries 2020, https://www.oecd-ilibrary.org/sites/d5c2705e-en/index.html?itemId=/content/component/d5c2705e-en.

recent years. The amount of investment in SU has increased significantly from $ 24M (2011) to $ 570M (2020)[16]. According to the Global startup ecosystem report 2020, Ukraine is ranked 29th out of 100 countries as a SU-friendly country[17].

As mentioned above, official statistics regarding to SU are not available in Ukraine because there is no official definition of SU. However, various ecosystem-related organizations summarized information based on their respective perspectives and networks. According to the website 360 Tech Ecosystem Overview[18] operated by the Ministry of DX in collaboration with multiple ecosystem stakeholders, there are more than 2,000 tech SUs in Ukraine, which are mainly located in active IT cluster city, such as the capital city of Kyiv, Lviv, and Kharkiv. By sector, Martec[19] & Media and Business Software & HR[20] are dominant.

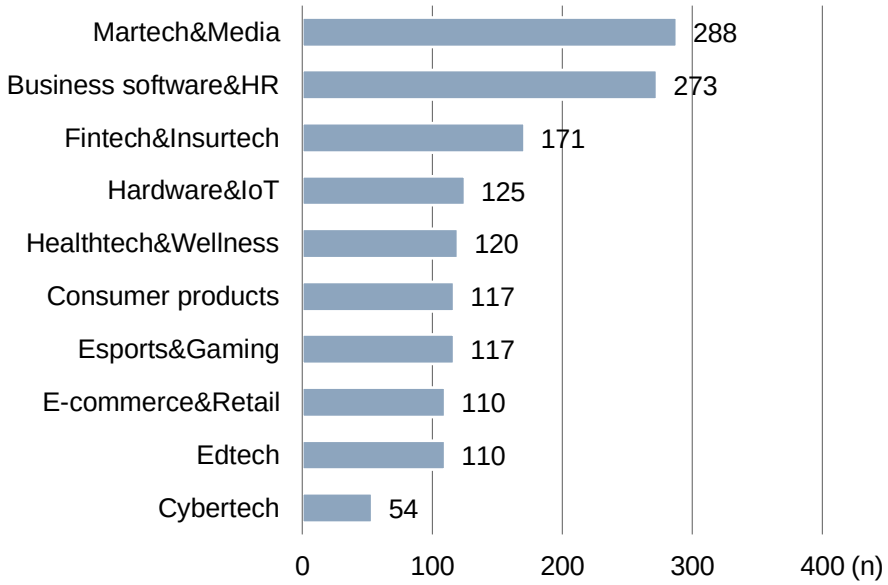
Figure 13 Location of Start up in Ukraine by city



Source: Developed by the survey team based on 360 Tech Ecosystem Overview Dashboard

[16] Cabinet of Ministers of Ukraine. (2020). UKRAINE'S IT INDUSTRY.
[17] StartupBlink.(2020). Global startup ecosystem report 2020.
[18] Online platforms that provide information about IT companies, investors, educational institutions, and R & D centers run by Nine institutions such as USF, Lift99, and Lviv IT Cluster as data Partners (Source: 360Tech Ecosystem Overview website, https://techecosystem.gov.ua/.
[19] Marketing Tech, the use of IT in corporate marketing activities.
[20] Solutions for improving the efficiency and sophistication of overall services related to human resources (recruitment, human resource development/allocation, labor management, employee benefits, health management, etc.) in organizations.

Figure 14 Product Start up in Ukraine by sector



Source: Developed by the survey team based on 360 Tech Ecosystem Overview Dashboard

Although the breakdown of entrepreneurs (ratio of students, retirees, serial entrepreneurs, etc.) has not been confirmed from the government statistics, a private-sector survey indicates that 25.9% of ICT-SUs in Ukraine which got financed in 2019 have at least one female founder. The percentage of women entrepreneurs is 33.3% for hardware, 14.3% for software and 10.5% for online services in the ICT sector[21].

3.1.1.2. Related policies surrounding startups and ecosystem

The Ukrainian government has placed particular emphasis on supporting SMEs since the latter half of the 2010s. In 2018, the SME Development Office were established as an advisory body to the Ministry of Economic Development, Trade and Agriculture[22], which is an administrative agency in charge of SME development. In 2019, the Coordination Council on Micro and Small Entrepreneurship Development was established as a forum for coordinating related ministries, government agencies, civil society and business[23]. As further organizational restructuring has progressed, the SME Development Office ended its activities in May 2021, and the Entrepreneurship and Export Promotion Office (EEPO) was newly established as a policy execution agency under the supervision of the Ministry of Economy to provide non-financial support to whole SMEs. As a place to provide more menus for SU, the Ministry of Economy is currently opening Business Innovation Centers in various area across Ukraine and aiming to make them to be a base for entrepreneurship support and technology transfer.

The Ministry of Digital Transformation (Ministry of DX) was established in 2019, and it was a notable change that they launched the national project “Diia”, which aims to contribute to the

[21] UVCA and Delloitte (2020) Ukraine Venture Capital and Private Equity Overview 2019, https://www2.deloitte.com/ua/en/pages/press-room/press-release/2020/investments-into-startups-2019.html

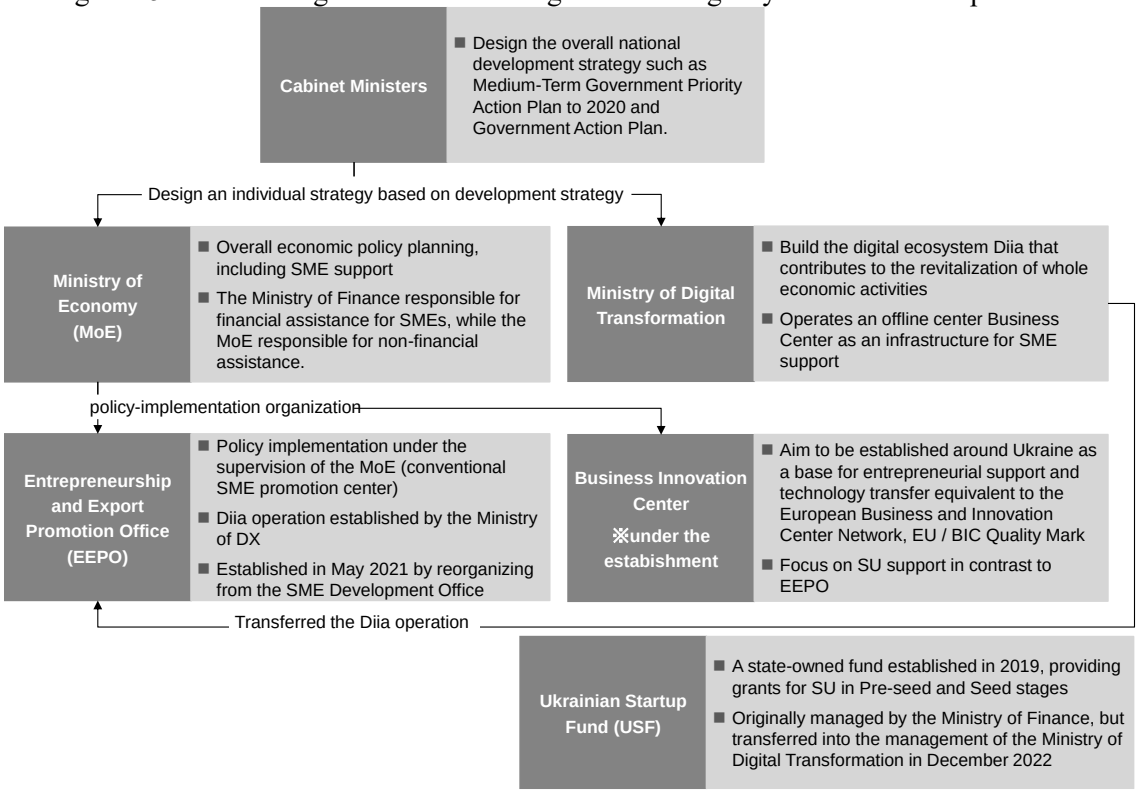
[22] Currently renamed to Ministry of Economy.

[23] OECD (2020) Monitoring the Implementation of Ukraine’s SME Development Strategy 2017-2020, Paris: OECD, https://www.oecd.org/eurasia/competitiveness-programme/eastern-partners/Monitoring-the-Implementation-of-Ukraine%E2%80%99s-SME-Development-Strategy-2017-2020-ENG.pdf

revitalization of whole economic activities. In particular, Diia Business, which is one of the Diia components, is an important policy to support SU and SME through both aspects of an online platform and an offline business center[24]. The Ministry of DX is responsible for the design and construction of the platform, and the actual operation of the Diia has been transferred from the Ministry of DX to EPEO.

Furthermore, the Medium-term Government Priority Action Plan to 2020, formulated in 2017, points out that one of the major impediments to Ukraine's growth is insufficient incentives for SU and innovative business creation due to inefficient national policies. In this context, the Ukraine Startup Fund (USF, described in 3.1.3.2), which is a government-affiliated fund, can be one of the important policies to provide grants and acceleration programs for SU.

Figure 15 Relation diagram for Ukrainian government agency related to SME promotion



Source: Developed by the survey team based on an interview

Figure 16 Strategy for Small and Medium-sized Enterprise Development in Ukraine Until 2020: Direction of SME support measures (including SU)

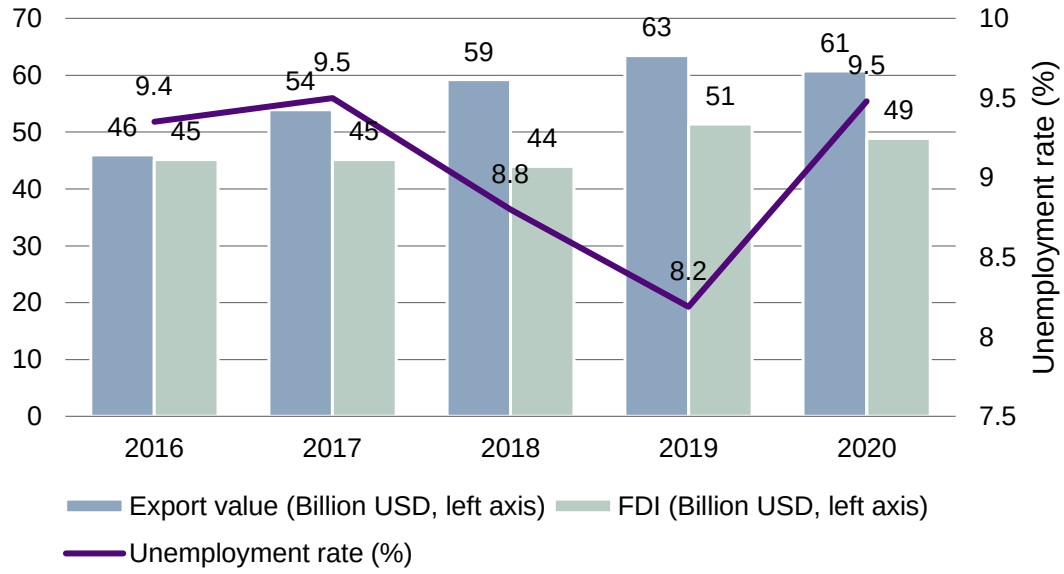
1. Creating a favorable environment for SME development
2. Improving an access to finance for SME
3. Simplifying Tax Administration for SME
4. Promoting Entrepreneurial Culture and Developing Entrepreneurial Skills
5. Promoting SME Export / Internationalisation
6. Improving competitiveness and developing the innovation potential of SMEs

The Ukrainian economy has been greatly affected by the COVID-19 pandemic, which occurred amid the continued policy efforts to promote SME and create innovation. The GDP growth rate has plummeted to -4% in 2020 due to the fact that domestic demand was restrained,

[24] See 3.1.5.2 for the latest status of Diia Business.

and trade and investment fell following to restrictions on measures to control infection[25]. In September 2020, UNDP surveyed more than 2,000 households and companies across the country and found that 84% of households lost their income, and at least one family member became unemployed in 43% of the households. As a result, the unemployment rate in 2020 has increased to 9.5%. Job opportunities in the ICT sector as the core sector of the SU market, declined sharply from January 2020 (5,562 jobs) to April (2,992 jobs), and then began to rise again, reaching a record high of 8,132 jobs in January 2021[26].

Figure 17 Change of Economic Indicators (2016 to 2020)



Source: Developed by the survey team based on World Development Indicators by the World Bank and UkraineInvest Guide

The Government formulated the Program of Action of the Cabinet of Ministers of Ukraine in June 2020. This shows the priorities to be addressed by the government in the future by dividing them into short-term measures based on the impact of COVID-19 (2020-2022) and measures based on a longer-term perspective (The table below extract the list of support measures from the aspects of private sector development). In the short term, while maintaining measures against COVID-19 expansion, the government intends to make maximum use of government finance, public procurement and various systems to minimize the impact on SMEs. In the long run, however, the report indicates that the focus will be on developing an environment to promote SUs and new industry creation, with promoting regulatory and market reforms and making appropriate use of foreign investment. In this context, SU may represent one of the new organizational forms of SME, which is expected to be an important player of the innovative and priority sectors that lead the next generation.

[25] OECD (2021) The COVID-19 Crisis in Ukraine, Paris: OECD. https://www.oecd.org/eurasia/competitiveness-programme/eastern-partners/COVID-19-CRISIS-IN-UKRAINE.pdf.

[26] DOU.UA (2020) Ukraine's IT Market: Recession Analytics.

Figure 18 the Government of Ukraine's short-to-mid-and long-term private sector support measures

	Priority Matters	Details	Remarks
Short-to-Mid-term (2020~2022)	Implementation of economic support measures	■ Review the 2020 State Budget of Ukraine to increase social protection and support to the economy. ■ Elaborate and implement the National Economic Stimulus Program to overcome adverse effects of the constrains put in place to prevent the emergence and spread of the coronavirus disease (COVID-19) for 2020-2022. ■ Provide lending to support small and medium businesses that have suffered losses due to the quarantine measures. ■ Support domestic industrial producers, inter alia, by using the public procurement mechanism. ■ Utilize fiscal and other tools to reduce burden on businesses under the force majeure circumstances. ■ Engage Ukrainian citizens who have returned from long-term stay abroad into active economic life.	<Key areas of the Economic Stimulus Program> 1. Putting in place adaptive quarantine measures 2. Stimulation of small and medium business 3. Securing employment and government contracts 4. 'Regulatory guillotine[27]' 5. Optimization of tax burden and administration 6. Rebooting of the production sector 7. Recovery from energy crises and development of the energy sector 8. Transport and infrastructure reform 9. Development of international trade 10. Digital transformation and development of the IT sector

[27] A quick and low-cost method for large-scale reviewing or cancellation of old regulations that are considered inappropriate for current social conditions.

Long term (2023~)	Entrepreneurship development	■ Creation of an enabling environment for the development and restoration of small and medium business, including by reducing regulatory pressure and introducing support programs. ■ Development of doctrine after the implementation of economic security legislation. ■ Creation of environment for liberalization and digitalization of relations between the state and economically active person, that is, the self-employed, micro-, small and medium business, and provision of full legalization of self-employment putting such persons out of the shady business. ■ Arrangement of the legal framework for the self-employed persons, micro-, small and medium business, and provision of new up-to-date forms of their activity and economic organization (platforms, BPO (business process outsourcing), start-up companies, etc.). ■ Adjustment of an effective communication system to monitor and solve problematic issues of foreign investors in Ukraine. ■ Ensuring employment of population by supporting business initiatives of citizens. ■ Ensuring fiscal, regulatory, financial and credit support to employers to preserve jobs. ■ Identification of priority national economy sectors for job preservation and provision of support and incentive for them. ■ Introduction of new and expansion of existing credit support programs for small and medium business. ■ Settlement of tariffs of monopolies in the interests of consumers. ■ Demonopolisation of key industries, reforming of the Antimonopoly Committee to protect competition and ensure equal conditions for access to markets and resources. ■ Attraction of the investment capital for the development of innovative and priority sectors of small and medium business by creating accessible tools to	Ministry of Economy

	Priority Matters	Details	Remarks
		attract investments and introduce a special legal regime of activities.	

Source: Cabinet of Ministers of Ukraine (2020)

3.1.1.3. Ecosystem overview

In recent years, the Ukrainian ecosystem has developed rapidly. In particular, the fastest growing SU is the ICT sector, which accounts for 10% of foreign direct investment (FDI) (2019) and is the second largest export sector, with exports of US$3.6 billion in 2017 (compared to US$2 billion in 2013) [28]. The establishment of UNIT.City in 2017, the largest innovation park in Central and Eastern Europe, and that of the USF in 2019 are among the major changes that symbolize this trend. Combined with the government's promotion of digitization, the SU ecosystem, particularly in ICT fields, is expected to expand in the future.

However, in contrast to the above-mentioned booming ICT industry, the entrepreneurial and business environment in Ukraine itself has many issues to be addressed, and it is expected to improve this environment for further development in the future. This article outlines the Ukrainian ecosystem from five perspectives -- "policy and governance," "access to funds," "market," "culture," and "human resources."

<Policy and governance>

Corruption remains a persistent social challenge in Ukraine, and the relatively low trust in government institutions affects the business environment. For example, Ukraine's scores for "Public-sector performance" (72nd/141 countries), "Incidence of corruption" (104th) and "Property rights" (109th) are low in the Global Competitiveness Index of the World Economic Forum[29]. The fast-growing ICT sector is no exception, and it has been pointed out that ambiguity in the legal interpretation of intellectual property rights protection and uncertainty in the enforcement of the law have hindered foreign companies from entering the country[30]. In addition, the Global Innovation Index, which is published jointly by Cornell University and several international organizations, shows that the indicators on "institutions" related to political stability and law enforcement, and ease of resolving insolvency are in a particularly low level. The difficulty in resolving insolvency is also pointed out by the World Bank, and it is recognized as a risk of business failure that raises the hurdle of entrepreneurship[31].

[28] Unit City (2019) Tech Ecosystem Guide to Ukraine, https://data.unit.city/tech-guide/Tech_Ecosystem_Guide_To_Ukraine_En-1.1.pdf.

[29] World Economic Forum (2019) The Global Competitiveness Report 2019. Geneva: World Economic Forum. https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

[30] World Bank (2014) 2013 Ukraine Enterprise Survey: Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

[31] Same as above

Figure 19 Global Innovation Index 2020: Index on “Institutions”

Category	Score (0-100)/Value	Rank (131 countries)
Institutions (overall)	56.2	91
1. Political environment	46.0	101
Political and operational stability	50.0	123
Government effectiveness	44.1	90
2. Regulatory environment	61.3	78
Regulatory quality	36.7	92
Rule of law	28.3	108
Cost of redundancy dismissal	13.0	40
3. Business environment	61.2	104
Ease of starting a business	91.1	52
Ease of resolving insolvency	31.4	117

Source: World Intellectual Property Organization (2021) Global Innovation Index 2021: Tackling Innovation through the COVID-19 Crisis. Geneva: WIPO.

According to the Doing Business report by the World Bank, Ukraine's overall business environment scores 70.2 points/100 points, ranking 64th out of 190 countries.[32] As shown in the table below, although there are many items that score around 70 points or higher, in contrast to the ease of starting a business, the time and cost associated with bankruptcy is very high, as mentioned above. In addition, there are only a few items that score higher than the average for Europe and Central Asia and neighboring countries, which means that Ukraine faces challenges in terms of its advantage within the regional economy.

Figure 20 Ukraine’s business environment (detailed scores of Doing Business 2020)

Category (score)	Overview
Starting a Business (91.1)	■ Good scores for time, cost, and capital requirements ■ The overall score is almost the average for Europe and Central Asia (ECA, 90.5), and the neighboring countries[33] are all slightly higher than Ukraine.
Dealing with Construction Permits (81.1)	■ Balanced and good scores for the number of procedures, time, cost, and quality ■ High scores compared to the ECA average (69.0) and the neighboring countries

[32] World Bank (2019) Doing Business 2020: Comparing Business Regulation in 190 Economies. Washington DC: World Bank. https://www.doingbusiness.org/content/dam/doingBusiness/country/u/ukraine/UKR.pdf

[33] Kazakhstan, Georgia, Belarus, and Moldova are included as neighboring comparators

Getting Electricity (62.5)	■ Reasonable and reliable, but taking a very long time to get electricity (267 days) ■ Even lower than that of neighboring countries and the ECA average (75.6)
Registering Property (71.3)	■ Issues in the number of procedures and the quality of land administration ■ Even lower than that of neighboring countries and the ECA average (75.8)
Getting Credit (75.0)	■ Almost same as the ECA average (72.2), which is an average position among the neighboring countries
Protecting Minority Investors (68.0)	■ Low scores for the extent of director liability and the ease of shareholder suits ■ Slightly higher than the ECA average (61.0)
Paying Taxes (78.1)	■ Taking a very long time despite introducing online payment ■ Almost same as the ECA average (77.9)
Trading Across Borders (80.1)	■ Low scores for time and to export (documentary compliance) ■ Lower than the ECA average (87.3) and relatively low position among the neighboring countries
Enforcing Contracts (63.6)	■ Costly and low quality of judicial processes ■ Lower than the ECA average (65.5) and the lowest among the neighboring countries with Moldova
Resolving Insolvency (31.4)	■ Taking time and costly in insolvency and weak insolvency framework ■ Very low compared to the ECA average (55.7) and the neighboring countries

Source: World Bank (2019) Doing Business 2020: Comparing Business Regulation in 190 Economies. Washington DC: World Bank.

Regarding such evaluation, government agencies are aware that the current state control system makes it difficult to conduct business in Ukraine[34]. The government's positive attitude toward the institutional reform can be seen in the establishment of the National Agency for Prevention of Corruption (NAPC) and the introduction of e-procurement systems for public procurement. Yet it requires certain period of time to bring visible changes considering that only 32% of companies in the country comply with the principles of transparency and accountability[35].

<Financing>
Access to financing is one of the biggest challenges faced by SMEs including SUs in the country. In the Global Competitiveness Index, Ukraine's financial system is ranked 136th out of 141 countries with low scores for "Domestic credit for private sector" (76th), "Financing of SMEs" (76th), and "Venture capital availability" (112th).

[34] Interviews with the Ministry of Economy (conducted on 22/09/2021).
[35] World Bank (2017) Ukraine Innovation and Entrepreneurship Ecosystem Diagnostic, Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/28831

Figure 21 Global Competitiveness Index: Financial System

Category	Score (0-100)	Rank (141 countries)
Financial system (overall)	42.3	136
1. Domestic credit to private sector	50.0	76
2. Financing of SMEs	39.2	112
3. Venture capital availability	33.7	80
4. Market capitalization	4.0	112
5. Insurance premium	23.4	78
6. Soundness of banks	37.4	131
7. Non-performing loans	0.0	139
8. Credit gap	100.0	1
9. Bank's regulatory capital ratio	93.0	120

Source: World Economic Forum (2019) The Global Competitiveness Report 2019. The Global Competitiveness Report 2019. Geneva: World Economic Forum.

Not only in Ukraine, but in general, getting a loan from a city bank is not easy for a newly started company, but an additional barrier could be the high interest rates in Ukraine compared to neighboring countries such as Russia and Germany[36]. In fact, while more than 60% of SMEs in Ukraine require loans, only 15% of micro and small enterprises and 22% of medium-sized enterprises have actually received bank loans[37,38]. SMEs cite high interest rates, excessive collateral requirements and complicated procedures as obstacles to bank loans.

Also, foreign VCs and investors in particular tend to invest in SUs that have grown to some extent, taking into account the risks of the investment environment, such as political instability, corruption, and weak regulations in the country. Inevitably, SUs in the pre-seed and seed stages are mainly funded by domestic VCs and investors, but some argue that the network of domestic angel investors is still in its early stages and crowdfunding is regulated, limiting funding options[39] (see 3.1.3 for details).

<Market>

Although it has been about 30 years since the transition to a market economy with independence in 1991, Ukraine is still in a developing phase. It is said that the market competition is not fully functioning, and the dominance of state-owned enterprises (or large former state-owned

[36] According to the World Economic Forum's Global Competitiveness Report 2016-2017, the lending rate in Ukraine is estimated to be 14.8% (4.6% for Germany, 8.3% for Russia and 3.6% for Latvia).

[37] World Bank (2014) 2013 Ukraine Enterprise Survey: Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

[38] The World Bank defined SMEs as enterprises with fewer than 100 employees.

[39] Interview with an EdTech SU based in Ukraine (conducted on 15/12/2021).

enterprises) makes it difficult for SUs to enter traditional sectors (e.g., energy, machine building)[40]. In addition, state-owned enterprises tend to be less active in innovation. Looking at access to international markets, some have pointed out that health, environment and technology-related regulations developed during the Soviet era are not in harmony with that of EU and thus impede selling certain products in the EU market.

The above environment partly results in the growth of ICT sector, which is less influenced by the traditional industries. Since SUs see the US as their first market in terms of market size and technology acceptability, the number of Ukraine-borne SUs headquartered in the US is increasing. According to Avenues, a Ukrainian VC, the majority of tech SUs have been forced to think globally and target mainly the global market from the day of establishment[41].

<Culture>

Ukraine's overall score on the Global Competitiveness Index for entrepreneurial culture is 73rd out of 141 countries, almost in the middle position. Its breakdown illustrated in the table below shows that while the rank of "Attitude toward entrepreneurial risk" (18th) is high, "Growth of innovative companies" (109th) and "Companies embracing disruptive ideas" (102nd) are ranked low, suggesting that there are issues in a growing phase as an organization rather than starting a company.

Figure 22 Global Competitiveness Index: Entrepreneurial Culture

Category	Score (0-100)	Rank (141 countries)
Entrepreneurial culture (overall)	50.0	73
1. Attitudes towards entrepreneurial risk	62.4	18
2. Willingness to delegate authority	55.5	73
3. Growth of innovative companies	42.8	109
4. Companies embracing disruptive ideas	39.4	102

Source: World Economic Forum (2019) The Global Competitiveness Report 2019. Geneva: World Economic Forum.

Generally speaking, the appearance of entrepreneurs who have succeeded in exiting increases interests in starting business and contributes to the development of an entrepreneurial culture. In Ukraine, there are a number of role models for tech SUs. For example, WhatsApp co-president Jan Koum and PayPal co-founder Max Levchin are from Ukraine. Looksery, Snapshot, and Viedle (Google acquired for US$30 million) are also examples of exit success in Ukraine.

On the other hand, SUs are required to build the capacity of the organization, including not only the entrepreneurs themselves but also the people around them in the process of growth. The ICT industry in Ukraine is supported by sole proprietorships with low-income tax rates (5%)[42],

[40] World Bank (2017) Ukraine Innovation and Entrepreneurship Ecosystem Diagnostic, Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/28831

[41] World Bank (2014) 2013 Ukraine Enterprise Survey: Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

[42] A tax system called "Fizichna Osoba-Pidpriyemets, FOP" ("sole proprietor" in Ukrainian). The FOP system defines 5% income tax to sole proprietors, and registration with the FOP allows sole proprietors to do business without being incorporated.

which accelerates the utilization of freelance ICT human resources. At the same time however, it is concerned that this may impede the growth of a company[43]. In the interviews, some SUs pointed out that it was difficult to keep talented engineers in-house[44]. Because Ukraine has already established itself as outsourcing destinations for ICT companies, there seem to be a dilemma that such talented personnel prefer to work outside of SUs[45].

<Human resources>
Ukraine has been actively engaged in research in the fields of nuclear power and aerospace since the Soviet era, and the quality of science and technology and science and mathematics education is generally high. These trained personnel acquire ICT skills and play an important role as ICT specialists. Currently, more than 150 institutions provide ICT education, producing 23,000 ICT human resources annually. According to the World Economic Forum, Ukraine is ranked 27th out of 137 countries in the field of mathematics and science education[46]. The ICT field is particularly favorable to SUs because of its low cost of capital and ease of access to global markets, therefore Ukrainian SUs are expanding. As illustrated in 3.1.1.4, the growing number of foreign companies establishing R&D and technology centers in Ukraine also means the country's wealth of talent pools.

On the other hand, there are challenges in the development of entrepreneurs, especially in higher education. In the interviews, it was pointed out that while the quality of the country's top business schools is considered to be high, functions and opportunities to develop business human resources such as business managers, product managers, and executives are limited in the country as a whole (detailed in 3.1.1.4). Some APs and donors emphasized the need in entrepreneurial development with global business in mind, since many Ukrainian SUs do not have a sufficient level of mindset to understand foreign markets when they aim to expand their business abroad.

In addition to the above, the brain drain of Ukrainian SUs and entrepreneurs is another point that needs to be recognized. Many Ukrainian SUs relocate to the U.S. or Europe after reaching a certain scale in search of greater funding possibilities and market access. However, there are also cases where relocation is considered at a relatively early stage in light of the limited domestic market and low acceptance of advanced technologies such as AI and blockchain, as well as the challenges in the domestic business environment.

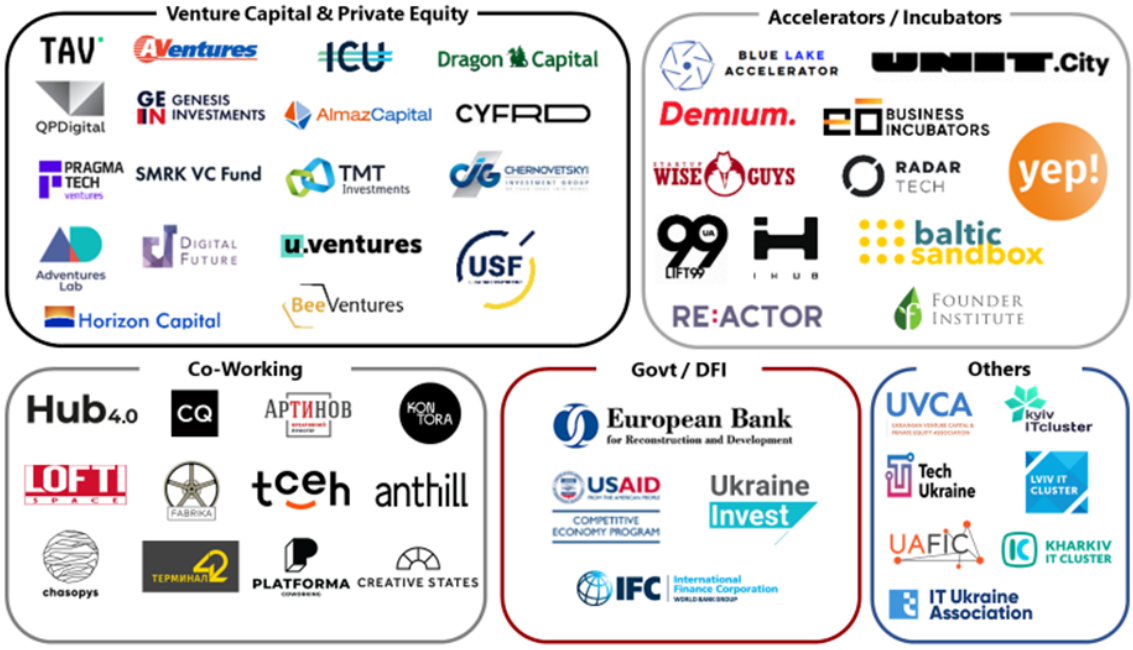
There are many reasons, both positive and negative, behind the decisions of individual SUs, but it is believed that the government has decided to prioritize creating new opportunities rather than insisting on having SUs stay in their home countries with the establishment of the Ministry of Digital Transformation[47]. In the short term, the speed of growth in the domestic SU ecosystem as a whole may slow down, as SUs with good track records move their headquarters out of Ukraine and only early-stage SU companies remain in the country. However, in the long run, globally successful SUs can be expected to increase the awareness of Ukrainian SUs and contribute to the local ecosystem by continuing their business in Ukraine in some way, creating employment opportunities, interacting with the local entrepreneurial community, and transferring technology. The Ukrainian government is also aware of the important theme of how to generate

[43] World Bank (2014) 2013 Ukraine Enterprise Survey: Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880
[44] Interview with a health-tech SU based in Ukraine (conducted on 14/12/2021).
[45] A report suggests that 60% of Ukraine's IT personnel work for IT outsourcing companies and 5% for SUs (Source: N-iX (2019) Ukraine: The Country that Codes - IT Industry in Ukraine, 2019 Market Report. https://eufordigital.eu/library/ukraine-the-country-that-codes-it-industry-in-ukraine-2019-market-report/).
[46] World Economic Forum (2017) World Competitiveness Report 2017-2018. Geneva: World Economic Forum. https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018
[47] Interview with USAID (conducted on 24/11/2021).

such benefits to the domestic SUs and the domestic economy from SUs that have been relocated abroad[48], and it is necessary to find an appropriate balance between the growth of individual SUs and the development of the domestic ecosystem.

This section reviewed the ecosystem components in Ukraine. At the end of the section, the major ecosystem players is summarized as below. In the next section, each player will be analyzed in detail.

Figure 23 Major ecosystem players in Ukraine



Source: Developed by the survey team based on each company's website and materials

3.1.1.4. Educational environment (universities and research institutions)

As mentioned in 3.1.1.3, while Ukraine has traditionally had a high level of science and technology education, there is relatively large room for improvement in entrepreneurship and business human resource development. Kyiv Polytechnic Institute (KPI) and National Taras Shevchenko University of Kyiv account for more than 40% of the home universities of Ukrainian entrepreneurs. In addition, Dnipropetrovsk National University, Kyiv National Economic University, and National University of Kharkiv make up 17% of entrepreneurs' home universities[49]. The above five universities account for 50% of the entrepreneurs' home universities, and UVCA mentioned as a challenge the fact that opportunities for quality entrepreneurship education are limited to these top universities and a few private schools[50]. Some private schools are offering programs for teachers to address the lack of knowledge among university faculty[51].

[48] Interview with the Ministry of Economy (22/09/2021).

[49] Estimated based on data from Crunchbase. While it is not a complete picture of all universities and their graduates, at least it could be said that the five universities are home to major entrepreneurs.

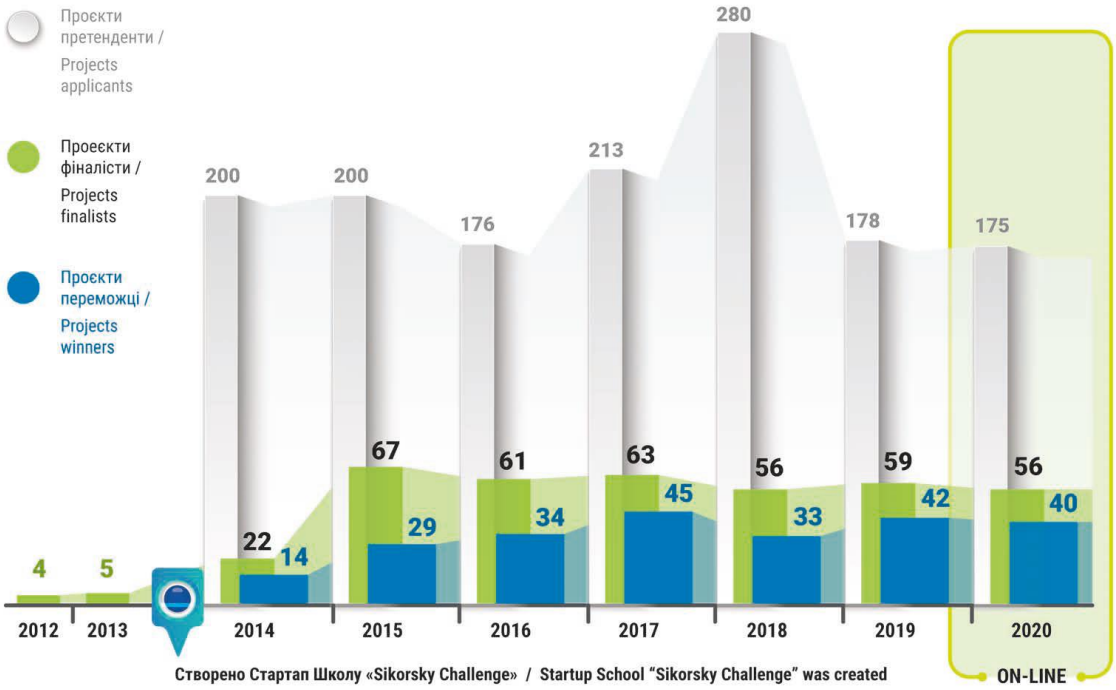
[50] Interview with UVCA (conducted on 4/8/2021).

[51] DOU.UA website, "Why do teachers take educational courses and is there a gap between university and IT?," https://dou.ua/lenta/articles/professors-about-it/

It is also said that there are not enough universities that offer business management skills such as management, marketing, and accounting[52].

KPI, one of the above-mentioned five universities, has taken a strong leadership in the SU ecosystem. KPI established a science park as part of the national policy in 2006, and has been making efforts to form an ecosystem both inside and outside the university with the park. In particular, the Sikorsky Challenge Ukraine (SCU), which has been held since 2012, is a large AP based on the collaboration with 24 educational institutions called Startup Schools in 20 regions of the country. SCU covers six areas: "Defense and security," "Industrial high-tech and space," "Biomedical engineering and human health," "IT, digital country, cyber security," "Agricultural engineering," and "Green energy, ecology."

Figure 24 Change of the number of applications to SCU



Source: Materials provided by KPI

While SCU is a platform that accepts any project that fits into the six areas, regardless of the applicant's organizational structure or nationality, KPI as a research institution has seeds of future SUs. In some cases, projects originating from KPI's academic research have joined the SCU and are aiming to be commercialized in the future. However, in these cases, although the research funds are relatively abundant, the funds and resources for business development are not sufficiently secured[53]. A local VC has commented that they have the impression that business ideas generated at universities and other research institutions do not lead to commercialization. How to make business out of university research with high technological capabilities could be an important question for raising the level of the Ukrainian ecosystem[54].

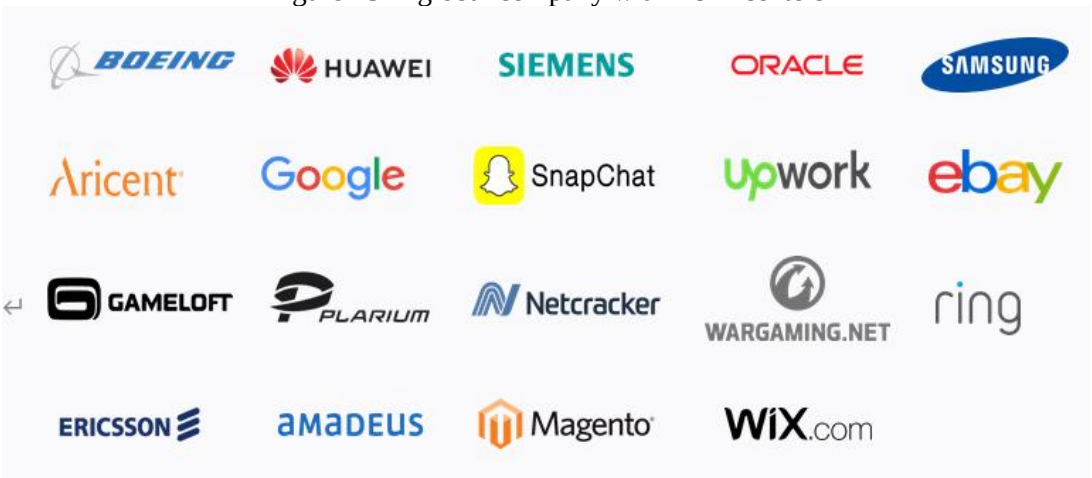
[52] World Bank (2014) 2013 Ukraine Enterprise Survey: Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

[53] Interview with a manager of a health-tech project in KPI (conducted on 17/12/2021).

[54] In this regard, a 2017 World Bank report noted that the government's STI budget allocation may be rigid and uncompetitive, making it difficult to induce business innovation (Source: World Bank (2017) Ukraine Science, Technology, and Innovation Public Expenditure Analysis. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/28829).

Lastly, it should be noted about the research institutions of private companies. In recent years, global companies have established R&D centers and technology centers, mainly in the ICT field. It is estimated that more than there are 100 R&D centers owned or affiliated by global companies, such as Google, Samsung, Simens, and Huawei, in Ukraine[55,56,57]. The main reasons for these companies' choosing Ukraine are its low labor costs and excellent human resources and good access to Europe[58].

Figure 25 A global company with R&D centers



Source: Beetroot (2021) Ukraine: the Home of Great Devs, 2021 Tech Market Report

3.1.1.5. Incubators and accelerators

Accelerators and Incubators are a critical element of the SU Ecosystem acting as a gateway and early investor for promising SUs. SUs who have graduated from top tier APs like Y Combinator or TechStars, often benefit not only from alumni and investor networks, but more importantly, it conveys a signal of competence and growth potential to investors. If they succeed in securing funding from VCs, that makes the SU much more attractive to the following investors.

Therefore, the presence of established global or regional APs in an ecosystem is an important step forward in increasing the interests in local SUs. It can be an indication of the maturity of the SU ecosystem in terms of SU pipeline and its quality. Ukraine has a variety of players including a few established regional-focused APs (Demium, Startup Wise Guys), several recently founded regional accelerators (Blue Lake, Baltic Sandbox), and some branches of Global Accelerator Networks (Seed Forum, Founder Institute).

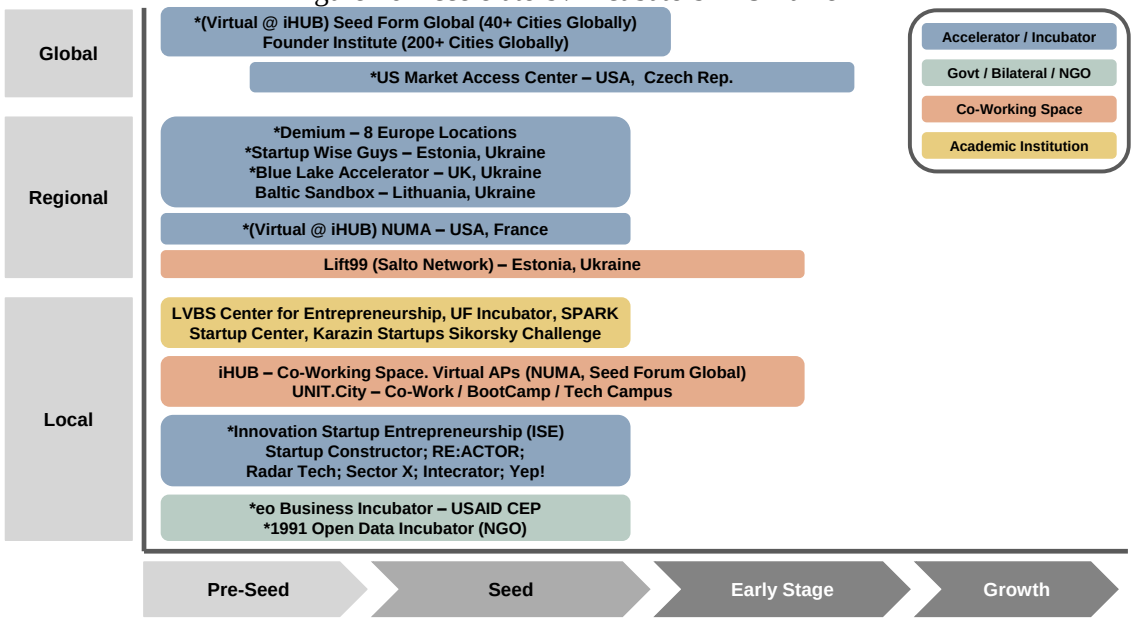
[55] Daxx (2021) Software Development Report in CEE. https://drive.google.com/file/d/12g8hAYI2QhD6KKIkFDg1ZNki1qM7I-ow/view

[56] Ilya Boshnyakov (2020) "Google now has an R&D Center in Ukraine," AIN.UA, https://ain.ua/en/2020/01/14/google-rd-center-ukraine/

[57] Alcor website, "Top 5 Reasons for Israeli Companies to Open R&D Center in Ukraine," https://alcor-bpo.com/your-own-rd-office-news/top-5-reasons-for-israeli-company-to-open-rd-center-in-ukraine/

[58] World Bank (2014）2013 Ukraine Enterprise Survey : Country Highlights、Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

Figure 26 Accelerators / Incubators in Ukraine



Notes: 1. * Ukraine Startup Fund Accredited Accelerator Program

Source: Developed by the survey team based on each company's website

UNIT City is the core incubator in Ukraine. In 2020, it received a $50 million loan from the EIB[59]. It also has a 2nd phase expansion plan toward 2025 (total construction costs: over US$700 million ~ US$800 million)[60] and is the largest innovation park in Central and Eastern Europe. It is managed with the support of donors and foreign investors, but does not receive government funding[61].

The UNIT.City's APs are divided into the programs operated by local accelerators including RadarTech, AgroHub and Sector X, and their unique AP "NEST (Network-Education-Startup-Technology)." NEST is held every three months and supports 10 SUs (Seed/Series A) per batch.

[59] EIB website, "Ukraine: InnovFin Emerging Innovators - EIB supports Ukrainian Innovation Campus Project in UNIT.City," https://www.eib.org/en/press/all/2020-170-innovfin-science-programme-eib-supports-ukrainian-innovation-campus-project-in-unitcity

[60] Vasyl Khmelnytsky Foundation website, ""About $50 million has already been invested in UNIT.City. Total costs are estimated at $700-800 million" – an interview with Vasyl Khmelnytsky," https://kfund.ua/en/about-50-million-has-already-been-invested-in-unit-city-total-costs-are-estimated-at-700-800-million-an-interview-with-vasyl-khmelnytsky/

[61] Interview with UNIT.City (conducted on 25/08/2021).

Figure 27 Overview of UNIT.City

Item	Overview
Year of establishment	2017
Founder	Vasyl Khmelnytsky (founder of Ufuture)
Number of resident SU	108
Requirements for SU	< To be a resident of UNIT.City > ■ Working in tech and innovation field < To participate in an acceleration program > ■ Having a team (not an individual) ■ Having a product or service (not necessarily profitable) ■ Having a few clients
Support menu for SU	■ Coworking space, office space and event space ■ Managing and conducting acceleration programs and bootcamp trainings ■ Academy for engineers (planning an entrepreneur's school in future) etc.
Major supporting organizations	EIB, USAID, EBRD, UC Berkley, Cornell University, etc.

Source: Developed by the survey team based on the UNIT City website and interviews with the organization

In regard to the current challenges of Ukrainian SU ecosystem, UNIT.City pointed out 1) access to funds for early-stage SUs (particularly the limited number of VCs) and 2) access to international markets. To address the issues 1) and 2), it emphasized the necessity of increasing access to foreign VCs and angel investors, rather than the grant-based financing scheme by existing donors. As a measure to improve the situation, UNIT.City is developing its own fund with financial support and access to investors provided by EBRD and USAID. It is a EUR 100 million-level fund for early-stage SUs, and if realized, is expected to be one of the largest funds in the region[62].

In addition, USF, a national fund for pre-seed/seed SUs (detailed in 3.1.3.2), also provides APs together with its eight accredited accelerators, enabling SUs to receive grants of up to US$10,000 to participate in the programs of prominent national and international accelerators[63].

To sum up, Ukraine has incubators/accelerators operating at various levels, from domestic to global, and access to APs seem to be relatively well developed.

3.1.1.6. IT clusters[64]

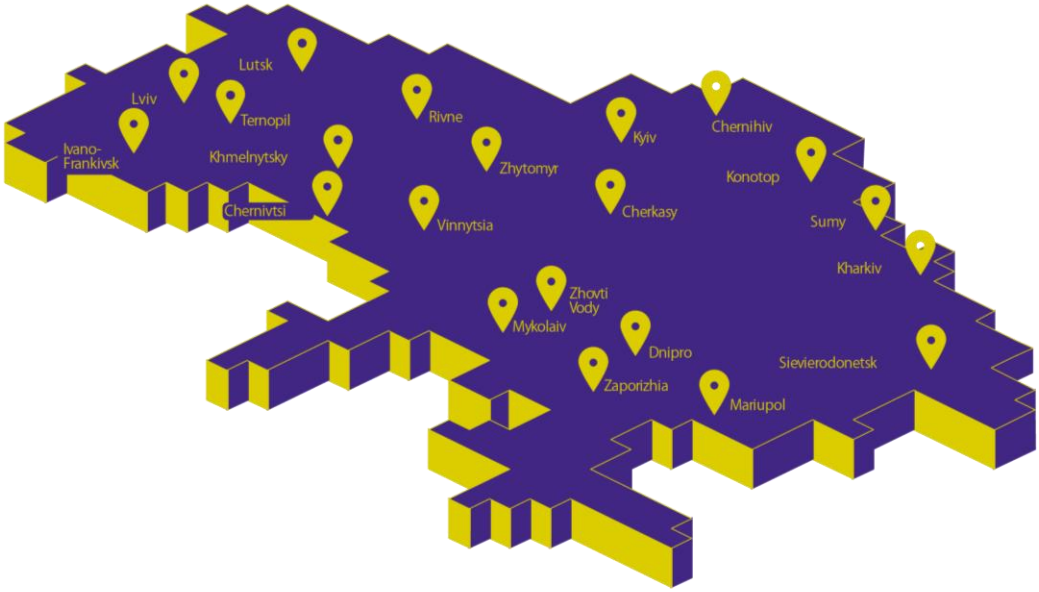
In Ukraine, IT clusters have been formed in more than 20 cities, playing an important role as a base for tech SUs and a starting point for innovation creation. Among them, the most representative are the IT clusters in Kyiv, Kharkiv, Lviv, and Dnipro.

[62] Interview with UNIT.City (conducted on 25/08/2021).

[63] Accredited accelerators: Eō Business Incubators, Startup Wise Guys, Blue Lake, Seed Forum Global, Innovation Startup Entrepreneurship, iHub powered by NUMA, 1991 Open Data Incubator, and US Market Access Center (Source: USF website, https://usf.com.ua/en/akseleracijna-programma/)

[64] IT companies, universities, research institutes, public institutions, and incubator organizations which support start-up companies are concentrated in a certain area. It is a concept that aims at fostering industry and regional development through technological innovation while industry, government, and academia in a particular region compete and cooperate with each other.

Figure 28 IT clusters in Ukraine



Source: UNIT.City (2019) Tech Ecosystem Guide to Ukraine

Lviv IT Cluster defines education, promotion, and infrastructure development as priority areas, and provides curriculums for nine clusters, including IoT, AI, and data science, in collaboration with universities in the region[65]. From the marketing perspective, it holds business conferences Lviv IT Arena for IT companies and investors, and publishes specialized magazines such as ITID Lviv, which introduces advanced technologies and projects. Since 2020, the construction of LvivTech Park has been in progress as part of infrastructure development, and it is expected to become a major Tech Park with offices, labs, universities and other facilities located in a 1.77-hectare site[66]. In other cities, Kharkiv IT Cluster has partnered with National University of Kharkiv to launch a master's degree program in IT media and communications named "Strategic Communication and the New Media[67]." Also, Ivano-Franivsk IT Cluster offers internship programs in the field of ICT for local university graduates[68].

IT clusters are not only the core of the region's tech business, but also contributes to the development of ICT human resources and entrepreneurs in each region in cooperation with public agencies and local communities[69]. The World Bank stated that the formation of an IT cluster in

[65] Lviv IT Cluster website, "721 Students Choose Lviv IT Cluster's Innovative Educational Programs," https://itcluster.lviv.ua/en/721-student-navchatymetsya-na-innovatsijnyh-programah-klasteru/

[66] LivivTech Park website, https://www.lviv-tech.city/en/

[67] Kharkiv IT Cluster website, https://it-kharkiv.com/en/projects/master-s-program-strategic-communications-and-the-new-media-in-kharkiv-national-university-named-after-v-n-karazin/

[68] Ivano-Frankivsk IT Cluster website, https://it-cluster.if.ua/projects

[69] Beetroot (2021) Ukraine: the Home of Great Devs 2021 Tech Market Report, https://beetroot.co/wp-content/uploads/sites/2/2021/03/Ukraine_-the-Home-Of-Great-Devs-2021-_-Ebook-v-2.0-2.pdf

collaboration with local governments is an important national policy for promoting SUs as it helps to build effective support measures linked with specific local needs[70].

3.1.1.7. Networking opportunities

For SUs with small organizations, networking with collaborative partners, investors, and mentors is very important, and events such as tech conferences and SU competitions, as well as co-working spaces are typical opportunities. In Ukraine, there are a number of such networking opportunities, especially in the capital city Kyiv, and some are listed in the table below[71]. In the last one to two years, there was a challenging period due to the impact of COVID-19, but there are many examples of overcoming the difficulties by holding online events. In addition, the growing social needs for the use of technology has been a tailwind for tech SUs, reflected on the continuing shortage of coworking spaces[72].

Figure 29 Various networking opportunities for SUs in Ukraine

iForum	
Category	Tech event
Location	Kyiv
Overview	■ One of the largest tech events in Ukraine organized by volunteers from the Ukrainian IT industry since 2009 ■ There were two stages in the Olympiski Stadium, where sessions on Startup, Future, Digital Fun, and Internet technologies were held. Exhibition zones were also be set up (summary of 2021)
Notes	-
IT Weekend Ukraine	
Category	Tech event
Location	Several cities in the country
Overview	■ Aims at improving the professional development of software engineers and creating conditions for the effective experience exchange among those working in the field of software development ■ Conferences were held in Bulgaria and Poland as well as Ukraine
Notes	■ Over 80 events were held between 2011 and 2019, but unknown for the last two years
Lviv IT Arena	
Category	Tech event
Location	Lviv
Overview	■ A tech event held by Lviv IT Cluster since 2014. it includes sessions by industry experts, SU competition, networking party, etc. ■ It was held online in 2020, and in a hybrid of online and on-site in 2021
Notes	-
Seed Forum Ukraine	
Category	SU pitch
Location	Several cities in the country

[70] World Bank (2014) 2013 Ukraine Enterprise Survey : Country Highlights, Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

[71] While this section summarized opportunities provided by private stakeholders, government agencies such as the Ministry of Economy (and EEPO) and the Ministry of Digital Transformation also manage and operate centers that play a similar role (see 3.1.1.2).

[72] Interview with UNIT.City (conducted on 25/08/2021).

Overview	■ Seed Forum is a SU-supporting organization with programs in more than 50 countries around the world. 20,000+ investors participate in the Global Network, and more than 8,000 SUs have been provided access to investors at more than 500 Seed Forums held around the world ■ Seed Forum Ukraine was established in 2011 after holding events in Kharkiv and Dnipropetrovsk
Notes	■ USF accredited accelerator
iHub	
Category	Hub/coworking space
Location	Kyiv, Lviv, Vinnytsia, Chisinau
Overview	■ Opened coworking spaces in four cities in Ukraine that are accessible 24 hours a day, 7 days a week ■ Various events such as workshops, hackathons, investor meetings, and pitches are planned
Notes	■ USF accredited accelerator
Impact Hub Odessa	
Category	Hub/coworking space
Location	Odesa
Overview	■ Impact Hub was first established in London in 2005 and now there are 90 Impact Hubs around the world ■ Impact Hub Odessa was established in 2013. About 150 events are held every month
Notes	-
Lift99 Kyiv	
Category	Hub/coworking space
Location	Kyiv
Overview	■ Lift99 is a startup community from Estonia. It currently has hubs in Tallinn and Kyiv, each with a coworking space
Notes	-
UNIT.City	
Category	Innovation park
Location	Kyiv
Overview	■ One of the largest innovation parks in Central and Eastern Europe, with various types of coworking spaces ■ A wide range of activities includes hosting tech events such as UNIT Fintech Forum and UNIT Investment Summit, and running acceleration programs
Notes	-

Source: Developed by the survey team based on the websites of each organization and USF

The incubators/accelerators and IT clusters mentioned in the previous section are often responsible for the operation of such events and coworking spaces, indicating that they do not provid a single menu of support, but rather a multiple support to SUs.

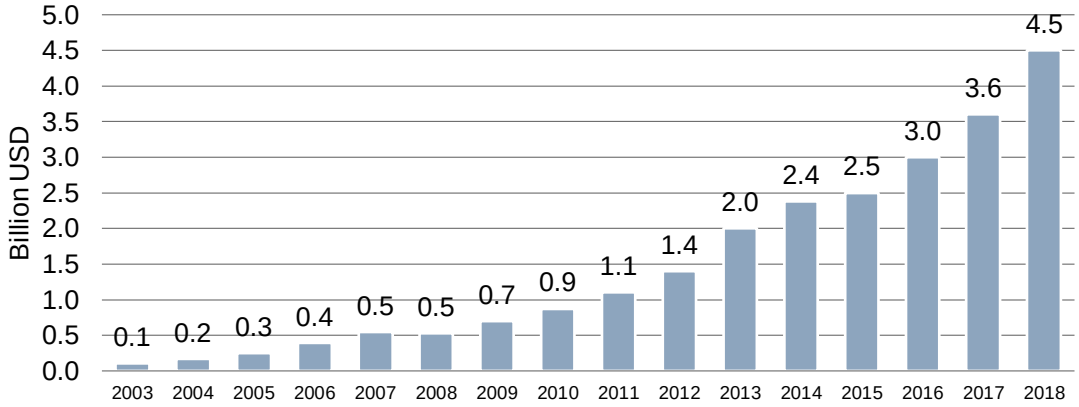
3.1.2. Challenges for startups and the industrial sector

3.1.2.1. ICT: Key to overcoming low-value-added outsourcing

It can be said that Ukraine's ICT industry already has a certain position in the global market. As described in 3.1.2, the quality of science, technology and mathematics education is high. In addition, unlike traditional industries such as steel and energy, in which Oligarchy's dominance

remains strong, the ICT industry, which is a relatively new industry, tends to attract skilled human resources who do not want to be trapped by such a dominance structure. Although the average wage in Ukraine is US $ 350, the salary level in ICT sector is quite high at US $ 2,000, which might be one of the reasons behind[73]. Furthermore, Ukraine has over 1,000 ICT outsourcing companies, of which 11 were selected as 100 global outsourcing companies in 2021 by the International Association of Outsourcing Specialists. As these outsourcing companies deal with Western European and US software companies, the quality and cost advantages of the Ukraine's outsourcing companies have been recognized globally. At present, Ukraine has 4,000 tech companies and more than 180,000 software developers, and annual IT service exports are US$4.5 billion (2018), equivalent to 4% of the country's GDP[74], which will be projected to increase to 9% by 2025[75].

Figure 30 Changes in production value of IT sector in Ukrainian

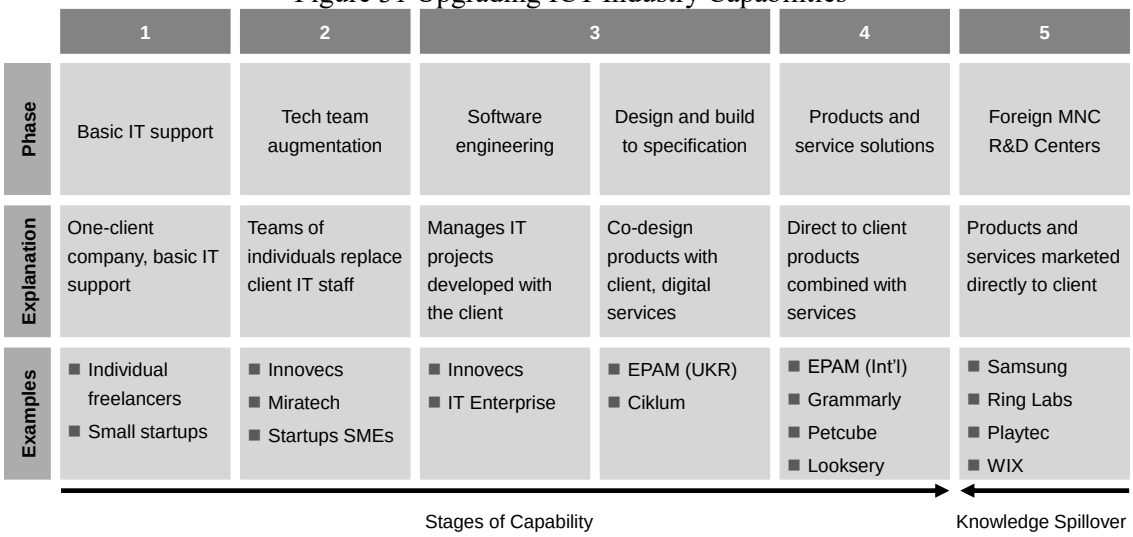


Source: Developed by the survey team based on UKRAINE'S IT INDUSTRY Overview

On the other hand, there are challenges in terms of the growth of enterprises that have entered the market as outsourcing service providers. A report released by the World Bank in 2019 illustrates the growth of ICT companies as Figure below, noting that most ICT companies in Ukraine are engaged in low-value-added outsourcing operations in Phases 1 and 2. Despite the emergence of Unicorns such as Grammarly, GitLab, and People.ai, in order for more companies to upgrade their business from a simple outsourcing destination to high-value-added services and R&D based on the experience of outsourcing, measures such as strengthening the management skills and designing incentives for capacity development are also necessary.

[73] Startup universal website, https://startupuniversal.com/country/ukraine/
[74] Cabinet of Ministers of Ukraine (2020), UKRAINE'S IT INDUSTRY Overview.
[75] BBC website, "Ukraine: The Home of Startups and Entrepreneurs", https://www.bbc.com/storyworks/future/ukraine-innovating-for-the-future/ukraine-the-home-of-start-ups-and-entrepreneurs.

Figure 31 Upgrading ICT Industry Capabilities



Source: World Bank (2019) Path for Ukraine's Economic Growth: Technology Upgrading. Washington DC: World Bank

3.1.2.2. Agriculture: Expectations for productivity improvement in the key industry through the use of technology

The advantages of Ukraine's agriculture include good climate, superior labor costs, and access to the European market in addition to having 30% of the world's black soil known as fertile soil (Chernozem). Agriculture is the main industry of the country, accounting for 11.4% of Ukraine's GDP and nearly 50% of the country's exports (US$22 billion in 2020). The main exports are sunflower seeds, rapeseed, millet, frozen fowls, maze or corn, wheat, barley, honey, etc[76].

Thus, this is an area that attracts attention from foreign investors. According to a survey conducted by the US Chamber of Commerce in Ukraine in 2019, agriculture is the most promising investment sector for foreign companies (2nd place: ICT, 3rd place: energy)[77]. In the past, foreign investors were restricted from acquiring agricultural land, but this was lifted in 2021, and they were allowed to do so on condition that they follow the prescribed procedures[78]. Further regulatory reforms are considered to improve agricultural productivity. Therefore, there seem to be potentials for the utilization of digital solutions such as sensors, drones, and data management systems, seem to satisfy the needs particularly. Interviews with several incubators, donors, and other ecosystem stakeholders also indicated that the agriculture and food processing industries are priority sectors, both in terms of their importance to the Ukrainian economy and their potential for future growth.

3.1.2.3. Education: Strength of the affinity with ICT and growing demand for online education

Education has a strong affinity with ICT, and given the growing demand for online education due to COVID-19, this is a sector where SUs are expected to grow. Preply, which uses AI to support student-teacher matching, successfully raised US$5.5 million in 2017-2019. In addition to Ukraine, the company is also expanding its services in Europe and South America, making it one of the leading Edtech SUs. All Right, an online English language education provider for children,

[76] Ukraine Invest (2021) Ukraine Invest Guide: Explore Your Opportunities. Kyiv: Ukraine Invest. https://ukraineinvest.gov.ua/guide/

[77] Sapiton, M (2019) "Business wants to invest in agriculture, IT and renewables – ACC survey," AIN.UA, https://ain.ua/en/2019/10/31/ukraine-business-climate-survey-acc/

[78] Ukraine Invest (2021) UkraineInvest Guide: Explore Your Opportunities. Kyiv: Ukraine Invest. https://ukraineinvest.gov.ua/guide/

has also successfully raised US$1.5 million in 2019. Other promising SUs in UVCA's 2019 report include Camtouch, which makes cameras and stylus pens for interactive whiteboards, and Mate academy, which develops an online education platform for computer science[79]. In general, the need for education is high even in low- and middle-income countries, and it is relatively easy to look at markets outside of Europe and the US if they can overcome the language barrier of the products and services.

3.1.2.4. Logistics: Road infrastructure renovation is an urgent issue, but limited SUs in the sector

Logistics affects all industries in Ukraine, a country with a large land area. According to the Global Competitiveness Index, the country ranks low in the quality of its road infrastructure (111th out of 141 countries) and the efficiency of its air transport services (101st). In the case of agriculture, a major industry in the country, it has been pointed out that the weakness of the transportation infrastructure is hampering the country's ability to quickly supply its products to export markets as farmers shift to high value-added crops[80].

Figure 32 Global Competitiveness Index: Transport infrastructure

Category	Score (0-100)	Rank (141 countries)
Transport infrastructure (overall)	55.5	59
1. Road connectivity	78.2	59
2. Quality of road infrastructure	33.7	114
3. Railroad density	93.3	25
4. Efficiency of transport services	52.9	34
5. Airport connectivity	56.6	53
6. Efficiency of air transport services	50.0	101
7. Linear shipping connectivity	30.1	57
8. Efficiency of seaport services	48.8	78

Source: World Economic Forum (2019), The Global Competitiveness Report 2019

On the other hand, SUs in the logistics sector can be said to be limited. According to a local VC, when the company was first launched, it had an investment strategy focused on the logistics and retail sectors, but there were few SUs to invest in, so the sector restriction was lifted. In addition, most of the logistics SUs are believed to be e-commerce related.

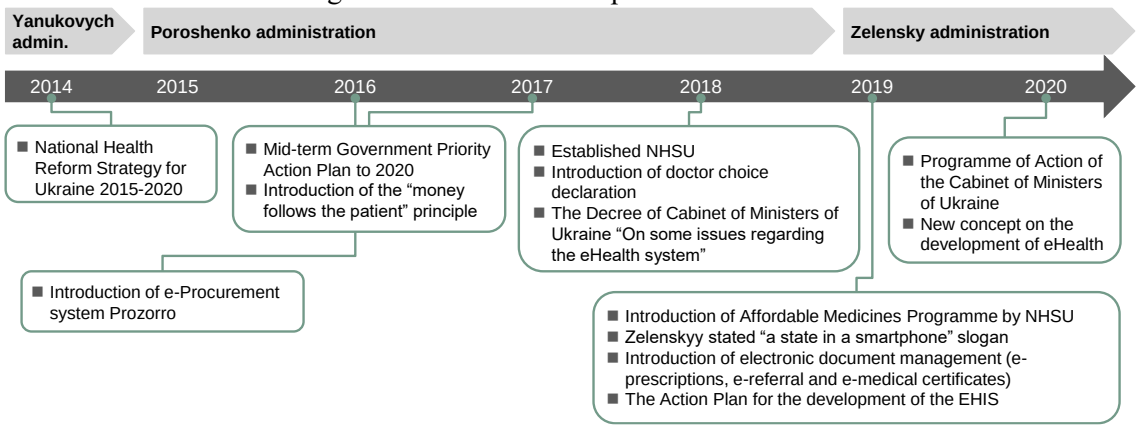
3.1.2.5. Healthcare: Can eHealth Promote Startups?

[79] UVCA (2019) Ukrainian Venture Capital and Private Equity Overview 2019, https://www.slideshare.net/UVCA/ukrainian-venture-capital-and-private-equity-overview-2019-232427411

[80] World Bank (2014) 2013 Ukraine Enterprise Survey : Country Highlights. Washington DC: World Bank. https://openknowledge.worldbank.org/handle/10986/20880

The Ukrainian government has been promoting eHealth as a means of reforming health administration since the latter half of the 2010's. In order to establish an efficient and transparent healthcare system, measures such as the unified pharmaceuticals procurement for public medical institutions through the electronic public procurement system Prozoro,[81] transformation from the rigid budget allocation depending on the size of medical facilities to the introduction of the "money follow the patient" principle, which allocates budgets according to the quantity and quality of medical services actually provided. As one of the reforms, medical institutions are required to introduce a certain level of IT and to provide relevant information to the national database to receive refunds from the national public medical system. As a result, the role of private service providers who offer medical information systems (MIS) is increasing.

Figure 33 eHealth-related policies in Ukraine



Source: Extracted and arranged by the survey team based on JICA (2021) Data collection survey on e-government for improvement of public service in Ukraine, Draft Final Report.

On the other hand, the above reform is currently focused on healthcare financing, and it cannot be said that the government-led eHealth has sufficiently improved the quality of healthcare services. A private company indicated that AI-based diagnostic support and telemedicine solutions would be promising in the near future, but few cases can be seen at present[82]. In this regard, there are some SUs to provide new services such as blood donation platforms[83], online appointments[84], remote monitoring of heart disease[85], and drug delivery services[86]. It is considered that one of the active sectors currently is biotechnology, medical care, and pharmacy, in which the number of applications for SCUs (see 3.1.1.4) held by KPI in 2020 is increasing due to COVID-19[87].

3.1.3. Trends, current status, and challenges of major European investors

Local VC funds are primarily focused on providing support to the pre-seed to early-stage growth local SUs, while leaving the larger ticket size investments for growth stage SUs to more established developed market VC funds. Riding the global wave of digital transformation and

[81] Prozorro is not limited to pharmaceuticals, but is an electronic system for public procurement in general.
[82] Based on an interview with an MIS provider in Data collection survey on e-government for improvement of public service in Ukraine.
[83] Donor UA website, https://donor.ua/.
[84] DOC.UA website, http://doc.ua/.
[85] Cardiomo website, http://cardiomo.com/.
[86] LIKI24 website, http://liki24.com/.
[87] Interview with KPI (conducted on November 16, 2021).

technology startup growth, the number of local VC firms that have raised funds is gradually increasing with new players entering the market. However, most local VCs have only raised their first or second fund, suggesting that many do not have an established track record of portfolio performance success and it remains to be seen how many of these funds can achieve long-term sustainability from a narrow focus on the local pipeline.

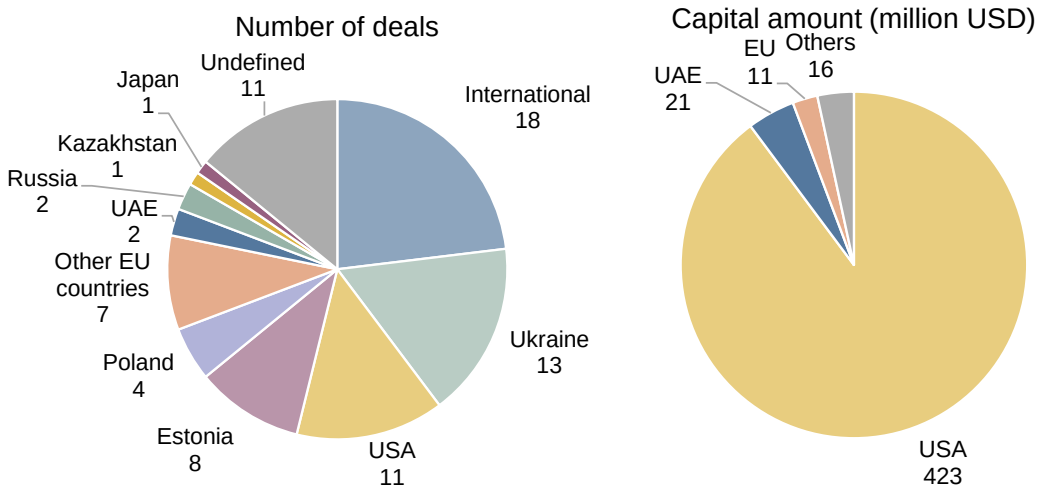
Also, local angel investor networks continue to be underdeveloped. Existing networks, such as UAngel, propose to match investors and entrepreneurs, while newer organizations such as the Business Angel School, a collaboration between UVCA and Baltic Sandbox, are working to educate potential angel investors on the intricacies of angel investing. In addition, UVCA's Investor club initiative promotes networking and community building between investors in hopes of more collective investment actions becoming possible in the future.

Additionally, there are cases of regional accelerators who provide access to foreign markets and funding, as explained in 3.1.1.5.

3.1.3.1. Recent financing activities by Ukrainian Startups

With now three Startup Unicorns (valuation over US$ 1 billion), Ukraine has established itself on the global stage as having the talent, growth potential and entrepreneurial drive to warrant international investors attention. According to the UVCA survey, as shown in the figure below, Ukraine is attracting a number of investments from the US and Europe.

Figure 34 Origin of capital (by number of deals and by capital amount, 2019)[88]



Source: UVCA (2019) Ukrainean Venture Capital and Private Equity Overview 2019, https://www.slideshare.net/UVCA/ukrainian-venture-capital-and-private-equity-overview-2019-232427411

However, while local-based and overseas-based SUs are often classified as “Ukrainian,” there are apparent differences in the composition of the SUs within these two categories.

[88] “International” includes deals with investors from multiple countries, funding from regional institutions such as EBRD, etc.

Figure 35 Top 10 Fund Raises (2019 – 2021) – HQ Located Outside of Ukraine

Organization	HQ location	Funding year	Venture stage	Amount raised	Total funding	Lead investor
GitLab	California, USA	2019	Growth Stage (Series E)	$268M	$434M	Goldman Sachs ICONIQ Capital
Grammarly	California, USA	2019	Growth Stage (Series unknown)	$90M	$200M	General Catalyst
Very Good Security	California, USA	2020	Growth Stage (Series C)	$60M	$105M	Vertex Ventures
People.ai	California, USA	2019	Growth Stage (Series C)	$60M	$100M	ICONIQ Capital
Restream	Texas, USA	2020	Early Stage (Series A)	$50M	$53M	Insight Partners Sapphire Ventures
airSlate	Massachusetts, USA	2021	Early Stage (Series B)	$40M	$130M	Morgan Stanley
Preply	Massachusetts, USA	2021	Early Stage (Series B)	$35M	$51M	Full In Partners Owl Ventures
Smartcat	Massachusetts, USA	2020	Early Stage (Series unknown)	$15M	$31M	Matrix Partners
Mobalytics	California, USA	2020	Early Stage (Series A)	$11M	$14M	Almaz Capital CABRA VC
Allset	California, USA	2020	Early Stage (Series B)	$8M	$17M	EBRD

Source: Crunchbase

Figure 36 Top 5 Fund Raises (2019 – 2021) – HQ Located in Ukraine

Organization	HQ location	Funding year	Venture stage	Amount raised	Total funding	Lead investor
Kivi	Kyiv, Ukraine	2021	Early Stage (Corp Round)	$13M	$13M	Shenzhen MTC Co.
Ajax System	Kyiv, Ukraine	2019	Early Stage (Series A)	$10M	$11M	Horizon Capital
Reface	Kyiv, Ukraine	2020	Seed Stage (Seed)	$6M	$6M	Andreessen Horowitz
Zakaz.ua	Kyiv, Ukraine	2020	Early Stage (Series A)	$5M	$9M	Chemovetskyi Investment Group
Liki24	Kyiv, Ukraine	2020	Early Stage (Series unknown)	$5M	$6M	Horizon Capital

Source: Crunchbase

Ukrainian SUs based overseas tend to be typically over Series B, whereas local SUs are in the Pre-Seed to Series A stage generally. With the eligibility for grants from regional DFIs, governmental support in the form of accommodative tax regimes and incentives, and comparatively low costs of operation, SUs benefit from local incorporation at the earliest stages of growth. This outcome is by design and meant to encourage local entrepreneurship to build a strong startup pipeline and entrepreneurial community.

However, as SUs progress in their development, the availability of financing and support at later stages of growth (Series A+) is reduced compared to that of the preceding stages. This is in part due to the makeup of the local investor base and its willingness or ability to anchor and finance larger expansion investments. Furthermore, from the startup's perspective, expanding into developed markets may possess significant benefits such as:

1) Access to Developed Market Investors who have preferences for developed market-based SUs due to familiarity and security of such regulatory and legal frameworks, including options to exit the investment.
2) Foreign Market Access into deeper consumer markets compared to Ukraine/Eastern European markets
3) Integration into top Startup Ecosystems and Communities to tap into talent pools in areas of business development, global market expansion, and operational or managerial expertise, which become increasingly important as SUs expand their employee base.

3.1.3.2. National investment scheme for startups

A typical example of domestic funds is Ukrainian Startup Fund (USF), a government-affiliated fund established in December 2019. The Board of Directors consists of the Deputy Minister of Finance, the Deputy Minister of Digital Transformation, the representatives from the country's famous VCs and funds, and former executives of global companies (e.g., Microsoft).[89] 440 million UAH (US$1.6-1.8 million) are funded by the government[90]. The outline of the fund is shown in Figure below.

Figure 37 USF Support Scheme

Item	Overview
Year of establishment	2019
Members of the supervisory board	Deputy Minister of Finance, Deputy Minister of Digital Transformation, etc.
Budget	UAH 440 million (US$16-18 million)
Type of fund	Grant
Grant amount	■ Pre-seed: up to US$25,000 ■ Seed: up to US$50,000
Target	Tech SU (AI, VR, blockchain, digital health, FinTech, EdTech, etc.)

Source: Developed by the survey team based on materials such as USF website

As of February 2022, before the start of the invasion by Russia, USF has received more than 4,500 applications and had provided grants to 250 companies. The number of USF-held pitch events (called "Pitch Days") reached 37[91]. USF also has an AP-based SU support scheme provided by domestic and international incubators/accelerators such as Demium, Seed Forum Global, and 1991 Open Data Incubator. The USF pays up to US$10,000 for participation in these APs on behalf of SUs[92]. While such government initiative is basically welcomed, there was some comments from a local VC that in the context where some SUs tend to be away from government

[89] USF Website, https://usf.com.ua/en/grant-usf/
[90] Communications Department of the Secretariat of the CMU (2019) Oleksiy Honcharuk: UAH 440 mn financing is envisaged for Ukrainian startups, https://www.kmu.gov.ua/en/news/na-finansuvannya-ukrayinskih-startapiv-peredbacheno-440-mln-grn-oleksij-goncharuk
[91] USF website, "Driver of Innovation: How the Ukrainian Startup Fund is Building an Innovative Ukraine. Review as of the 3rd Anniversary of the Fund," https://usf.com.ua/en/drajver-innovacij-yak-ukrainskij-fond-startapiv-buduie-innovacijnu-ukrainu-oglyad-naperedodni-tretoi-richnici-diyalnosti-fondu/
[92] USF website, "Acceleration Program of Ukrainian Startup Fund," https://usf.com.ua/en/akseleracijna-programma/

support, the USF's review of funding for SUs is becoming lenient, perhaps from the perspective of budget digestion.

Figure 38 USF's SU selection process

Source: Developed by the survey team based on USF website, etc.

In December 2022, the Ukrainian government announced the transfer of the USF from the Ministry of Finance to the control of the Ministry of Digital Transformation. With the protracted war with Russia, military tech has become a priority to support projects that will lead to the reconstruction of the country and strengthen its defense capabilities, and there is an urgent need to implement and rapidly validate ideas in this area on the ground and to promote SU development. Against this background, the government decided this reorganization to effectively promote a series of SU support under the comprehensive coordination of the Ministry of Digital Transformation[93].

3.1.3.3. Venture capital investors

Local VC firms remain in the early stages of growth and mostly do not have successful track records and are likely to struggle in raising sizable investment capital to rival that of established developed market VC firms. AVentures Dealbook 2021 noted that many Ukrainian VCs have distributed their first funds and are waiting on exits or raising a second fund.

Local VCs are primarily focused on Pre-Seed to Early-Stage Investments. This could be due to:

[93] The Ukrainian government portal, "Innovations Development Fund transferred into the management of the Ministry of Digital Transformation: Government's decision," https://www.kmu.gov.ua/en/news/fond-rozvytku-innovatsii-perekhodyt-v-upravlinnia-mintsyfry-rishennia-uriadu

1) Portfolio Concentration Risks: By focusing on lower-ticket stages, Local VCs are able to diversify their portfolio risk. Local VCs may not have sufficient investment capital to participate in Series B stages and onwards due to higher ticket size[94] requirements.
2) Fulfilling Local Market Needs: Local VCs support Local Startups at Pre-Seed to Early Stages to fill the market need as Foreign VCs will generally only consider such firms at a Growth Stage after global market scalability and traction is proven.
3) Lack of Global Network: Local VCs lack the global investor and entrepreneurial networks to enter more lucrative foreign startup deals or lack key value propositions to attract in-demand global SUs

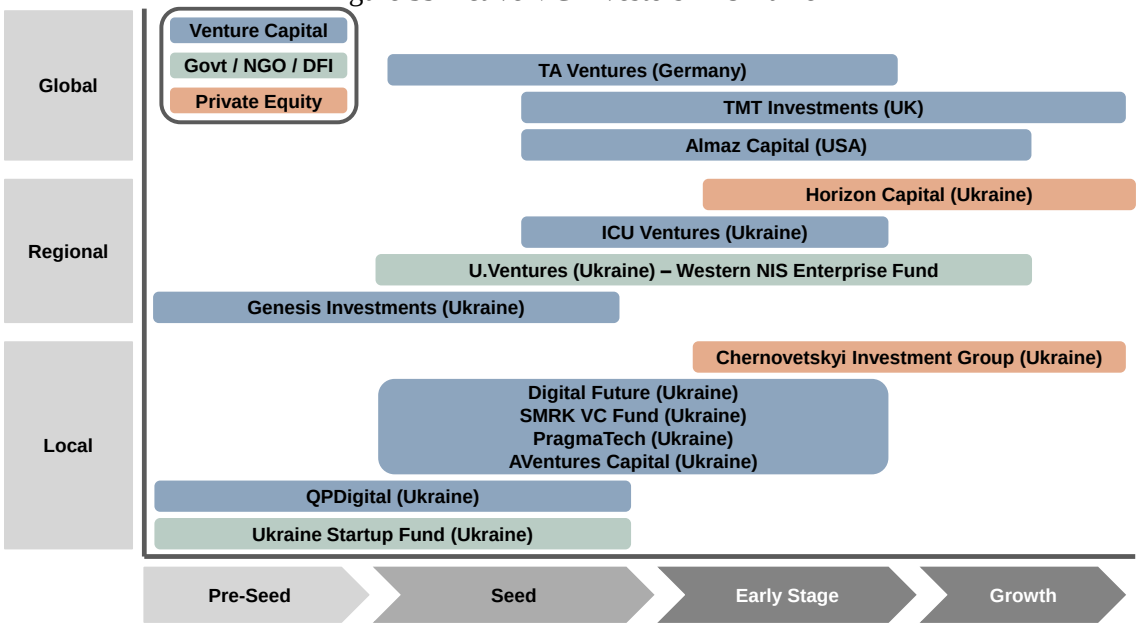
Foreign investors have generally waited until Series A+ to invest in local SUs, and prefer SUs incorporated in a developed market (US, UK, Western Europe). Almaz Capital, for example, specifically sets this as a criterion for investment.

1) Global Perspective and Market Opportunities: Global VCs with strong track records can raise sizable investment capital for deployment in the best market opportunities offered around the world. Therefore, there is little appetite to invest in high-risk early-stage emerging market companies in based in foreign legal and regulatory systems with uncertain investor protections.
2) Investor Protections in Ukrainian Legal System: Legal issues surrounding investor protections and investor rights are commonly cited reasons for foreign investor reluctance on entering the market, as gathered through interviews with local ecosystem stakeholders including those in positions to lobby the government in improving the regulatory and business climate for SUs and investors.

Therefore, the Ukraine SU ecosystem appears to be in a cycle where the state provides pre-seed/seed grants, the local VC firms and accelerators/incubators take on the high-risk of Seed to Early-Stage investments by diversifying their risk in small ticket sizes across many portfolio companies, and the SUs with the best performance will tend to shift their base of operations to the US or Western Europe for expansion and attracting foreign investment from more established VCs.

[94] Ticket size means the amount of investment for one transaction.

Figure 39 Active VC investors in Ukraine



Source: Developed by the survey team based on each company's website

Figure 40 Ukrainian Venture Capital and Private Equity Investors by Deal Size & Portfolio Value

Organization	Type	Sector	Deal Size	Portfolio Value (USD) – excl. Exits
AVentures Capital	VC Fund	Early Stage	$200k to $2.5M	$763M
ICU Ventures	VC Fund	Seed to Early Stage	*Undisclosed*	$288M
SMRK VC Fund	VC Fund	Seed to Early Stage	$100k to $1.0M	$214M
Digital Future	VC Fund	Seed to Early Stage	$50k to $500k	$198M
Genesis Investments	VC Fund	Pre-Seed to Early Stage	$100k to $1.0M	$112M
u.Ventures	VC Fund	Seed to Early Stage	*Undisclosed*	$102M
QPDigital	VC Fund	*Undisclosed*	$500k to $1.0M	*Undisclosed (Fund Size - $50M)*
Adventures Lab	VC Fund	Stage Agnostic	$100k to $300k	*Undisclosed (Fund Size - $25M)*
PragmaTech	VC Fund	*Undisclosed*	$500k to $2.0M	*Undisclosed*
Horizon Capital	PE Fund	Growth Stage	$1M to $50M	$510M
Dragon Capital	PE Fund	Seed to Growth Stage	*Undisclosed*	$355M

Source: Ukraine Startup Ecosystem Database by Dealroom.co, https://ukraine.dealroom.co/

3.1.4. Support from other donors related to the development of startups and ecosystem

3.1.4.1. European Union

Since 2009, the EU has formed the "Eastern Partnership[95]" with six Eastern European countries, including Ukraine, and has been working to strengthen political and economic relations with these countries. At the 5th Eastern Partnership Summit in 2017, they agreed on the "20 Deliverables for 2020" as priority areas of cooperation that include cross-cutting issues in addition to economic, governance, connectivity, and social issues. Here, the first goal of the economic sector is to "improve the investment and business environment and bring out the growth potential of SMEs." This indicates that the EU places importance on supporting SMEs, including SUs. At present, the post-2020 agenda is being considered.[96] However, the emphasis on supporting SMEs is likely to continue.

Figure 41 Priority Cooperation Areas Agreed on at Deliverables for 2020

Thematic areas	Deliverables
Cross-cutting	1. More engagement with civil society organisations 2. Increase gender equality and non-discrimination 3. Strengthen strategic communications and supporting plurality and independence of media
Stronger Economy	4. Improve the investment and business environment and unlock SMEs' growth potential 5. Address gaps in access to finance and financial infrastructure 6. Create new job opportunities at the local and regional level 7. Harmonise digital markets 8. Support intra-regional trade among partner countries and the EU
Stronger Governance	9. Strengthen the rule of law and anti-corruption mechanisms 10.Support the implementation of key judicial reforms 11.Support the implementation of public administration reform 12. Stronger security cooperation
Stronger Connectivity	13. Extend the TEN-T core networks, transport[1] 14.Increase energy supply security 15.Enhance energy efficiency and the use of renewable energy; reduce Greenhouse Gas emissions 16.Support the environment and adaptation to climate change
Stronger Society	17. Progress on Visa Liberalisation Dialogues and Mobility Partnerships 18.Strengthen investment in young people's skills, entrepreneurship and employability 19.Establish an Eastern Partnership European school 20.Integrate Eastern Partnership and EU research and innovation systems and programmes

Notes: 1.Trans-European Transport Network, an important transportation network for European integration, with a core network to be completed by 2030 and a comprehensive network to be completed by 2050.

Source: Prepared by survey team based on the European Commission website[97]

Assistance to Ukraine by donors affiliated with the EU is basically implemented based on the above-mentioned direction.

<European Bank for Reconstruction and Development (EBRD)>

It provides direct financing to SUs through the Venture Capital Investment Program (VCIP). Recent assistance to Ukraine has included Allset[98] (Restaurant platform/Series B/US$ 8.25

[95] Armenia, Azerbaijan, Belarus, Georgia, and Moldova are included as well as Ukraine.

[96] European Commission website, "Eastern Partnership," https://ec.europa.eu/neighbourhood-enlargement/european-neighbourhood-policy/eastern-partnership_en.

[97] European Commission website, "20 Deliverables for 2020," https://www.consilium.europa.eu/en/policies/eastern-partnership/20-deliverables-for-2020/.

[98] EBRD Venture Capital website, "ALLSET, a dining and take-out company, raises USD 8.25 million," https://www.ebrdvcip.com/single-post/allset-a-dining-and-take-out-company-raises-usd-8-25-million.

million), Depositphotos[99] (Image-contents marketplace/Series A/US$ 5 million), and Scalarr[100] (AI tool for anti-corruption/Series A/US$ 7.5 million). In addition, business support centers were established in Kyiv with the support of the EBRD in 2017 through the EU's EU4Business (SME support) covering six Eastern European countries. The Center provides financing, consulting, network support and training services for SMEs. As of 2018, EBRD has provided approximately US$17 million in loans to over 78 SMEs. [101]

<European Investment Bank (EIB)>
Since 2007, it has started financing Ukraine and has identified transport, SMEs, energy, and regional and social infrastructure as priority sectors. To date, EIB has provided over EUR 1.9 billion in support for SMEs.[102] They supported, private sector development in agriculture sector[103] and a EUR 50 million loan to Unit City as an innovation infrastructure.[104] In addition, a programme called InnovFin (explained later), is being implemented jointly with the European Commission.

<European Commission>
The European Commission, together with the EIB and the European Investment Fund (EIF), is implementing an InnovFin program within the framework of Horizon 2020, which aims to promote research and innovation to ensure Europe's global competitiveness. In addition, they provide loans to enterprises and debt guarantees to financial institutions in the Debt and Equity Financing Program. The EIB is responsible for lending to medium-to large-sized enterprises and for providing debt guarantees to financial institutions, while the EIF is responsible for lending to small and medium-sized enterprises and for providing debt guarantees to financial institutions.[105]

3.1.4.2. KfW (the German Reconstruction Finance Corporation)
The KfW Development Bank of the KfW Group is supporting Ukraine in energy, good governance, internally displaced persons, SMEs, vocational training, and environmental protection. In the context of SME support, the Business Development Fund was established in 1996 with the Ministry of Finance of Ukraine and the Bank of Ukraine, and has provided over 160,000 loans to SME. Efforts are also being made to reform vocational education, including both software and hardware, through investment in vocational training systems and related facilities and equipment tailored to market needs.[106]

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[99] EBRD Venture Capital website, "Depositphotos announces $5 million series A round from EBRD and TMT Investments," https://www.ebrdvcip.com/single-post/2016/03/22/title-title.
[100] EBRD Venture Capital website, "Scalarr raises $7.5M to fight mobile ad fraud," https://www.ebrdvcip.com/single-post/scalarr-raises-7-5m-to-fight-mobile-ad-fraud.
[101] EU4Business website, "Where to get money for business development in Ukraine," https://eu4business.eu/news/where-to-get-money-for-business-development-in-ukraine/.
[102] EIB website, "Ukraine and the EIB," https://www.eib.org/en/projects/regions/eastern-neighbours/ukraine/index.htm.
[103] One example is a EUR 250 million loan to Kernel Group, the country's largest agribusiness group, to expand seed oil production, agricultural infrastructure and renewable energy production.
[104] EIB website, "Ukraine: InnovFin Emerging Innovators - EIB supports Ukrainian Innovation Campus Project in UNIT.City," https://www.eib.org/en/press/all/2020-170-innovfin-science-programme-eib-supports-ukrainian-innovation-campus-project-in-unitcity.html.
[105] European Commission website, "Access to risk finance," https://ec.europa.eu/programmes/horizon2020/en/h2020-section/access-risk-finance.
[106] KfW website, "Ukraine," https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/Local-presence/Europe/Ukraine/.

3.1.4.3. World Bank and IFC

In 2017, it provided a US$15 million loan to Emerging Europe Growth Fund III (EEGF III), a fund in the country that aims to support SMEs.[107] The fund is managed by Horizon Capital (a Ukrainian VC) and is targeted at investments in growing export-oriented companies such as IT, light industries and agribusiness. In addition, 10 to 15 SMEs with transaction volumes between US$5 million and US$20 million are the target of investment. As one of the World Bank group organization, International Finance Corporation (IFC) also offers financing and advisory services for smart city plans in Zaporizhzhia, southern part of Ukraine.

3.1.4.4. USAID

For the US, a "resilient and free Europe" is of vital importance to its national security, and Ukraine's independence has a strong influence on its realization. In Ukraine Country Development Strategy 2019-2024, which is the current development strategy for Ukraine, USAID places priority on the realization of market-driven economic growth as well as anti-corruption measures, governance, health, agriculture, and assistance for conflict-affected areas in eastern Ukraine.[108] It has been actively supporting SMEs in parallel with Ukraine's market reform and reform of state-owned enterprises (including privatization).

The table below shows the ongoing programs related to SME support.

Figure 42 SME Support Program by USAID

Name of program	Implementation period	Overview
Business Investments and Loans	September 1994 ~ December 2023	■ Established the Western NIS Enterprise Fund (WNISEF), a private fund for Ukraine and Moldova, with US$150 million in 1994, and has invested US$186 million in 130 companies over 25 years ■ In 2017, WNISEF established a new fund, U.Ventures, which focuses on Seed ~ Series A technology SUs
Competitive Economy Program	October 2018 ~ October 2023	■ To improve the competitiveness of SUs and SMEs in the domestic and international markets, support the development of the business environment, foster innovative industries and companies, and promote exports and trade
Economic Resilience Activity	August 2018 ~ August 2023	■ Support entrepreneurs and SMEs to mitigate economic decline and reduce dependence on oligarch-based industries in the eastern conflict zones (Luhansk and Donetsk)

Source: Developed by the survey team based on USAID and WNISEF website

Amid such a development, supports to the SU ecosystem can be omnidirectional, and are provided by various schemes. In addition to support to major ecosystem players such as UNIT.City and KPIs (including SCUs), the government programs such as Diia City of the

[107] IFC website, "IFC Supports Ukraine's SMEs with $15 Million Investment in New Private Equity Fund," https://pressroom.ifc.org/all/pages/PressDetail.aspx?ID=16068.

[108] USAID, Ukraine Country Development Strategy 2019-2024, https://www.usaid.gov/sites/default/files/documents/1863/Ukraine_USAID_CDCS_2019-2024_Public_EN_12.pdf.

Ministry of DX also contribute to the infrastructure development support. There are also several supports for individual SUs, which provide opportunities to overseas tech events and boot camp trainings. Furthermore, through close communication with industry groups such as IT clusters and UVCA in each region, USAID try to develop the system to collect the voices of companies that they cannot reach directly.

Below table summarizes the four entities supported by USAID through above program (related to startup investments), the Western NIS Enterprise Fund, Horizon Capital, U.Ventures and Eō Business Incubator.

Figure 43 USAID-backed Investment Entities Supporting the Ukraine Startup Ecosystem

Organization	Category (Year of establishment)	Fund size	Remarks
Western NIS Enterprise Fund	Regional Development Fund (1995)	$150M (including below) ■ Horizon EEGF I: $25M ■ Horizon EEGF III: $30M	Termination commencement date: December 2022
Horizon Capital Associates	Private Equity (2005)	Emerging Europe Growth I: $132M Emerging Europe Growth II: $370M Emerging Europe Growth III: $200M Horizon Capital Growth II: $258M	EEGF I & II: Buy-out & expansion capital for domestic focused businesses EEGF III: IT and export focused companies
U.Ventures	VC (2017)	$5M (Seeded from WNISEF)	Supports early-stage tech SUs in Ukraine & Moldova
Eō Business Incubator	Accelerator / Incubator (2019)	N/A	USF Accredited Accelerator

Source: Developed by the survey team based on WNISEF 25th Year Brochure 2019 and WNISEF Annual Report 2019, 2020.

<Western NIS Enterprise Fund (WNISEF)>
Established in 1995 by USAID with USD 150 million grant to support the economic transformation of Ukraine and Moldova to market-based economies. This was achieved through four main programs: Export Promotion, Local Economic Development (SME Focused)、Economic Leadership and Impact Investing. WNISEF estimates USD 1.85 billion of capital was unlocked for Ukrainian and Moldovan companies based on the original USD 150 million grant. Initially scheduled for termination in Aug 2009, this date was extended several times for socio-economic reasons and now stands at Dec 2022, with a Target Liquidation date of Dec 2023.

<Horizon Capital Associates – Private Equity>
Spun-off from WNISEF in 2005, with the objective of attracting private capital to Ukraine & Moldova, Horizon Capital benefited from the investment track record and international network established with WNISEF, successfully raising $132M for its first Emerging European Growth Fund I with an anchor commitment of $25M from WNISEF. Horizon Capital continued to raise substantial amounts of capital from institutional investors in the US and Europe as well as International Organizations like the EBRD. Horizon Capital currently manages over USD 800

million across four funds. USAID provides fund to Horizon Capital as well as WNISEF under the Business Investments and Loans Program.

<U.Ventures – Venture Capital>
Established in November 2017 with USD 5 million seed capital from WNISEF, U.Ventures invests in early stage technology SUs (Seed to Series A) with Ukrainian or Moldovan co-founders. With a commitment to locally develop global products and contribute to the economic progress in Ukraine and Moldova, over 80% of portfolio companies' employees are based in local markets.

<Eō Business Incubator, – Accelerator / Incubator>[109]
Eō Business Incubator (Eō) was launched in April 2019 in Kyiv and Kharkiv under the USAID's Competitive Economy Program, and is an accredited accelerator of the USF. Eō provides a 4-month Incubation Program to around 25 – 30 SUs a year, and completed around 7 cohorts (8-10 SUs per cohort) since 2019. Plans to launch a complementary Venture Capital Fund (Target USD 20-30 million) to support the sustainability of the incubator have been placed on hold due to uncertainty surrounding the COVID Pandemic. Currently, Eō and the USAID correspondent team operate in an organizationally nearly identical manner.

3.1.5. Impact of invasion by Russia from February 2022

3.1.5.1. Overview of the invasion to the present (until January 2023)

Tensions between Ukraine and Russia had remained high since Russia unilaterally annexed the Crimean Peninsula in 2014. By February 2022, Russia had massed its troops around the Ukrainian border and on 21 February, it recognized independence of eastern part of Ukraine as "Donetsk People's Republic" and "Luhansk People's Republic." Then, on the 24th, Russia launched an invasion into Ukraine. Ukrainian President Zelensky declared martial law on the same day, banning men between the ages of 18 and 60 from leaving the country (a measure that is still in effect). The international community has initiated economic sanctions, including the freezing of bank assets of Russian government officials and certain individuals in various countries, the exclusion of Russian banks from the Society for Worldwide Interbank Financial Telecommunications (SWIFT), and a ban on exports of certain products to Russia.

The whole Ukraine, including the capital city of Kyiv, was under combat, but after May 2022, the main battlefield gradually shifted to the eastern and southern parts of the country. Since October, however, Russia launched missile attacks across Ukraine, damaging infrastructure facilities in many areas and seriously affected the supply of electricity, especially as winter approached and demand for electricity increased.

[109] USAID (2020) Competitive Economy Program: Year 3 (FY21) Implementation Plan. https://pdf.usaid.gov/pdf_docs/PA00X76C.pdf

Figure 44 Timeline of the Invasion by Russia

Time	What happened
March 2014	Russia unilaterally annexed the Crimean Peninsula
May 2019	Zelensky inaugurated as President of Ukraine
July 2021	Russian President Vladimir Putin published paper titled "On the Historical Unity of Russians and Ukrainians"
23 August 2021	Ukraine's President Zelensky held an inaugural summit of the Crimea Platform with attendance by approximately 40 heads of state and government from about 60 countries, etc.
September 2021	Russian and Belarusian military conducted joint military exercise in Belarus near Ukrainian border
October 2021	Ukrainian military attacked pro-Russian militants in the east of the country with Turkish drones
December 2021	Russia presented to the US and Europe a draft agreement on European security (draft NATO Eastern Non-Expansion Treaty)
February 2022	Russian and Belarusian military gathered near Ukrainian border
21 February 2022	Russia recognized independence of Donetsk and Luhansk Oblasts in eastern Ukraine
24 February 2022	Russian President Vladimir Putin approved special military operation and began invasion throughout Ukraine Ukraine's President Zelensky declared martial law and severed diplomatic relations with Russia
End of February ~ March 2022	Economic sanctions against Russia by the international community (partial) • Asset freeze and ban on transactions targeting certain Russian individuals, including government officials, politicians, and oligarch • Exclusion of Russian and Belarusian banks from the Society for Worldwide Interbank Financial Telecommunications (SWIFT) • Export prohibition of technological products (semiconductors, electronic components, computers, telecommunications equipment, aerospace-related products, etc.)
May 2022	The southern port city of Mariupol in Donetsk Oblast had virtually fallen
22 July 2022	Russia agreed to resume grain exports by Ukraine via the Black Sea, mediated by Turkey (Russia subsequently announced an indefinite suspension on 29 October)
October 2022~	Russia launched missile attacks across Ukraine, damaging infrastructure facilities and severely affecting electricity supply in Ukraine
March 2023	The International Criminal Court (ICC) has issued an arrest warrant for Putin over the unlawful deportation of children from Ukraine to Russia.
May 2023	President Zelensky attended the G7 Hiroshima summit.

Source: Developed by the survey team based on various news articles

3.1.5.2. Impact on the Ukrainian economy

<Overview>

The war is, of course, having a serious impact on Ukrainian economy. In April 2022, the World Bank estimated that Ukraine's GDP in 2022 would be 45% lower than in the previous year[110]. There was a slight improvement toward the end of the year as the war situation calmed down at some extent, and owing to the international aid and the Ukrainian government's and citizens' response to the wartime economy. In March 2023, the Ukrainian government announced GDP for

[110] World Bank's press release by 10 April 2022, "Russian Invasion to Shrink Ukraine Economy by 45 Percent this Year," https://www.worldbank.org/en/news/press-release/2022/04/10/russian-invasion-to-shrink-ukraine-economy-by-45-percent-this-year

2022 at -29.2% year-on-year[111]. Behind this decline, there is a significant contraction in all economic activities, including private consumption, investment, and trade. The impact of fiscal spending that would not occur in peacetime was also significant: in February 2023, one year after the invasion began, the Ukrainian government announced that it had spent the equivalent of one year's national budget in peacetime on the military[112].

Also, refugees increased at an unprecedented speed and scale, with over 3 million people fleeing Ukraine in just three weeks after the invasion began on February 24, 2022. Some returned home during the summer and fall as battlefields became limited, but basically, the number continued to increase, with an estimated 8 million refugees in Europe and 5 million internally displaced persons as of April 2023[113].

Figure 45 Ukraine's Major Macroeconomic Indicators (2019~2024 forecast)

Indicator	2020	2021	2022 (estimate)	2023 (forecast)
Real GDP growth, at constant market prices	-3.8	3.4	-29.2	0.5
Private Consumption	1.7	6.9	-15.5	7.7
Government Consumption	-0.7	0.8	16.7	0.0
Gross Fixed Capital Investment	-21.3	9.3	-80.0	5.5
Exports, Goods and Services	-5.8	-8.6	-60.0	15.0
Imports, Goods and Services	-6.4	14.2	-30.0	20.0
Inflation (Consumer Price Index)	5.0	10.0	26.6	18.0
Current Account Balance (% of GDP)	3.4	-1.6	5.7	-4.5
Fiscal Balance (% of GDP)	-5.0	-4.0	-26.5	-28.2
Debt (% of GDP)	60.4	43.3	78.0	97.0
Primary Balance (% of GDP)	-2.1	-0.5	-23.8	-24.9
Upper middle-income poverty rate ($6.85 in 2017 PPP)	7.1	5.5	24.1	24.0

Source: World Bank (2023) Europe and Central Asia Economic Update, Spring 2023: Weak Growth, High Inflation, and a Cost-of-Living Crisis. The World Bank. https://doi.org/10.1596/978-1-4648-1982-7

The Ukrainian government, the European Commission, and the World Bank announced in September 2022 that the reconstruction and rehabilitation of Ukraine, which was severely damaged by the war, would cost $349 billion[114]. This was based on an estimate of $97 billion in physical losses from February, when the war began, to June 2022 with particular damage to housing, transportation, commercial, and industrial infrastructure in the Chernihiv, Donetsk,

[111] The Ukrainian government portal, "Ministry of Economy: GDP falls by 29.2% in 2022," https://www.kmu.gov.ua/en/news/minekonomiky-vvp-za-pidsumkom-2022-roku-vpav-na-292

[112] The Ukrainian government portal, "Ukraine spends entire peacetime state budget on Army: Denys Shmyhal," https://www.kmu.gov.ua/en/news/ukraina-vytrachaie-na-armiiu-uves-biudzhet-derzhavy-myrnoho-chasu-denys-shmyhal

[113] UNHCR (2023) Ukraine Situation Flash Update #45, https://data.unhcr.org/en/documents/details/100224

[114] World Bank (2022) Ukraine Rapid Damage and Needs Assessment (English). Washington, DC: World Bank Group. http://documents.worldbank.org/curated/en/099445209072239810/P178843048379106 30b9c6040ac12428d5c

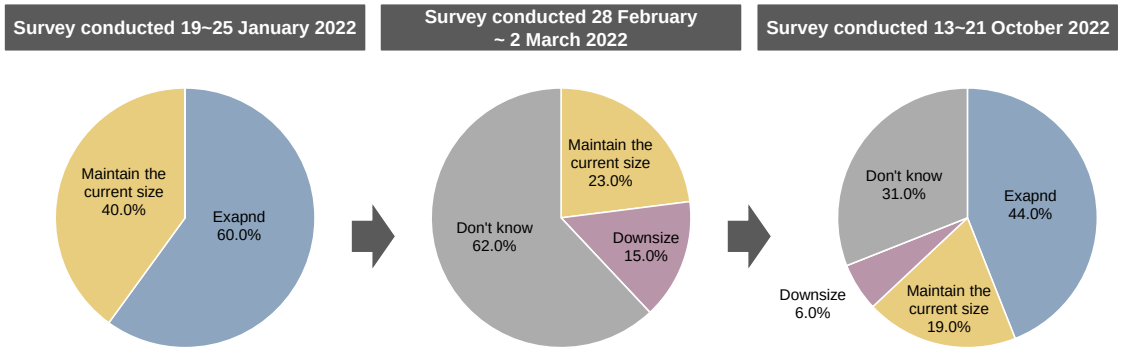
Luhansk, Kharkiv, and Zaporizhzhia oblasts bordering Russia, as well as in the capital city of Kyiv. In addition, $105 billion of the $349 billion is considered necessary within the next 36 months for urgent needs to restore educational and health facilities and infrastructure, prepare homes for winter, support agriculture, and repair critical transportation routes. It is extremely difficult to ascertain the full extent of the damage, and another estimate put losses at $113 billion through August 2022, with $750 billion needed for restoration[115].

In the second estimate released six months later in March 2023, the cost increased to $411 billion[116]. Damages also increased to $135 billion, with the most notable increases in damage in the second estimate compared to the first being in the energy, housing, and transportation sectors, which were significantly affected by Russian missile attacks, and in the agriculture sector, where more detailed information becomes available.

<Impact on Japanese Companies>

The activities of Japanese companies operating in Ukraine have also been severely affected, and the future outlook is not readily apparent. In a survey for Japanese companies in Ukraine conducted by JETRO in late February and early March 2022, immediately after the invasion began, all 13 companies responded that they "have already been negatively affected" or "expect to be negatively affected[117]." Specific effects included "stagnation or decline in domestic sales" and "disruption/stagnation of logistics." Subsequently, an update released in November suggested that expectations for reconstruction demand (housing, infrastructure, heating) were rising[118]. However, "review the travel advice and warning by the Ministry of Foreign Affairs," "normalize transportation infrastructure," and "information for Japanese companies to spec into a reconstruction plan by the Ukrainian government," were mentioned as issues to be addressed to do business activities in Ukraine in near future.

Figure 46 Results of Questionnaire on Business Prospects for Japanese Companies in Ukraine



Source: JETRO Business News (26 January, 4 March and 26 October 2022)

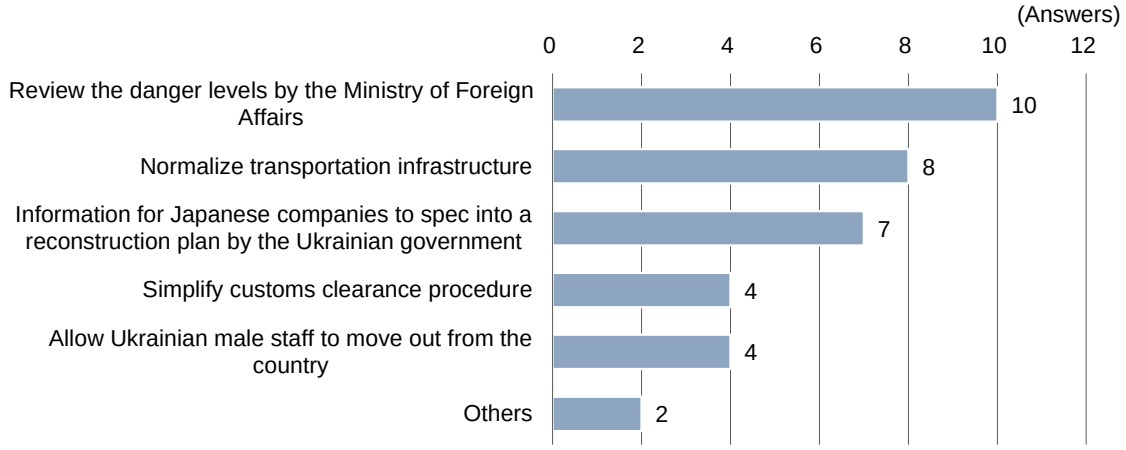
[115] Estimation by Kyiv School of Economics from Ukraine Invest (2022) GUIDE: Rebuilding Ukraine with Private Sector. Kyiv: Cabinet Ministers of Ukraine. https://ukraineinvest.gov.ua/wp-content/uploads/2022/09/UI-Guide_1.pdf

[116] World Bank (2023) Ukraine Rapid Damage and Needs Assessment: February 2022—February 2023. World Bank Group. https://documents1.worldbank.org/curated/en/099184503212328877/pdf/P1801740d1177f03c0ab180057556615497.pdf

[117] JETRO Business News, "Russian Military Invasion Severely Affects Japanese CompaniesinUkraine (Ukraine, Russia)" (in Japanese), https://www.jetro.go.jp/biznews/2022/03/d9ad7d994fac1208.html

[118] JETRO Webinar, "The Latest Business News from Russia and Ukraine - 9 Months from the Military Invasion, What Has Changed?" (in Japanese), https://www.jetro.go.jp/biz/seminar/2022/567e7734abbec8b7.html

Figure 47 Issues for Full-Scale Business Initiatives in Ukraine (multiple answers allowed)



Source: JETRO Business News (26 October 2022)

<Support by the government>
Under these difficult circumstances, the Ukrainian government has implemented various support measures for domestic businesses to ensure the continuation of economic activities. The first is the "eRobota" grant program for new businesses, which is the collective name for six grant programs: "Microgrants for creation and development of own business ("Own Business")," "Grants for creation or development of horticulture, berry growing and viticulture," "Grants for the creation or development of a greenhouse economy," "Grants for the creation or development of processing enterprises," "startup support," and "training of IT specialists[119]." It aims to create at least 320,000 permanent jobs and 110,000 seasonal jobs. As of April 2023, 23,000 applications have been received in total, and several programs including microgrants, have already begun disbursing the grants[120]. Also in April, eRobota added a program to help veterans and their families start their own businesses[121].

[119] Website of the Ministry of Economy, "eRobota: Grants from the State for Opening or Developing a Business," https://www.me.gov.ua/Documents/Detail?lang=en-GB&id=f26e87de-b597-4634-b77e-53792b7ac4a5&title=Erobota-GrantsFromTheStateForOpeningOrDevelopingABusiness

[120] The Ukrainian government portal, "Nearly 23,000 Ukrainians applied for Government's eRobota grant programme," https://www.kmu.gov.ua/en/news/maizhe-23-tysiachi-ukraintsiv-podaly-zaiavky-dlia-uchasti-v-uriadovii-prohrami-hrantiv-ierobota and the Ukrainian government portal, "eRobota: Processing companies received over UAH 280 million in development grants," https://www.kmu.gov.ua/en/news/yerobota-pererobni-pidpryiemstva-otrymaly-ponad-280-mln-hrn-hrantiv-na-rozvytok

[121] The Ukrainian government portal, "eRobota: Ukrainian defenders can get a state grant for doing business," https://www.kmu.gov.ua/en/news/yerobota-ukrainski-zakhysnyky-i-zakhysnytsi-mozhut-otrymaty-hrant-vid-derzhavy-na-pidpryiemnytstvo

Figure 48 Overview of eRobota

Microgrants for creation and development of own business ("Own Business")	
Grant amount	■ Up to UAH 250,000 for two workplaces ■ Up to UAH 150,000 for one workplace
Purposes of the grant	■ Purchase of equipment necessary for the conduct of economic activity ■ Purchase of licensed software, animals, raw materials, materials, goods and services related to the production of products/providing services ■ Marketing and advertising services ■ Rent for non-residential premises ■ Rent for equipment ■ Leasing of equipment
Beneficiary	■ A citizen of Ukraine who wants to create or develop his own business (micro-small business) ■ A newly created and operating FOP or a legal entity
Status (as of Dec 2022)	■ Application: 14,578 submissions for a total amount of 3.3 billion hryvnias ■ Grant decision: 2,417 recipients for the total amount of 562.8 million hryvnias
Grants for creation or development of horticulture, berry growing and viticulture	
Grant amount	■ Up to UAH 400,000 per hectare (70% of the cost of planting gardens)
Purposes of the grant	■ Exclusively for planting no more than 25 hectares of plantations
Beneficiary	■ Legal entities (except for legal entities of the communal form of ownership and business entities of the state sector of the economy), the ultimate beneficial owners of which are citizens of Ukraine ■ Entrepreneurs, citizens of Ukraine, who conduct activities in the field of growing agricultural crops cultures on the lands for which the right of ownership and/or use is confirmed by the appropriate legal documents
Status (as of Dec 2022)	■ Application: 249 submissions ■ Grant decision: 57 recipients for a total amount of 260.5 million hryvnias
Grants for the creation or development of a greenhouse economy	
Grant amount	■ 1st 1,000 applications: no more than 70% of the cost of the modular greenhouse construction project, but no more than UAH 7,000,000 ■ All subsequent applications: no more than 50% of the cost of the modular greenhouse construction project, but no more than UAH 5,000,000
Purposes of the grant	■ Exclusively for the construction of one modular greenhouse
Beneficiary	■ Legal entities (except for legal entities of the communal form of ownership and business entities of the state sector of the economy), the ultimate beneficial owners of which are citizens of Ukraine ■ Entrepreneurs, citizens of Ukraine, who conduct activities in the field of growing agricultural crops cultures on the lands for which the right of ownership and/or use is confirmed by the appropriate legal documents

Status (as of Dec 2022)	■ Application: 62 submissions ■ Grant decision: 5 recipients for a total amount of 34.9 million hryvnias
Grants for the creation or development of processing enterprises	
Grant amount	■ No more than UAH 8,000,000 ■ 1st 1,000 applications: up to 70% of the project cost ■ All subsequent applications up to 50% of the project cost
Purposes of the grant	■ Acquisition of the main means of production (machines, technological equipment) ■ Delivery and commissioning of the main means of production (machines, technological equipment), including software
Beneficiary	■ Legal entities that plan to expand existing production or create a new production in the industry in which they already work
Status (as of Dec 2022)	■ Application: 1,459 submissions ■ Grant decision: 247 recipients for a total amount of 1,339.4 million hryvnias
Support of startups	
Grant amount	Application has not been started (as of December 2022)
Purposes of the grant	
Beneficiary	
Status (as of Dec 2022)	
Training of IT specialists	
Grant amount	Application has not been started (as of December 2022)
Purposes of the grant	
Beneficiary	
Status (as of Dec 2022)	
Grants for veterans to start or develop their own business	
Grant amount	■ A combatant and/or a person with a disability caused by war (1 job created): UAH 250,000 ■ A family member of a combatant and/or a person with a disability caused by war (2 jobs created): UAH 500,000, up to 70% of the project cost ■ A combatant and/or a person with a disability caused by war who has been registered as an individual entrepreneur for at least 3 years (4 jobs created): UAH 1,000,000, up to 70% of the project cost
Purposes of the grant	■ Purchasing equipment, raw materials, supplies, rent premises and vehicles necessary for the implementation of their business project ■ Purchasing licensed software, paying for marketing and advertising services
Beneficiary	-
Status (as of Dec 2022)	■ Newly established program in Apr 2023

Source: Developed by MURC based on information provided by the Ministry of Economy and articles on the Ukrainian government portal

In addition to the above grants, the government offers business loans with interest rates of 0% during martial law and for one month after its lifting, and no more than 5% after lifting. The government is also working to improve the business environment, including the declarative principal approach to business (i.e., businesses can start up based on declarations, eliminating the

need to obtain most permits and licenses except in high-risk areas), abolish and review by the Interagency Working Group[122], and the moratorium on business inspection during martial law are among the various measures underway[123]. Efforts are being made to ensure that businesses in Ukraine can continue to operate and retain jobs, both financially and non-financially, as much as possible.

As the war becomes prolonged, the Ukrainian government's measures are not only aimed at the relatively short-term goal of continuing economic activities under the war, but are also gradually taking on implications for creating an environment conducive to attracting investment after the combat is over and in postwar reconstruction. For example, in January 2023, it was announced that preferential treatment for tenants of 60 industrial parks in the country (compensation for the cost of infrastructure development, including electricity, gas, and networks) would be provided[124], and in February 2023, Yuliia Svyrydenko, Deputy Prime Minister and Minister of Economy announced plans to introduce an insurance scheme against war risks to promote domestic and foreign investment[125]. In April, amendments to the "On State Support for Investment Projects with Significant Investments in Ukraine" law (commonly known as the investment-nanny law) were announced. It illustrated the intention to expand the state's support of up to 30% of the cost of investment projects and the various tax exemptions available to small and medium-sized investments, in addition to the existing large investments[126].

Finally, Diia Business – the Ukrainian government's platform for SUs and SMEs support, mentioned in 3.1.1.2, which consists of a website (online) and a business center (offline) – should be noted. Currently, the website has a special page called “Business support in wartime,” which is updated with information on compensation for employment of internally displaced persons, support for business relocation, a marketplace for financial opportunities, updates on exports, financial assistance for exporters, and other information useful for continuing business during the war[127]. The information is constantly updated to help them continue to do business during the war. Applications for the "eRobota" grant described above can also be submitted through this website. In addition, as of October 2022, 9 of the 11 business centers in the country, except for Kharkiv and Mykolaiv, have resumed offline operations, offering consultations and entrepreneurship education[128]. The European Commission has selected Diia Business for the European Enterprise

[122] The Interagency Working Group on Accelerated Review of State Regulatory Instruments for Economic Activities, co-led by the Ministry of Economy and the Ministry of Digital Transformation.
[123] Information provided by the Ministry of Economy on 28 November 2022
[124] UkraineInvest website, “Government determines mechanism for compensating participants of industrial parks for the costs of connection to engineering and transport networks,” https://ukraineinvest.gov.ua/news/1-%d1%88%d0%b0%d0%b1%d0%bb%d0%be%d0%bd-%d0%bd%d0%be%d0%b2%d0%b8%d0%bd%d0%b8-%d1%82%d1%83%d1%82-%d0%b2%d0%ba%d0%b0%d0%b7%d1%83%d1%94%d1%82%d1%8c%d1%81%d1%8f-%d0%bd%d0%b0%d0%b7%d0%b2%d0%b0-2-2/
[125] The Ukrainian government portal, “War risk insurance mechanisms should be launched to attract investors to Ukraine: Yuliia Svyrydenko in Brussels,” https://www.kmu.gov.ua/en/news/dlia-zaluchennia-investoriv-v-ukrainu-treba-zapustyty-mekhanizmy-strakhuvannia-voiennykh-ryzykiv-iuliia-svyrydenko-u-briusseli
[126] UkraineInvestwebsite, “The Draft law No. 8138 on expansion of incentives for investors according to the law on “investment-nanny” is recommended for consideration in the first reading,” https://ukraineinvest.gov.ua/news/06-04-2023/ and UkraineInvest website, “UkraineInvest welcomes adoption of the draft law No.8138 on expansion of incentives for investors according to the law on “investment-nanny” in the first reading,” https://ukraineinvest.gov.ua/news/12-04-2023/
[127] Diia Business website, “Business support in wartime,” https://business.diia.gov.ua/en/wartime
[128] Kyiv Post website, “Diia.Business Drives UAV Support, Business Revival, ” https://www.kyivpost.com/russias-war/diia-business-drives-uav-support-business-revival.html

Promotion Awards 2022 for its role as a "hotline" for Ukrainian businesses and entrepreneurs, both online and offline[129].

3.1.5.3. Changes in startups and ecosystem

<The latest status of startups>

While economic activity is highly restricted throughout the country, the ICT sector is expected to be an important player in creating economic opportunities due to its relatively low dependence on infrastructure compared to Ukraine's other major industries such as agriculture and mining[130]. In fact, Ukraine's ICT sector has been strong even during the war, with exports of $7.3 billion in 2022, up 5.8% from the previous year and accounting for about half (45%) of all services exports[131]. SUs are also showing resilience in the face of difficulties; for example in August, USF reported that they had been consulted by 20 of its grantee SUs about temporary difficulties in fulfilling their grant obligations in the five months since the start of the Russian invasion, but none of them had closed down their business[132].

However, even if Ukraine's ICT sector remains strong, it is clear that they too have been heavily affected by the war. In June-August 2022, USF, in cooperation with the Ministry of Digital Transformation and others, conducted an online survey for Ukrainian SUs to understand their situation since the start of the Russian invasion (153 responses)[133]. According to the survey, 44% of SUs have moved their base of operations, while 56% have not. 95% of SUs have at least a partial base of operations in Ukraine, of which 55.7% operate entirely within the country. For SUs that have moved their base out of the country, the EU (38.6%) and the US (10.0%) are the main destinations for relocation. UNIT. City, one of the leading IT parks in the country, stated that the war halved the number of jobs in the park, which would have been about 3,800 in peacetime, and that the main reason for this was the relocation of foreign tenants such as Microsoft to other countries[134].

As for the reason why not so many SUs move out of Ukraine, it is necessary to consider the fact that even before the Russian invasion, SUs in the growth stage after Series A tended to move their bases out of the country, and many relatively small SUs in the demonstration stage remain in the country. In addition to this characteristic of the Ukrainian ecosystem, it should be noted that there are factors associated with the war in the background, such as, "Martial law restricts the move of men aged 18-64 out of the country," "Many Ukrainian SUs are linked to universities and

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[129] European Commission Promoting Enterprise News, “European Commission reveals winners of European Enterprise Promotion Awards – EEPA,” https://blogs.ec.europa.eu/promotingenterprise/european-commission-reveals-winners-of-european-enterprise-promotion-awards-eepa/

[130] World Bank (2022) Relief, Recovery and Resilient Reconstruction: Supporting Ukraine’s Immediate and Medium-Term Economic Needs (English). Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/099608405122216371/IDU08c704e400de7a048930b8330494a329ab3ca

[131] UkraineInvest website, “Record IT exports in 2022 brought the Ukrainian economy $7.3 billion,” https://ukraineinvest.gov.ua/news/03-02-2023/

[132] USF website, “USF: During the Five Months of Full-Scale War in Ukraine, None of the Fund’s Grantee Startups Has Closed Down,” https://usf.com.ua/en/usf-za-p-yat-misyaciv-povnomasshtabnoi-vijni-v-ukraini-zhoden-zi-startapiv-grantootrimuvachiv-fondu-ne-zakrivsya/

[133] Komarnytska, E., Supruniuk, I., Toporkov, O., Grzegorczyk, M., Turp-Balazs, C. and Wrobel, A. (2022) The Country at War: The Voice of Ukrainian Start-ups. London: Emerging Europe Limited. https://drive.google.com/file/d/18kV886D29iQ3ENmS9NeIl3AjFgzeBvoV/view

[134] UVCA website, “Doing Business From A Bomb Shelter: How Ukraine Fights Back On The Economic Battlefield,” https://uvca.eu/en/news/doing-business-from-a-bomb-shelter:-how-ukraine-also-fights-back

research institutes in Ukraine, making it difficult for them to relocate outside the country," and "Some are voluntarily serving in the Ukrainian military[135]."

Related to the location of the business base, Ukraine also attracted the largest number of responses for the main market of Ukrainian SUs (60.0%), with the EU (46.4%), the US (34.3%), and global (20.0%) also receiving a certain percentage of responses. Although only 2.1% of SUs in the survey considered Asia as a market, several SUs support organizations expressed the opinion that the war had made many SUs feel the need to do business globally more than ever before, and that they were now more likely to look to Asia as one of their global markets.

<Change in ecosystem>

There are several changes in the ecosystem surrounding SUs. Firstly, in response to the war and in anticipation of post-war reconstruction, particular emphasis is being placed on the military, construction, logistics, and agriculture sectors, where demand is expected to grow. TA Ventures, a VC with a presence in Ukraine, worked with USF and the Ministry of Digital Transformation to map out the areas of priority and SUs for post-war Ukraine and Ukraine's economic revival[136]. All sectors will be involved in the recovery, but the most important focus areas are "Construction technology, housing and communal services," "Logistics tech, export and import," "Agritech and foodtech," "Digital health (mental health)," "Fintech (lending and mortgages for consumers, lending to SMEs)," "Energy," "Cybersecurity," and "Military technology." As mentioned in 3.1.3.2, the USF was moved under the control of the Ministry of Digital Transformation with the urgent task of strengthening military tech in particular.

[135] Interview with UVCA (conducted on 30 November 2022)

[136] USF website, "The Ukrainian Startup Fund, TA Ventures and the Ministry of Digital Transformation Have Developed a Map of Startups with Priority Verticals for Investment," https://usf.com.ua/en/ukrainian-startup-fund-ta-ventures-ta-mincifri-rozrobili-kartu-startapiv-iz-prioritetnimi-dlya-investuvannya-vertikalyami/

Figure 49 Priority Areas of Startups for Reconstruction and Economic Revitalization of Ukraine

テクノロジー	キーワード	
Construction Tech	■ Workflow collaboration & project management ■ Field productivity ■ Construction materials marketplaces ■ Design & planning	■ Market data & data analytics ■ Safety & risk management ■ Budgeting & estimating ■ Procurement & supply chain ■ Robotics & automation technology
Logistics Tech	■ Tracking & visibility ■ Shipping marketplace ■ Logistics procurement ■ Robotic fleets ■ Supply chain management	■ Freight forwarding ■ Warehouse automation ■ Ecommerce logistics ■ Smart pallets & containers ■ On-demand storage
Food Tech/Agritech	■ Precision agriculture ■ Agribusiness management software ■ Irrigation & weather prediction ■ B2B agritech marketplaces ■ Food waste management	■ Farm-to-table ■ Next generation farms ■ Robotics & drones ■ Yield forecasting ■ Sensors
Edtech	■ Learning management systems ■ Language learning ■ School administration software	■ Online study tools ■ Educational games
Digital Health	■ Virtual care ■ Digital therapeutics ■ B2B platform for mental health & well-being	■ Digital pharmacy ■ Homecare
Social and Employment	■ Recruiting platforms ■ Benefits management ■ Performance management	■ Workforce management ■ Workplace culture
Fintech	■ Digital SMBs lending ■ Digital consumer lending ■ Insurance	
Energy and Sustainability	■ Energy management software ■ Renewable energy production ■ Energy access & storage	
Military and Cybersecurity	■ Data & cloud security ■ Mobile security ■ Encryption & cryptography	■ Defense Technologies

Source: USF, TA Ventures and the Ministry of Digital Transformation

Among these, expectations for military drones are particularly high, and the USF held its first three-day military drone hackathon in August 2022, with 150 participants from Japan and abroad

working in 30 teams to develop solutions[137]. In December, the first Drone Demo Day was held jointly by the USF, Ukrainian Armed Forces, Ministry of Defense, etc.[138]

A similar trend can be seen in KPI's annual startups support program SCU (see 3.1.1.4), which in 2022 focused on projects that were not at the idea level but had some technical readiness under the themes "Defense and security," "Industrial high tech and space," "Information technologies, digital country and cybersecurity," "Construction and infrastructure," "Energy and environmental safety," "Biomedical engineering and human health," and "Agricultural engineering and food safety[139]."

The second point is the growing interest in the Ukrainian SUs from outside the country. Originally, the potential of the Ukrainian SUs was recognized worldwide, but the view of Ukrainian ecosystem stakeholders was that investment was not that large relative to the size of the ecosystem. While the war has forced domestic investors to postpone new investments, creating a difficult situation for SUs based in the country, there are some interesting examples of European and global investors entering the Ukrainian investment market, and these SUs are gaining access to capital[140]. For example, ff Venture Capital, a US VC firm based in Warsaw, decided on a $50 million fund exclusively for companies founded by Ukrainians[141]. Also, Danish VC Seier Capital A/S planned to invest €10 million, including grants, in Ukrainian blockchain SUs[142]. In addition, the UK and Poland are also forming funds to invest in Eastern Europe, including Ukraine, and the war has been one turning point for new investors to get involved in Ukraine.

Efforts to support Ukrainian SUs can also be seen in various ways other than investment: global companies such as Google and Amazon expressed their support (see table below), and solidarity has been shown by invitations to Ukrainian SUs to global tech events including CES (USA), SWSX (USA), Slush (Finland), and Web Summit (Portugal). Furthermore, the Ukrainian startup community has established mechanisms to accept support from abroad and deliver it to SUs quickly and smoothly, such as Support Ukraine Startup NOW![143] by UVCA and the FREE Ukraine Foundation, and Save UA startups[144] by the USF. In the contingency of war, attentions to Ukrainian SUs have increased from both investment and assistance. The SU side also recognizes this situation as a byproduct of the war, and in a survey conducted by the USF in cooperation with the Warsaw Stock Exchange in October-November 2022 of 83 Ukrainian SU representatives, a quarter of the respondents acknowledged that the war could cause positive as well as negative changes[145]. Specifically, including potential ones, the respondents mentioned the

[137] USF website, "The First International Drone Hackathon Was Held in Ukraine: Results," https://usf.com.ua/en/v-ukraini-vidbuvsya-pershij-mizhnarodnij-drone-hackathon-osnovni-rezultati/

[138] USF website, "The First Drone Demo Day in Ukraine Took Place in Kyiv: Main Results," https://usf.com.ua/en/pershij-v-ukraini-drone-demo-day-vidbuvsya-v-kiievi-osnovni-rezultati

[139] Material on the SCU website, "Innovative Projects for Post-War Reconstruction of Ukraine," https://drive.google.com/file/d/1NEkNDvQg1Gsd105uuYee1weUAApBuCHn/view

[140] Interview with UVCA (conducted on 30 November 2022)

[141] UkraineInvest website, "The American venture firm ff Venture Capital is creating a fund to invest in startups whose founders are Ukrainians," https://ukraineinvest.gov.ua/news/18-09-22/

[142] UkraineInvest website, "Seier Capital A/S to invest € 10 mln in Ukrainian startups," https://ukraineinvest.gov.ua/news/13-10-22/

[143] The grant program is funded by donations from around the world to support IT companies and tech SUs that remain in Ukraine. Established shortly after the invasion began, a total of 28 companies have received grants of around $5,000 each on four occasions through July. https://uvca.eu/en/project/support-ukrainian-startups-now-program

[144] A matching platform that allows donors to directly support specific startups. https://usf.com.ua/en/saveuastartup/

[145] Polish-Ukrainian Startup Bridge (2022) Russian aggression in Ukraine: How do Ukrainian startups survive. https://www.startupbridge.eu/report/

creation of new cooperative markets, foreign support for business continuity, and new development opportunities created by relocating to the Western countries.

Figure 50 Support for Ukraine by the Global Companies

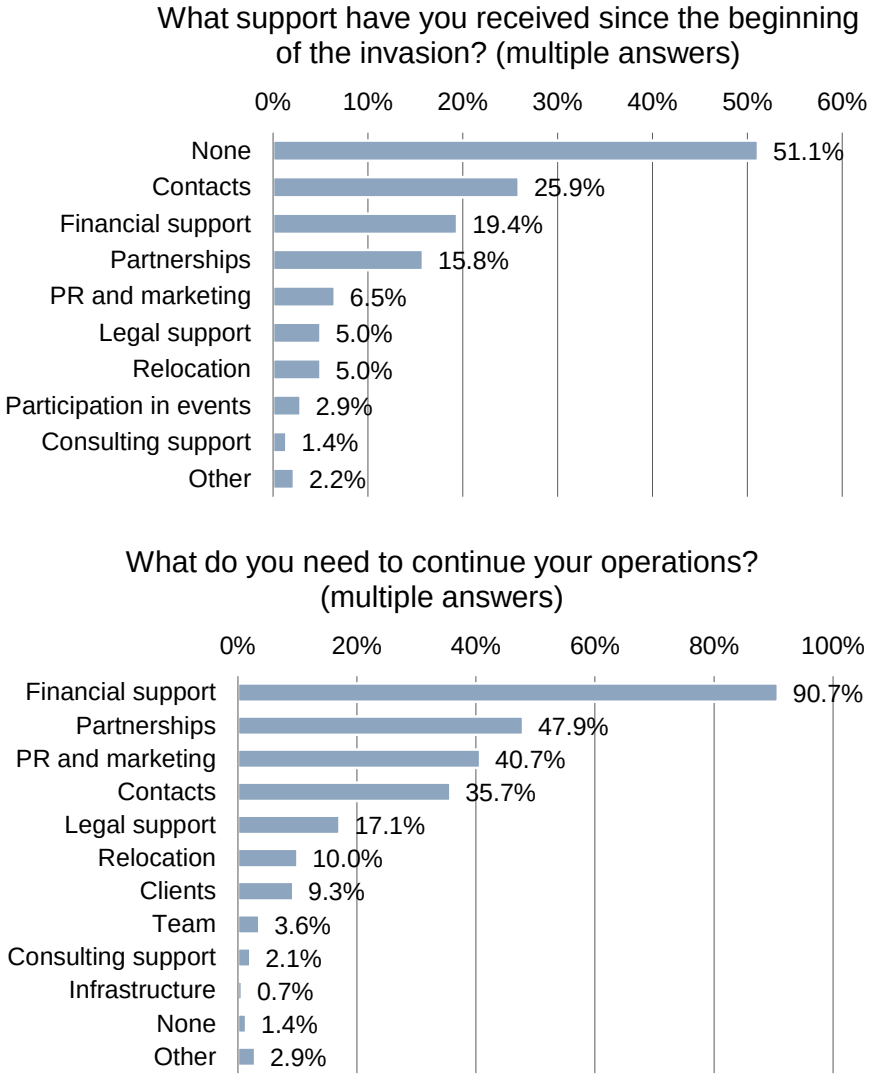
Name	Total amount of support	Details
Google	30 million USD	■ 15 million USD of donations and in-kind support to humanitarian efforts in Ukraine ■ 5 million USD of advertising grants to help trusted humanitarian and intergovernmental organizations connect people to the important sources of aid and resettlement information ■ 5million USD for Ukraine Support Fund allocating equity-free cash awards and Google support for Ukraine-based startups
Amazon	30 million USD	■ 15 million USD for cloud computing credits, and technical expertise, to continue supporting local and global organizations addressing Ukraine's humanitarian crisis ■ 10 million USD for organizations providing on-the-ground support in Ukraine ■ Up to 5 million USD from employee matching campaign
BINANCE	10 million USD	■ 10 million USD of donations to Ukraine humanitarian effort and launching the first crypto crowdfunding site to further help provide aid to Ukraine ■ Launching the Emergency Relief Fund that allows people to donate crypto to emergency relief to refugees and children and support logistics of food, fuel, and supplies for refugees
bitpanda	0.65 million USD	■ Raises crypto-assets to contribute to humanitarian support to people affected by the war. The platform converts all funds to euros without any fees and donates them weekly to selected organizations (up to 500K EUR) ■ 50K EUR of the personal contribution made by each of the three founders

Source: Kreston Ukraine, UVCA, AVentures, and ISE Corporate Accelerator (2022) Ukraine Deal Review 2021: Tech Venture Capital and Private Equity Deals of Ukraine. https://www.slideshare.net/UVCA/ukraine-deal-review-2021-tech-venture-capital-and-private-equity-deals-of-ukraine

<Needs of support>

While impressed by the resilience of the Ukrainian SUs and the international attention and solidarity, it is also true that many SUs continue to be in extremely difficult situations as the war prolongs and they need further assistance in any form. According to the results of the survey conducted by the USF and the Ministry of Digital Transformation, etc. mentioned above, 51.1% had not received any assistance since the start of the invasion. Financial support stood out as the most needed assistance at 90.7%, followed by partnerships (47.9%), PR and marketing (40.7%), and contracts (35.7%). In the survey conducted by the USF and the Warsaw Stock Exchange, many respondents also asked for "grants" (74%) and "introductions to investors" (61%), while others asked for "assistance with client acquisition" (44%), " Legal support, setting up legal presence in a new country" (39%), and "acceleration in a new country" (25%). While financial support is something that every SU needs, the needs for other types of support depend on the competencies of each team and the situation they are facing: marketing, fundraising, partnership building (including language skills), and where they would like to find support.

Figure 51 Results of Survey by the USF and the Ministry of Digital Transformation, etc.



Source: Komarnytska, E., Supruniuk, I., Toporkov, O., Grzegorczyk, M., Turp-Balazs, C. and Wrobel, A. (2022) The Country at War: The Voice of Ukrainian Start-ups. London: Emerging Europe Limited.
https://drive.google.com/file/d/18kV886D29iQ3ENmS9NeIl3AjFgzeBvoV/view

Figure 52 Results of Survey by the USF and the Warsaw Stock Exchange

Types of support needed	Number of indications (persons)	% of entities
Grants	62	74
Introduction to investors	51	61
Assistance with client acquisition	37	44
Legal support, setting up legal presence in a new country	33	39
Acceleration in a new country	21	25
Place (co-working) in a country	16	19

Source: Polish-Ukrainian Startup Bridge (2022) Russian aggression in Ukraine: How do Ukrainian startups survive. https://www.startupbridge.eu/report/

Similar perceptions were expressed by government agencies and SU support organizations, especially the importance of financial support and networking support for overseas expansion. Regarding financial support, while emphasizing that the first step is to help, whether by investment or donation, it was pointed out that investment is the greatest opportunity. In addition, there are strong expectations especially for Japan, for support to help SUs to show their presence in the Asian market, which is not very familiar to most Ukrainian SUs (e.g., participation in tech events and exhibitions held in Japan and other Asian countries).

3.2. Serbia

Serbia is a landlocked country located in the Balkan Peninsula, with an area of 77,474 square kilometers and a population of 6.87 million (2021, Statistics Serbia). The Danube River flows from east to west and joins the Saba River in Belgrade, which has long been a major transportation hub. The major cities are Belgrade, the capital, Novi Sad, the capital of the North autonomous region of Vojvodina, and Niš, the center of the south.

The Kingdom of Serbia was established in the 12th century, but came under Ottoman rule in the 14th century. It was the first country in the world to have a socialist economy. The country was renamed Serbia and Montenegro in 2003, and with Montenegro's independence in 2006, it became the Republic of Serbia.

The majority of the population is Serbian (83% according to the 2011 census), with a variety of other ethnic groups including Hungarians (4%) and Bosniaks (2%). The religious composition is similar to that of the ethnic groups, with 84% Serbian Orthodox, 5% Catholic, and 3% Muslim. The official language is Serbian, with the Cyrillic alphabet as the official script, but the Latin alphabet is also used.

Regarding the economy, the country achieved a budget surplus in a single year in 2017 as a result of continued efforts to reduce spending with the support of the IMF, and GDP showed moderate growth (2.1% in 2017, 4.5% in 2018, and 4.3% in 2019). In 2020, the growth rate was negative (-1%) due to COVID-19, but it will recover again in 2021. In terms of domestic industry, the manufacturing sector, including automobiles, parts, and machinery manufacturing, and the energy sector, including electricity and gas, are major sectors. The agricultural sector also has potential. Meanwhile, the IT industry has been growing in recent years.

In terms of international diplomacy, the country has positioned the EU, the US, Russia, and China as the pillars of its diplomacy. The independence of Kosovo has affected the diplomatic relations of each of these countries. Among these, China has a strong presence, and the strength of the relationship with China can be seen in Serbia's active participation in One Belt One Road and 17+1, the acquisition of Serbian state-owned companies by Chinese companies, and infrastructure projects financed by Chinese public institutions. Moves toward reconciliation and improvement of relations among the regional countries of ex-Yugoslavia are underway, but the ethnic rivalry remains intense. In addition to Serbia, Montenegro, Bosnia and Herzegovina, North Macedonia, Kosovo, and Albania (the six "Western Balkan" countries) also aspire to join the EU. The current Serbian president, Vucic, is aiming to establish a framework (mini-Schengen) that would allow free movement of goods, services, people, and capital within the Western Balkan countries, and is exchanging views with the leaders of these countries.

3.2.1. Current Status and Challenges Concerning Startup Companies in the selected countries

3.2.1.1 Definition of startup

There is no legal definition of SUs in Serbia. SU programs of the Development Fund which supports companies with the government's entrepreneurial budgets, and the Innovation Fund which supports innovation companies determine applicants by legal company sizes classification and running years. Companies must be in less than 2 years for the development fund and five years for the innovation fund. On the other hand, On the other hand, the Strategy for the

Development of the Startup Ecosystem of the Republic of Serbia for the period from 2021 to 2025 defines SU as a newly established innovative business entity (legal entity or entrepreneur). The definition of "newly established" is within 10 years. This is a new definition in this strategy, taking into account that SUs engaged in research and development in fields such as biology, chemistry, electronics, medicine, agriculture, etc., need to spend several years to proof of their concept due to nature of their product, and are not able to generate profits in the first few years.

The current size classification is defined by the Section 6 corporate and entrepreneur classification of the Accounting Act, enforced in 2020. It includes four types of micro, small, medium and large enterprises, depending on the average number of employees in the fiscal year, sales and the value of total assets on the balance sheet.

Figure 53 Definition of Company Classification in Serbia

	Micro	Small	Medium	Large
Number of employee	< 10	< 50	< 250	Larger than medium-sized company
Revenue	< EUR 0.7 million	< EUR 8 million	< EUR 40 million	
Total Asset	< EUR 0.35 million	< EUR 4 million	< EUR 20 million	

Source: Current Accounting Act[146]

Among them, the Innovation Fund requires in its application guidelines that SUs must be SMEs that meet the above criteria and have innovative solutions (see below in 3.2.3.2).

Other services (32.8%), trading (28.2%), manufacturing (15.7%), and transport and storage (10.2%) account for the largest share in the SME sector in 2016. On the other hand, the manufacturing sector (27.8%) and the secondary trade sector (27.1%) accounted for the majority of SME employment[147]. Approximately 86% of entrepreneurs in Serbia are micro-entrepreneurs, and this is characterized by frequent closures and new construction[148].

The Ministry of Economy, the Serbian Development Agency, the Women Business Association, and the German International Cooperation Agency (GIZ) provide support to foster the entrepreneurship of women[149]. Since 2007, the Women's Business Association has held an annual event for female entrepreneurs called Success Flower, which has awarded 134 women[150].

3.2.1.2 Current status, issues, and related policies surrounding startups

The main relevant policies and measures for SUs and ecosystems in Serbia are as follows.

[146] ZAKON O RAČUNOVODSTVU ("Sl. glasnik RS"、 br. 73/2019 i 44/2021 - dr. z akon)(2020)、Republic of Serbia

[147] OECD et al.（2019）, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[148] Ministry of Education, Science and Technological Development, Republic of Serbia （2020） Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[149] OECD et al.（2019）, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[150] European Commission (2020) SUCCESS FLOWER 2020/October 28/Association of Business Women in Serbia, Belgrade, https://ec.europa.eu/growth/tools-databases/sme-week/index.cfm?fuseaction=sme.viewPublishedEvent&event_id=10340&edition_id=12013&country_cd=rs

■ Ministry of Economy: SME Development Strategy 2015-2020 / Year of Entrepreneurship in 2016, etc.

SMEs account for more than 99% of the total number of enterprises and generate 65% of employment, the government has identified SME promotion as one of its most important economic objectives. The Ministry of Economy established the SME Development Strategy 2015-2020 and Year of Entrepreneurship in 2016. In 2017, the Ministry of Economy decided to expand the program, originally planned for 2015- 2020, to a 10-year program. Under the Decade of Entrepreneurship program, a number of government agencies, chambers of commerce, industry associations, international organizations, donors, and NGOs are involved. The program supports enterprises with both financial (e.g., loans, subsidies, export development, assistance in entering the supply chain, etc.) and non-financial support (e.g., education, re-certification, professional and consulting assistance, etc.).

The Ministry of Economy also operates TEHNIS, a website that compiles rules and regulations on products for sale, and provides SMEs with easy access to the information they need . In addition, the Public Procurement Law has been enacted to promote SME participation in public procurement, and the documents to be submitted during procurement are simplified.

■ Ministry of Education：Strategy of Scientific and Technological Development "the Power of Knowledge" / Smart Specialisation Strategy Serbia（4S）

The Ministry of Education adopted the Strategy of Scientific and Technological Development of the Republic of Serbia for the period from 2021 to 2025 "the Power of Knowledge" in 2020[151]. It aims to develop the Science and Technology Parks for the development of the Serbian economy based on research and innovation, and the development of SU communities.

The Ministry of Education has established the Smart Specialisation Strategy Servia (4S) to implement new and innovative policies jointly by the government, academia, business and civil society, and has identified the following four priority areas for innovation.[152]

- Food for Future
- Information and Communications Technology
- Future Machines and Manufacturing Systems
- Creative industries

■ Office of the Prime Minister: Strategy for the Development of the Startup Ecosystem of the Republic of Serbia for the period from 2021 to 2025

Since Ana Brnabic became the Prime Minister in 2017, Serbia as a nation has launched a strategic effort on startup ecosystems and the digital economy. In 2020, The Strategy for the Development of the Startup Ecosystem of the Republic of Serbia for the period from 2021 to 2025 was formulated for the purpose of developing the SU ecosystem[153]. According to the interview with the Office of the Prime Minister, a representative of the SU support organization was appointed as the chair of the working group for the development of the strategy, and the strategy was created in close cooperation between the Serbian government and the SU community. The objectives of the strategy are as follows.

[151] The Government of the Republic of Serbia (2020) Government adopts Strategy of scientific and technological development of Serbia, https://www.srbija.gov.rs/vest/en/167208/government-adopts-strategy-of-scientific-and-technological-development-of-serbia.php#:~:text=The%20Ministry%20of%20Education%2C%20Science,called%20%E2%80%9CPower%20of%20Knowledge%E2%80%9C

[152] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[153] СТРАТЕГИЈУ РАЗВОЈА СТАРТАП ЕКОСИСТЕМА РЕПУБЛИКЕ СРБИЈЕ ЗА ПЕРИОД ОД 2021. ДО 2025. ГОДИНЕ. https://www.mpn.gov.rs/wp-content/uploads/2021/12/Strategija-razvoja-stertup-ekosistema-RS-od-2021-do-2025.pdf

1. To build the capacity of SU entrepreneurs through educational programs
2. To establish infrastructure and software support for SUs
3. To promote funding mechanisms for SUs
4. To improve the conditions for SU entrepreneurship
5. To promote SU culture and increase awareness of the global ecosystem

■ Serbian Development Agency: Youth Caravan Project / Create Life

The Serbian Development Agency also offers legal consultations and business plan development support for the youth through the Youth Caravan Project, and supports the innovation and competitiveness of micro, small and medium enterprises by the program called Create Life.

■ Tax deduction, etc.

In recent years, a number of tax amendments have been made to improve the investment environment. For example, taxpayers who invest in newly established innovative SU shares are allowed a tax credit of 30% of the amount invested (tax credit is limited to 110 million JPY or 1 billion Serbian Dinar (RSD)) to encourage investment by companies in SUs shares, and the founders of innovative SUs have deferred payment of income tax for three years after starting their businesses[154] if they meet the following conditions[155]. However, according to an interview with KfW, it is unlikely that any SUs have actually been listed on the Serbian stock market.

1. The innovative SUs are not affiliated with any legal entity and or generate more than 30% of its total income from those deemed to be affiliated with the founder.
2. The founder (or each founder if there is more than one) has an employment contract with the SU and is covered by compulsory social insurance.
3. The founder holds at least 5% of the shares or capital contribution of the SU during the period of exercising the right of exemption.

In addition, the law deducting 70% of taxes and social insurance premiums on salaries for foreigners and expatriates is attractive to foreign investors. This 70 percent deduction also applies to software developers and young people entering the employment market. In addition, the tax and social insurance premiums for SU founders' salaries were 0% for the first three years[156]. The Serbian government also introduced tax exemptions to support R&D in 2018.

As a result of these policies and measures, the country is gradually creating an environment for entrepreneurship development, as shown in the below figure. On the other hand, in the interviews with GIZ, it was said that information on these tax deductions and other benefits was not sufficiently available to each SU.

[154] Ministry of Education, Science and Technological Development, Republic of Serbia （2020） Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[155] Petrovic Legal (2021) Startup and tax incentives in Serbia. https://www.petroviclegal.com/startup-and-tax-incentives/

[156] Startup Genome （2021） Serbia, Belgrade and Novi Sad. https://startupgenome.com/ecosystems/belgrade-and-novi-sad

Figure 54 Status of the Environment for Supporting Entrepreneurs

Item	Overview
Number of days for business registration	■ Registration has been simplified and the average number of registration days has been shortened year by year (23 days in 2008, 11.5 days in 2015 and 5.5 days in 2018). This is shorter than the average of 17 days for the 13 EU countries and 9 days for the OECD (OECD et al., 2019).
Initial cost for businesses and fund procurement	■ The ratio of initial costs to start businesses per capita income fell sharply in 2014, and it reduced to 2.2% in 2018. This is attributed to a reduction in signature and certification tax (OECD et al., 2019). ■ Due to the National Bank's Dinarisation strategy, local currency loans are increasing, while interest rates are declining, making it easier for SMEs to obtain funding (OECD et al., 2019).
Tax deduction	■ The government provides an incentive called an "IP box" that reduces the tax base because the R&D costs borne by SUs are double-counted in the income statement. ■ Investment in startups by companies is tax deductible at 30% of the investment amount.

3.2.1.3 Ecosystem overview

<Overview>

Serbia has a population of 7 million and the largest domestic market in the Western Balkans. About half of the GDP is accounted for by the service sector, and most of the employment is concentrated in the service sector. In the Western Balkans region, Serbia has the highest number of SMEs per population, with 50.9 SMEs per 1,000 people as of 2017 (The average number in the Western Balkan region is 37.0 SMEs)[157]. There is no official information on the actual number of startup companies, but they are concentrated in urban areas, with 75% in Belgrade and 15% in Novi Sad.

<Foreign direct investment and ecosystem value>

Foreign direct investment (FDI) is increasing year by year, and is expected to be 3.2 billion EUR in 2018 and 7.5% of GDP is from FDI[158]. In 2020, Startup Genome reported that Belgrade and Novisad rank 91-100 in the emerging SU ecosystem ranking[159], with an ecosystem value of US$314 million[160].

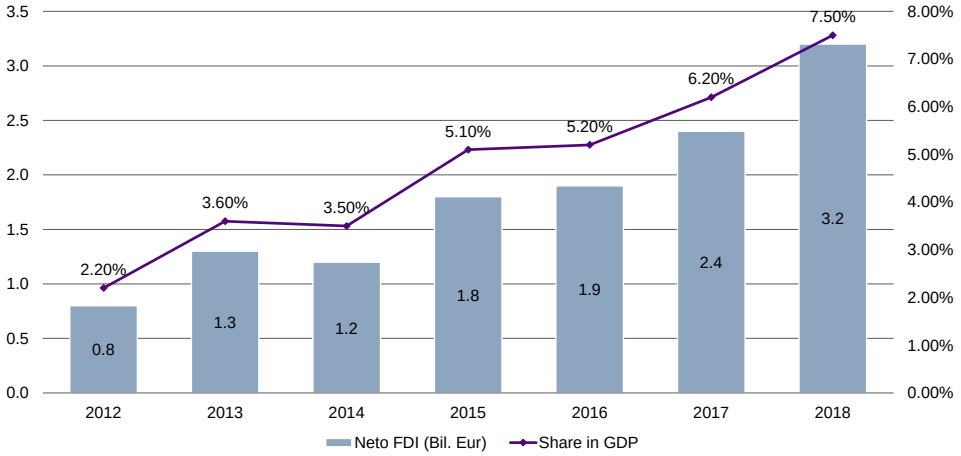
[157] OECD et al.（2019） SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[158] Ministry of Education, Science and Technological Development, Republic of Serbia （2020） Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[159] Startup Genome (2020) Top 100 Emerging Ecosystem Rankings. https://startupgenome.com/article/rankings-top-100-emerging.

[160] Startup Genome (2021) Serbia, Belgrade and Novi Sad. https://startupgenome.com/ecosystems/belgrade-and-novi-sad

Figure 55 Total FDI and its percentage of GDP



Source: Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

<Institutions and governance>
When it comes the institutional indicators of the Global Innovation Index, the regulatory and business environment is relatively high (41st and 38th out of 131 countries, respectively), while the political environment (70th) is moderate[161]. This may be related to the fact that in interviews with several donor agencies, serious corruption was cited as a risk that could hinder further development in the country.

Figure 56 Rank of Institutional indicators for Global Innovation Index 2020, Serbia

Category	Rank (131 countries)
Institutions (overall)	50
1. Political environment	70
Political and operational stability	60
Government effectiveness	72
2. Regulatory environment	41
Regulatory quality	64
Rule of law	68
Cost of redundancy dismissal	1
3. Business environment	38
Ease of starting a business	60
Ease of resolving insolvency	38

Source: Global Innovation Index 2021

[161] WIPO (2021) Global Innovation Index 2021: Tracking Innovation through the COVID-19 Crisis. Geneva: World Intellectual Property Organization. Abailable at https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf

< Access to finance >
In interviews with several SUs and donor agencies, lack of access to financing was mentioned as a challenge facing Serbia's SUs. In the Global Competitiveness Index, there is still room for improvement in such indicators as domestic credit to private sector (81st out of 141 countries), financing of SMEs (65th), and venture capital availability (69th)[162].

Figure 57 Rank of financial system for lobal Competitiveness Index, Serbia

Category	Rank (141 countries)
Financial system (overall)	83
1. Domestic credit to private sector	81
2. Financing of SMEs	65
3. Venture capital availability	69
4. Market capitalization	88
5. Insurance premium	64
6. Soundness of banks	85
7. Non-performing loans	105
8. Credit gap	1
9. Bank's regulatory capital ratio	22

Source: World Economic Forum (2019) The Global Competitiveness Report 2019

<Other challenges of ecosystem>
During the interview to Digital Serbia Initiative, the local SU lacks experience and skills in business development, including market development, which can be the challenge in Servian ecosystem. In addition, there is a lack of information coordination among companies in the ecosystem, and similar technologies are often developed at the same time.

While the brain drain remains a major problem, some believe that instead of stopping the brain drain, they should make better use of Serbs who are migrating to the country. For example, according to the interview with the Ministry of Education, in preparation for the official launch of the Serbian Diaspora Facility, which is part of the Serbian Accelerating Innovation and Entrepreneurship Project (SAIGE) supported by World Bank, a pilot program, Vouchers for Knowledge Exchange, is being implemented to connect domestic researchers with Serbians working abroad. The issues on the ecosystem in Serbia are as shown below.

[162] World Economic Forum (2020) The Global Competitiveness Report: How Countries are Performing on the Road to Recovery.
https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2020.pdf

Figure 58 Issues related to the ecosystem

Item	Issues
Overseas business	■ The Serbian Development Agency (RAS) aims to integrate SMEs into global value chains, but there is a need for a support program to facilitate "liaison" between SMEs and multi-national companies (OECD et al., 2019).
Domestic public procurement	■ It is necessary to promote the digitization of public procurement and to support the participation of SMEs in public procurement (OECD et al., 2019). ■ In order to participate in public procurement, there are requests for reference on past performance, so many SUs give up on entering the market (interview with Digital Serbia Initiative).
Fund procurement	■ There is a need for legislation to support the diversification of financing support for small-scale entrepreneurs, in particular funding by microfinance organizations (OECD et al., 2019).
Other environmental issues	■ It is necessary to develop an environment in which SMEs that have failed in business can take up the challenge again (OECD et al., 2019).

3.2.1.4 Educational environment (universities and research institutes)

With regard to the educational environment, there are about 15,000 researchers (about 2,000 researchers per million population) in Serbia, which is a relatively high figure among the Western Balkan countries[163]. Universities offer new courses on SU development and intellectual property management, while vocational training schools introduce entrepreneurship. For example, the Subotica School for Chemical Technology has established and operates a school-based company to foster professional and commercial skills as well as entrepreneurship. Students have learned practical business development and transaction know-how in the process of market analysis, production management, testing, marketing, sales, etc. This project has been awarded the European Vocational Skills Week 2018. In order to foster entrepreneurship, there are also initiatives focused on improving problem solving abilities in elementary and junior high schools[164].

Regarding intellectual property, according to the interview with the Ministry of Education, the University of Belgrade and the University of Novi Sad have established Technology Transfer Offices (TTO), and some other institutions are trying to move forward on that way.

Biotechnology is another area of focus for the government, which plans to build a BIO4 campus, consisting of the Torlak Institute, the Institute for Molecular Genetics and Genetic Engineering, the Faculty of Pharmacology and Biology, etc., in Belgrade to promote biomedicine, bioinformatics, biotechnology, and biodiversity[165].

In addition, regarding the educational environment, the following issues have been mentioned.

[163] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[164] OECD et al. (2019) SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[165] The government of the Republic of the Serbia (2020) Government approves formation of "BIO4 Campus" in Belgrade, https://www.srbija.gov.rs/vest/en/177490/government-approves-formation-of-bio4-campus-in-belgrade.php

Figure 59 Issues related to the educational environment

Item	Issues
Research/ education institutions	■ Companies have very limited investment in R&D, a very small proportion of innovative products that are world-class, and fewer patents owned by Serbian companies than other countries (Ministry of Education, 2020) ■ Collaborative R&D between companies and research institutes is scarce, and 24.1% of the innovative expenditure by companies is spent on R&D in-house alone (Ministry of Education, 2020). ■ Insufficient cooperation between different faculties within universities (interview with Digital Serbia Initiative). ■ Insufficient recognition among researchers that collaboration between research institutions and SU companies is effective and necessary to solve social issues (interview with the Ministry of Education). ■ While students receive excellent technology education at universities, they often lack skills in business development and entrepreneurship (interview with Science and Technology Park Nišh).

3.2.1.5 Incubators and accelerators

Four Science and Technology Parks have been established in Belgrade, Novisad, Nis and Cacak as major government-affiliated incubation centers. The Science and Technology Parks function as co-working spaces, incubators and network providers to connect academic or research institutions, government and SUs. In addition, youth entrepreneurship is also promoted through these Parks through competitions, events and training programs. The longest of the four parks is in Belgrade, where more than 70 high-tech companies have their offices and about 700 employees work. Established in 2015 with support from the Government, the city of Belgrade and the University of Belgrade, the park supports innovation development and commercialization by providing office rentals and business support services for entrepreneurs and SUs, especially high-tech companies[166]. Donor Programs such as the "Raising Starts" program launched by the Parks in Belgrade, Nis and Cacak together with the Swiss Government provide some assistance in fulfilling the resource gap. The 4-year Raising Starts project provides funding of up to CHF 15,000 and a phased acceleration program for up to 100 idea-stage or pre-seed stage SUs. The Ministry of Education mentioned, during the interview, that the fifth park in the country is scheduled to be built in Kragujevac.

As shown in the figure below, there are 20 incubation facilities in Serbia as of 2017[167]. One of these is Business Incubator Novi Sad, which provides office rental and coworking space, and supports SU activities by holding a Startup Weekend[168]. In addition, Serbian Entrepreneurs is helping to build a network between VCs and entrepreneurs[169].

[166] Science Technology Park Belgrade (2018) Reinventing the world-The power of Industry 4.0. http://ntpark-conf.rs/

[167] Institute for Territorial Economic Development: InTER (2017) Business incubators in Serbia. http://www.lokalnirazvoj.org/upload/Publication/Documents/2017_09/Business_incubators_in_Serbia.pdf .

[168] Poslovni Inkubator Novi Sad (2021) Zašto Poslovni Inkubator Novi Sad? http://inkubator.biz/

[169] Serbian Entrepreneurs (2020) A pay-it-forward global network of entrepreneurs fostering the Serbian startup ecosystem. https://www.serbianentrepreneurs.com/

Figure 60 Maps of Incubation Facilities in Serbia

Source: InTER (2017) Business incubators in Serbia

Digital Serbia Initiative and ICT Hub play major roles as private organizations. The Digital Serbia Initiative was established in 2017 by major Serbian digital companies to develop an internationally competitive digital economy. It examines digital ecosystems from a strategic point of view and conducts various activities such as promoting programming education, supporting SU ecosystem, and making recommendations on related laws and regulations [170]. Specific achievements include the compulsory implementation of programming education for grades 5-12 (from fifth grade in elementary school to third grade in high school in Japan), the introduction of Master 4.0, which is a higher education policy aimed at fostering human resources with a combination of business knowledge and skills and advanced technology and other highly specialized knowledge and skills, as well as the formulation of a growth strategy for the SU ecosystem. Recognizing that financing is the biggest challenge for Serbian SUs and its ecosystem, Digital Serbia Initiative have launched an angel group and have proposed new grant programs to the government.

The Innovation Fund Serbia is the agency responsible for the disbursement and management of government-funded financial support for local SUs. The Innovation Fund is financially supported by the World Bank and the European Union (EU), along with the Government of Serbia. In 2022, the Innovation Fund launched the Katapult Program, an in-house acceleration program, and accepted 19 SUs (11 Scale-Ups and 8 Pre-MVP) out of 150 applicants. SUs accepted to the program are provided an At-Entry Grant of EUR 25,000 (Pre-MVP) or EUR 50,000 (Scale-Up), and qualify for the Matching Grant Program where the Innovation Fund will match any private investment secured by the Startup on a 1-to-1 basis up to EUR 300,000.

ICT Hub is an organization established in 2014 to support the ecosystem. It also focuses on supporting SUs, such as managing private investment funds specializing in early-stage SUs called ICT Hub Venture. The fund provides pre-seed and seed-period SUs with up to 50,000 EUR in

[170] Digital Serbia Initiative (2021) Hello, we are Digital Serbia Initiative. https://www.dsi.rs/en/

exchange for their 5-15% equity. ICT Hub also works for improving access to the ecosystem of SUs, providing individual support in accordance with the needs of each SU, offering networking opportunities, and fostering entrepreneurship[171].

There are StartLabs, Start-It, ImpactHub, etc. as accelerators, but the amount of support is only about 50,000 EUR, which is not sufficient[172]. Although business development skills are identified as a key area for improvement in the growth of local SUs, there are currently no government programs to sponsor SUs for the acceleration programs that would afford them those skills. In general, there appears to be gap in the supply of acceleration programs in the ecosystem and a lack of regionally established accelerators who deploy programs locally. Through interviews with primary research sources, regional acceleration programs may be reluctant to enter or to perform extensive scouting activities for their programs in the Western Balkans Region due to the immaturity of the ecosystem such that the cost-benefit of scouting in this region remains untenable. Participation in Regional Acceleration Programs by local Serbian SUs therefore becomes driven mainly by the initiative of the startup's management team to participate in an overseas program, which further increases the participation cost. During the interview with Japan External Trade Organization (JETRO), on the other hand, it is mentioned that accounting auditors such as Ernst & Young Global Limited (EY) and PricewaterhouseCoopers (PwC) have been conducting acceleration programs aiming for exit of SUs.

3.2.2. Challenges for startups and the industrial sector

3.2.2.1. ICT: Rapidly growing with a focus on gaming and blockchain

The ICT sector has been the fastest-growing sector in Serbia over the past decade, and the domestic market has been stable at 500 million EUR in recent years. Exports also showed an annual increase of 20% from 2015 to 2018[173]. According to the interview with the public business support organization, since the IT sector has a business model that can all be completed online, they have been active with overseas market from the outset while most Serbian companies in other sectors often start their business targeting the domestic market first. More than 3,300 software developers are born each year from 26 universities in Serbia, and the number is increasing year by year. Coding has been mandatory since the fifth grade of elementary school, and there are more than 80 high schools in Serbia specializing in computer science and electrical engineering[174]. One of the four main 4S pillars mentioned in 3.2.1.2 is ICT, with particular emphasis on big data, business analysis, cloud computing, software development, embedded systems, AI, and block chain technologies[175].

In the ICT sector, the Serbian companies have strengths in gaming and blockchain. The gaming industry employs more than 2,000 people (about one-third of them are women), with annual sales of 120 million EUR in 2020, about twice as many as in 2018. Forty-one games are on the market in 2020, of which 40% are mobile games[176]. The best-known SUs are as follows.

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[171] ICT Hub (n.d.) About ICT hub. https://www.icthub.rs/about-ct-hub/

[172] OECD et al.（2019）, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[173] Ministry of Education, Science and Technological Development, Republic of Serbia （2020） Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[174] OECD et al.（2019）SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[175] Ministry of Education, Science and Technological Development, Republic of Serbia （2020） Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[176] Startup Genome (2021) Serbia, Belgrade and Novi Sad. https://startupgenome.com/ecosystems/belgrade-and-novi-sad

Figure 61 Major SUs in the Gaming Industry

SU	Overview
GAME Credits	■ Develops distributed metaverse games. Has a billing system as well ■ A block-chain technology that enables the buying and selling of currencies is utilized in the game called Game Credits
3Lateral	■ Is a pioneer in the Serbian game industry. Digitizing human appearance and behavior by using electronic equipment and hardware for 3D and 4D scanning ■ Epic Games Inc. acquired the company a few years ago
Nordeus	■ Develops mobile games such as soccer ■ With more than 170 staff from 20 countries ■ Take-Two Interactive Inc. acquired the company for 378 million USD
Ebb Software	■ Be a Scorn developer

Source: Prepared by the survey team based on the website of each SU

It is also a world leader in the development of products related to the blockchain, using human resources with advanced engineering and mathematical skills, and is compiled by the Serbian Blockchain Initiative. Investments in this area are also active, including the recent acquisition of MVP Workshop by Celsius, a 15.3 million USD, investment in Tenderly led by Accel, and 3.4 million USD investment in Solrise Finance[177]. Furthermore, AI has been recognized as an important sector, such as the Strategy for the Development of Artificial Intelligence in the Republic of Serbia for the period 2020-2025[178].

In the analysis of the ICT industry (general) and the creative industry conducted in 4S, weaknesses and threats were pointed out as follows[179].

[177] Startup Genome (2021) Serbia, Belgrade and Novi Sad. https://startupgenome.com/ecosystems/belgrade-and-novi-sad

[178] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[179] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

Figure 62 Weaknesses and threats related to ICT (general) and creative industries in 4S

Field	Weakness	Threat
ICT industry (general)	■ Limited soft business skills and know-how at start-ups and companies ■ Simple outsourcing as prevailing business model ■ Poor collaboration between firms ■ Poor local linkages and exchange of knowledge between start-up founders, investors, and experts ■ Insufficient ICT professionals ■ Poor collaboration with R&D sector ■ ICT firms unwilling to hire students as interns ■ Some stakeholders falling behind in mastering latest technologies and knowledge	■ Education doesn't keep the pace with the development and needs of the ICT sector ■ Other sectors unwilling to adopt new ICT solutions ■ Countries at similar levels of development threaten to overtake the Republic of Serbia ■ Out-migration of highly qualified ICT experts ■ Decentralized system of support for disbursement and use of available EU funds ■ Inefficient mechanisms for commercializing R&D output produced by universities and institutes
Creative industry	■ Poor transfer of highly specific knowledge through teams along vertical and horizontal hierarchies; large share of general knowledge ■ Poor career guidance in how existing education can be applied in industry ■ High overheads in terms of investment in software and hardware ■ Poorly concentrated high-performance infrastructure (broadband access, electricity, data security) ■ Under-utilised potential for inter-sectoral co-operation ■ Poor awareness of and application for EU funds ■ Poor recognition of Serbian high-tech products and services (low brand value)	■ Cheap workforce compared to developed countries ■ Education and classification of new occupations lags behind the development and needs of the creative industries sector ■ Difficulties with acquiring hardware and software ■ Out-migrations of experienced and skilled professionals ■ Poor awareness by Serbian clients of production process; poor business and professional ethics

Source: Prepared by the survey team based on the Ministry of Education, Science and Technology Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

In addition, the shortage of human resources and the consequent increase in wages are challenges for the ICT sector. The country's software engineers have a salary of 30,000 USD, which is lower than the world average of 42,100 USD[180]. However, during the interview with Digital Serbia Initiative, it was pointed out that the salaries of engineers increased year by year, so it was difficult to maintain global competitiveness without providing more value-added end-service. Therefore, it is necessary to aim for a higher level within the ICT sector value chain.

[180] Startup Genome (2021) Serbia, Belgrade and Novi Sad. https://startupgenome.com/ecosystems/belgrade-and-novi-sad

3.2.2.2. Agriculture: Would increase competitiveness in the future adding product values etc.
Despite the lack of diversity in Serbia's agricultural products, the agriculture sector is recognized that there is room to increase competitiveness through continuous diversification, utilization of technologies, reduction of losses, improvement of product value added, acceleration of commercialization, and improvement of position in the value chain. Therefore, Food for Future is listed as the first important sector in the 4S. Specifically, the challenge is to establish a high-tech agriculture, high-value-added food products, and a sustainable production processing chain[181].

The Food for Future analysis conducted in the 4S points to the following weaknesses and threats.

Figure 63 Weaknesses and threats related to Food for Future in 4S

Field	Weakness	Threat
Agriculture	■ Education system lacks up-to-date applied knowledge and practices ■ Low technology transfer from R&D to businesses ■ Poor perception on the need of intellectual property protection ■ Lack of appropriate workforce ■ Poor demographics in rural areas ■ Fragmented farms ■ Fragmented production capacity and sub-optimal industry clusters and other business association arrangements ■ Inadequate production structure – low added-value products ■ Under-utilised potential for inter-sectoral cooperation ■ Investment in insufficiently sustainable, insufficiently productive, and uncompetitive industries and technologies ■ Producer mistrust of domestic innovations	■ Out-migrations abroad and migrations of young people from rural areas ■ Poor technical preparedness for climate change ■ Higher EU agricultural subsidies ■ Lack of continuity in implementing incentive policies and strategies ■ Consumer mistrust of and resistance to innovations

Source: Prepared by the survey team based on the Ministry of Education, Science and Technology Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

The BioSense Institute, which was established in 2015 as a research institute with the aim of providing cutting-edge digital solutions to the agricultural sector in Serbia and around the world, is leading the way in agri-tech in the country[182]. Major SUs in the agriculture sector are as follows.

[181] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027
[182] BioSense Institute (2021) Who we are. https://biosens.rs/en/about-us

Figure 64 Major SUs in the Agriculture Sector

SU	Overview
Agremo	■ Develops Agremo agricultural software using high-precision field data based on human expertise and AI ■ By using IT, it is possible to grasp droughts, pests, flooding, nitrogen concentrations, diseases and stress conditions of crops, and improve the efficiency of agriculture
Smart Watering	■ Develops a system to monitor the condition of irrigation and fertilizer 24/7/365 ■ The system saves time, money, water, and fertilizer, and uses real-time data to help timely decision-making
Atfield Technologies	■ Develops and provides solutions for data-driven vineyard management (platform called Winessense) ■ The number of its staff is 8 as of 2021. Product launch in 2020 with sales of around 350,000 Euros. ■ In light of the social situation, such as COVID-19 after the product launch in 2020, the company is currently focusing on Serbia, with plans to expand to the U.S., U.K., and China from 2022. However, they do not see Japan as a major target market due to the small number of vineyards and other demand aspects. ■ The CEO is making efforts to increase cash flow without raising funds by taking on engineering service-related jobs, which he did before. He is trying to extend the fundraising to the later stage (when the company scales up, probably in 2022). Discussions with potential investors are underway, and they do not think it will be more difficult to raise funds than otherwise.

Source: Prepared by survey team based on the website of each SU

3.2.2.3. Education: SUs are limited but have potential for ICT use

Serbia has long been enthusiastic about teaching science and mathematics and foreign languages such as English. 4S states that it is important to foster entrepreneurship among students and to strengthen cooperation between higher education institutions and companies and local communities through the use of ICT in education[183].

As the table below shows the main SU in the education sector, the number of SUs in this sector is limited, and there seems to be no or little SUs in the education sector that have been awarded by the Innovation Fund. On the other hand, EdTech Center Western Balkans has an office in Belgrade, which was established by educational experts and practitioners to improve the quality of education for all students in the Western Balkans. It improves the digital skills and competencies of teachers and students, helping to improve the accessibility, openness, efficiency and equity of education.[184]

[183] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[184] EdTech Center Western Balkans (2021) About us. http://edtech.center/en/about_us/.

Figure 65 A Major SU in the Education Sector

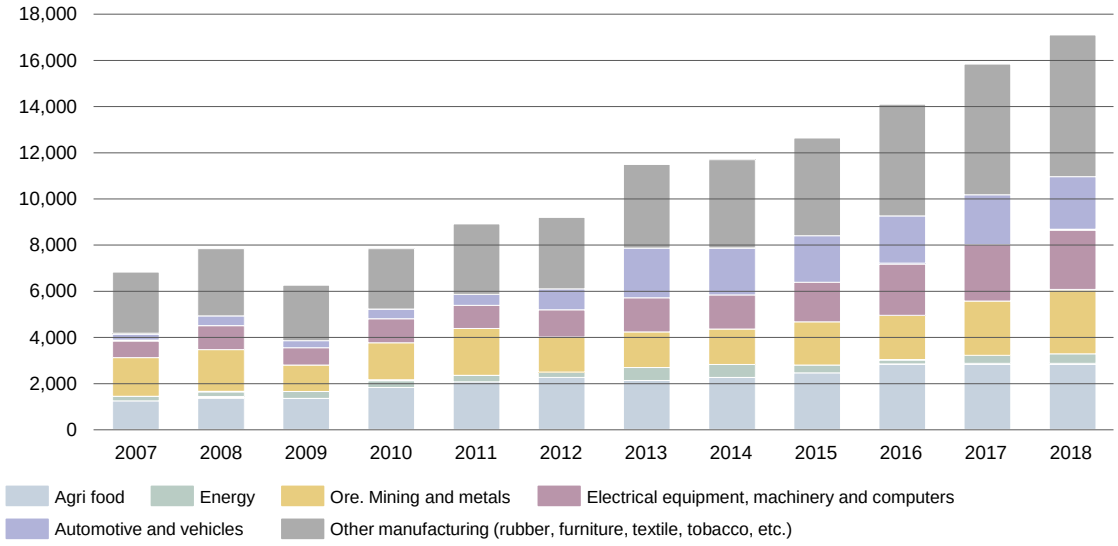
SU	Overview
Propter	■ SU for application and game development using VR/AR technology. ■ Main business is development of open source ScioXR supported by UNICEF, games under Flat Hills name, and enterprise (BtoB) software. ■ Has dealings with Western companies such as Pepsico/Facebook ■ Receives funding on a project basis, but no other fund procurement

Source: Prepared by the survey team based on SU website and interview

3.2.2.4. Logistics: Exports from automotive-related industries are booming with a potential of flying vehicles

Serbia, which is also the manufacturing base for overseas automakers, has seen a significant increase in exports of the automotive industry (red in the figure below) since 2013[185]. In the interview with the Office of the Prime Minister, it was also revealed that the government was paying attention to the development of self-driving vehicles and drones, etc. with 5G technology in the future.

Figure 66 Export sector ratio in manufacturing industry



Source: Ministry of Education, Science and Technology Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

Major SUs in logistics are as follows.

[185] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

Figure 67 A Major SU in the Logistics Sector

SU	Overview
Car Go	■ Established in 2015 and has worked mainly in hire services. Has also engaged in food delivery in recent years ■ The following four missions are set out • Using technology to bring people to life • Introdusing hybrid and electric vehicles to provide environmentally friendly urban transportation • Reducing CO2 and other harmful gases that adversely affect the environment • Making Belgrade and Serbia a healthier and more environmentally friendly city/country
KOV Technologies	■ A seed stage SU that offers a road service app Vozzi, started in 2016 after the CEO's own car troubles inspired him to come up with the business idea ■ In 2018, the company raised operational funding from Innovation Fund. The company has received about $3 million so far from a US citizen friend and plans to receive another $3.8 million in funding in 2022. They also need 20-25 million Euros to cover about 80 million potential customers ■ The company recently moved its headquarters to Amsterdam with the intention of scaling up further, including an IPO. The service is available in any country, and by collaborating with existing auto clubs (road service organizations) in each country, the number of users and repair shops will increase, and by 2021, the service will be available in 16 countries, mainly Turkey and the EU

Source: Prepared by the survey team based on website of each SU and interview with KOV technologies

3.2.2.5. Healthcare: E-health is gaining attention in the wake of COVID-19

With the COVID-19 pandemic, the necessity of investing in healthcare has increased, and the Innovation Fund, for instance, is investing in innovative projects by 12 companies coping with COVID-19 pandemic[186]. In the concrete action plan of 4S, it is pointed out that there is a particularly large possibility of e-health and digital health in the health sector[187]. A sandbox system is permitted in this sector. A member company for the Science and Technology Park or a company funded by the Innovation Fund, can import unregistered medical devices within 24 hours for innovative research and development[188]. According to the interview with the office for the Prime Minister, biomedicine was expected to grow rapidly in the future. In addition to promoting the

[186] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

[187] Ministry of Education, Science and Technological Development, Republic of Serbia (n.d.) The Action Plan for the period 2021-2022, For the implementation of the Smart Specialization Strategy in the republic of Serbia for the period 2021-2027.

[188] Ministry of Education, Science and Technological Development, Republic of Serbia (2020) Smart Specialisation Strategy of the Republic of Serbia 2020-2027

digitalization of healthcare services, the government expects the improvement in high-quality healthcare through the development of solutions in the fields of AI, genes, and biomedicine at the BIO4 Campus, as mentioned in 3.2.1.4.

3.2.2.6. Others: AI, Biotech and smart bench-related SUs are leading the way

According to the interview with the Ministry of Education, the government is taking a top-down approach to measures related to the use of AI, and therefore, speedy development is underway. In addition, as the government is planning to establish the BIO4 Campus, biotech is also an area of focus, and some leading SUs have emerged in this field. The world's first smart bench, a bench equipped with solar chargers, etc., invented by university students is one of the well-known SUs.

Figure 68 Other Major SUs

SU	Overview
Seven Bridges Genomics	■ Famous SU in the biotech field ■ Was acquired by a Canadian listed company with an unofficial amount
Strawberry Energy	■ Uses 100% solar system to develop and sell smart benches equipped with a free Wifi function and charging of electronic devices ■ The bench is located in more than 50 cities in 23 countries
Corten Art	■ A bio-ethanol-based steel processing company located in the industrial city of Shabatu, which is involved in laser cutting and bender processing of metal sheets and pipes, as well as steel furniture. ■ The company is also involved in activities, such as participating in the EU PRO Development Programme (European Support to Municipal Development Programme) and donating disinfection tunnels to the Corona disaster ambulance service in the city

Source: Prepared by the survey team based on the website of each SU and interview with Corten Art

3.2.3. Startup's capital access and investment overview

Although the Serbian Startup Ecosystem as a whole is at an early stage of development, there is already present a high degree of technical expertise in the workforce especially in areas of Cloud Infrastructure and Software Engineering based on its global presence as an R&D hub, including the Microsoft Development Center Serbia which recently received a significant investment to expand the team working on Azure Data service development (Cloud Infrastructure) [189].

Serbian SUs have also gained global recognition for the development of leading Blockchain and Crypto-based applications / platforms and are among the world leaders in this field. Fundraising in this sector may be raised through cryptocurrency-based Initial Coin Offerings. Although this method of fundraising has since tapered off, the ICOs of MobileGo (USD 53 million in 2017) and OriginTrail (USD 22.5 million in 2018) were ranked among the highest ICO fund raises in their respective years.

Gaming is another key industry for local SUs, highlighted by the recent acquisition of bootstrapped startup Nordeus by US-Based Take-Two Interactive for USD 378 million, and the 2019 acquisitions of 3Lateral by US-Based Epic Games for an estimated USD 120 million and Eipix Entertainment by Russian-based Playrix for an undisclosed amount. These significant

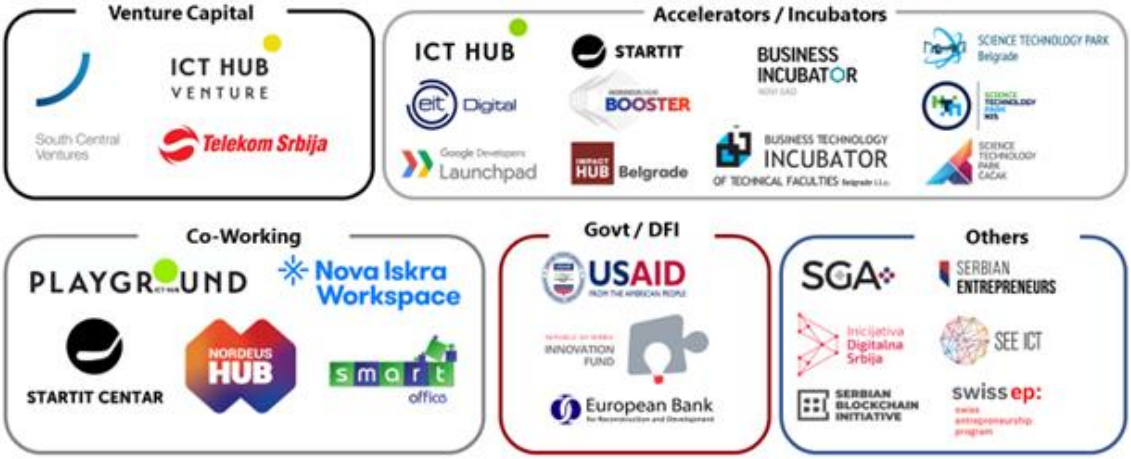
[189] Large investment in Serbian Azure Data Team in 2021

acquisitions of local SUs by global gaming leaders have helped to raise the profile of the creative industry in Serbia.

Taken together, these factors indicate that entrepreneurial drive, technical expertise and willingness to adapt to new technologies are all factors that work to this ecosystem's advantage. The supporting network providers and associations present at both a generalized level (e.g. Serbian Entrepreneurs) and at a specific sector level (e.g. Serbian Blockchain Initiative, Serbian Gaming Association) is supportive of an active, robust and collaborative entrepreneur community, which is conducive for knowledge sharing and may lead to a virtuous cycle of innovation and a pipeline of promising SUs capable of sustaining the local ecosystem.

Without a significant presence of business angel networks, this leaves the Innovation Fund Serbia, the government agency responsible for startup grant program development and startup-related initiatives, as the primary means of access to financing for most Serbian SUs up to early-stage development, and the main investor supporting the ecosystem at present.

Figure 69 Serbia Startup Ecosystem Players: Investor Types and Representative Firms



Source: Prepared by the survey team

3.2.3.1. Recent financing activities by Serbian startups

Interviews with several organizations revealed that the Serbian ecosystem was still in its early stage, and compared with the potential of Serbia, the SUs were not sufficiently funded. In particular, several aid agencies mentioned, during the interviews, that the early-stage SUs struggled to raise funds. On the other hand, in the interview with Science and Technology Park Niš, they emphasized the lack of support from venture capitalists and angel investors during the transition from prototyping to development for commercialization, which requires larger scale funding. USAID indicated, during the interviewer, that the Exit option is still limited in Serbia.

At the time of the interview with the Office of the Prime Minister, however, they expressed optimism that the situation of SUs' access to finance would change significantly in the near future, as the government is actively revising laws and other measures to improve SUs' access to finance.

In addition, as shown in the table below, there are several issues related to the investment environment.

Figure 70 Issues related to the investment environment

Item	Issues
Risk for SU investment	■ Domestic investors often hesitate to invest in high-risk SUs (interview with Digital Serbia Initiative)
Corruption	■ The country's corruption ranking is relatively high and has long been a problem (interviews with World Bank Serbia and JETRO) ■ Some argue that digitization can solve the government ‘s corruption problem (interview with World Bank Serbia)
Brain drain	■ The disparity in wages between Serbia and the EU countries is very high, and the fluency in English has also contributed to the brain drain, which has been a major problem (interview with World Bank Serbia). ■ However, it is not realistic to stop emigration, and there is a view that businesses that make good use of Serbs who are working abroad should be considered in Serbia (interview with World Bank Serbia).
Intellectual property corporate income tax	■ If the SU is incorporated in the United States or other countries, intellectual property is registered outside Serbia, even though most of the founders and managers of the SU reside in Belgrade. In addition, because corporate income tax is also paid in the United States, Serbia may suffer losses (interview with Digital Serbia Initiative)

The trend of high growth potential SUs incorporating their businesses overseas is not as evident in Serbia at the current moment. This could be due to the early stage of development of the ecosystem and its SUs since most SUs are in the Seed to Early Growth Stages. However, with few local venture capital investors, the lack of access to local early-stage financing results in this critical resource leakage occurring at earlier stages of startup growth, where even promising seed or pre-seed SUs may be relocated or incorporated in regional markets startup investor-friendly markets like Estonia.

As an Activation stage ecosystem, Serbian SUs early adoption and development of blockchain technologies have managed to attract some foreign investors into their local market. A startup like Tenderly, an Ethereum blockchain development platform, successfully raised over USD 18 million in funding from foreign VCs unconstrained by a regional mandate. This speaks to the significant growth potential of the blockchain development sector and the risk appetite of investors seeking such opportunities.

While decentralized finance startup platforms are less constrained by such geographic location concerns, gaming SUs benefit from immediate global market access through Android and Apple platforms and therefore start revenue cycles from early on in their development, allowing them to bootstrap growth rather than seek external financing for expansion.

Figure 71 Top 5 Fund Raises (2019 – 2021) – HQ Located outside of Serbia

Organization	HQ Location	Funding Year	Venture Stage	Amount Raised	Total Funding	Lead Investor
Seven Bridges	**Massachusetts, USA**	**2021**	**Growth Stage (Series C)**	**$15.0M**	**$113M**	-
Happiest Baby	**California, USA**	**2021**	**Growth Stage (Series Unknown)**	**$12.2M**	**$45.2M**	-
Nanom	**California, USA**	**2021**	**Seed Stage (Seed)**	**$3.0M**	**$3.0M**	-
Blloc	**California, USA**	**2019**	**Seed Stage (Pre-Seed)**	**$1.6M**	**$1.6M**	-

-Molo	**New York, USA**	**2019**	**Seed Stage (Seed)**	**$0.8M**	**$0.9M**	**-**

Source: Prepared by the survey team based on Crunchbase

Figure 72 Top 5 Fund Raises (2019 – 2021) – HQ Located in Serbia

Organization	HQ Location	Funding Year	Venture Stage	Amount Raised	Total Funding	Lead Investor
Tenderly	**Belgrade, Serbia**	**2021**	**Early Stage (Series A)**	**$15.3M**	**$18.6M**	**Accel**
Tenderly	**Belgrade, Serbia**	**2021**	**Seed Stage (Seed)**	**$3.3M**	**$18.6M**	**Point Nine Version One Ventures**
Trickest	**Belgrade, Serbia**	**2021**	**Seed Stage (Seed)**	**$1.7M**	**$1.7M**	**Credo Ventures**
Hunch	**Belgrade, Serbia**	**2020**	**Seed Stage (Seed)**	**$1.5M**	**$1.9M**	**-**
Blinking	**Belgrade, Serbia**	**2020**	**Seed Stage (Seed)**	**$1.4M**	**$2.5M**	**-**
Orgnostic	**Belgrade, Serbia**	**2020**	**Seed Stage (Pre-Seed)**	**$0.9M**	**$0.9M**	**122 West Ventures**

Source: Prepared by the survey team based on Crunchbase

Nordeus is a notable local SU' success story. The creators of Top Eleven, a Football Manager game which became a global leader in its genre, bootstrapped their growth and development from the start and never accepted external financing up to its acquisition by Take-Two Interactive, a major US gaming development firm. Nordeus and its founder have in turn reinvested into the local entrepreneur community by establishing a co-working space, operating a gaming accelerator and its founder has taken on key leadership positions in local ecosystem associations to promote the development of a stronger business climate for SUs.

Figure 73 Notable Recent Acquisitions / Exits

Organization	Acquired By	Acquired Date	Transaction Amount	Sector
Nordeus (Belgrade, Serbia)	**Take-Two Interactive (New York, USA)**	**June 2021**	**$378M**	**Gaming**
3Lateral (Novi Sad, Serbia)	**Epic Games (North Carolina, USA)**	**Jan 2019**	**$120M**	**Gaming**
Eipix Entertainment (Novi Sad, Serbia)	**Playrix (Vologda, Russia)**	**Dec 2019**	**Undisclosed**	**Gaming**
Frame (California, USA)	**Nutanix (California, USA)**	**Aug 2018**	**$165M**	**Cloud Infrastructure**

Source: Prepared by the survey team

3.2.3.2. National investment scheme for startups

The Innovation Fund and the Science Fund are the main players as government funds. The Innovation Fund was established in 2012 with the support of the European Union and the World Bank to support innovative SUs in the early stages of development and to help commercialize new products and technologies. As of 2021, there are about 30 employees, and through two or three public applications per year, the Innovation Fund supports about 100 companies and organizations. The Innovation Fund is funded through ongoing support from the European Union's Instrument for Pre-Ascension Assistance (IPA) with over EUR 30 million to date, and through the National Budget through the Ministry of Education, Science and Technological Development. The outline of support is shown in the table below. It also provides some entrepreneurial training, though not some of its main activities. It is required to allocate 50% of the budget of the Innovation Fund for the four key 4S areas.

Figure 74 Innovation Fund's Support Projects/ Programs

Project/Program Name	Upper row:Overview Lower row: Target company	Period of support	Maximum amount (per project/program)	Upper row: Total amount Supported (EUR) Lower row: Number of applications/ number of applications
Mini Grant Program	■ Financing the development of innovative marketable technologies, products and services ■ Micro and small enterprises within five years of establishment ■ Or a team of five or more key members	■ For up to 12 months	■ 80,000 EUR or up to 70% of the total budget (30% or more of which must be financed by the company itself) ■ Plans to increase the upper limit to 12,000 EUR in the future	■ 13,048,446 ■ 177 / 1,421
Matching Grant Program	■ Funding for the commercialization of research and development ■ Private micro, small and medium enterprises, the majority of which were established in Serbia	■ For up to 24 months	■ 300,000 EUR or up to 70% of total budget for micro and small enterprises and up to 60% for medium enterprises	■ 12,109,340 ■ 50 / 435
Collaborative Grant Scheme Program	■ Funding for joint development projects between private companies and public research institutes aimed at generating innovative technologies ■ A consortium of up to five organizations consisting of one or more micro, small and medium enterprises and one or more public research and development institutions	■ For up to 24 months	■ 300,000 EUR or up to 70% of total budget for micro and small enterprises and up to 60% for medium enterprises ■ 30% of the total budget needs R&D expenditure ■ In order to provide opportunities to multiple companies and organizations, the total amount of support for one company or organization is 600,000 EUR	■ 11,722,269 ■ 48 / 279
Innovation vouchers	■ Funding for SMEs to engage in innovation in collaboration with research institutes ■ SMEs established under Serbian Enterprise Law, majority of which are private enterprises	■ N/A	■ 800,000 RSD or up to 60% of total amount ■ No more than twice per company	■ 3,177,679 ■ 632 / 747
Technology Transfer Program	■ Funding for local organizations conducting research and development ■ N/A	■ N/A	■ 300,000 EUR	■ 580,350 ■ 27 / 36
Proof of Concept	■ Funding to test hypotheses and assumptions based on research ■ Public research institutes or private organizations engaged in research and development	■ For up to 12 months	■ Up to 20,000 EUR (can support up to 100% of total budget)	■ 1,752,077 ■ 93 / 521
Program for suppressing the effects of the COVID-19 pandemic	■ Funding for COVID-19 ■ Micro, small and medium enterprises	■ N/A	■ 100,000 to 450,000 EUR or up to 60% of total budgeting	■ 468,907 ■ 12 / 229
Smart Start *** Currently in preparation**	■ Scheme to be newly established in 2022 ■ Micro, small and medium enterprises with approximately three years of experience	■ About 6 months	■ 30,000 EUR or up to 90% of total budget	■ N/A ■ N/A

Source: Prepared by the survey team based on the website of the Innovation Fund, Strategy of Scientific and Technical Development Annex 1-Serbian Scientific Tradition, and the interview with the Innovation Fund.

According to the interview with the Innovation Fund, they have been also welcoming applicants that are just a team, not a company, for the Mini Grant Program from 2020 onward, based on the opinion of entrepreneurs that even if they have a good business idea, it will not be easy to start a business. As a result, in 2021, about half of the applicants and those that were awarded were pre-corporate teams. In addition, in order to strongly support research and development, improvements are being made in the Collaborative Grant Scheme Program, such as increasing the allocation of research and development budgets. But most SUs financially supported by the Innovation Fund are concerned that they have to raise 30% to 40% of their budget on their own. The companies or teams are allowed to prepare their own budget at any time during the project period, as well as to apply other public funds and borrow money from commercial banks, so there are not many SUs which actually had difficulty in procuring their own funds and had to abandon the Innovation Fund's support. However, the Innovation Fund said that they are now preparing a new program called Smart Start for micro, small and medium enterprises with around three years of business experiences. The upper limit of this program is 30,000 EUR, and it is possible to support up to 90% of the total budget and only 10% is required for self-financing. This makes it easier for enterprises that have just started up recently to apply for the program compared with other schemes.

The awarding of Innovation Fund Grants is through a 2-stage process and extends over a period of around 3 months before the financing decision is announced.

- Stage 1: Technical Peer Review by International Peer Reviewers & Investment Committee
  - Outcome: Pre-Selection of Applicants
- Stage 2: Financing Decision by Investment Committee

<Stage 1: Pre-Selection of Grant Applicants>

Following an administrative check for eligibility and completion of the grant application, the Pre-Selection Evaluation Process is performed by both International Peer Reviewers and the Investment Committee Members against a standardized evaluation criteria set out by the Innovation Fund Serbia. Peer reviews are performed first with the Investment Committee evaluating the applications having taken into account the Peer Reviewer's evaluation of the ability of the management team, the innovativeness of the technology proposed and other project elements.

<Responsibility of Peer Reviewer

- Review Application for conflicts of interest and that assigned Application matches the reviewer's area of expertise, and inform Innovation Fund if issues exist.
- Prepare written evaluation based on defined evaluation criteria and judgement of merit. Each review must provide comments and critical analysis justifying the evaluation for each criterion that may be given to the Applicant if requested.
- Applications will be scored by at least two peer-reviewers and ranked based on the average score for the consideration of the Investment Committee.

<Responsibility of Investment Committee>

- Review applications for conflicts of interest and inform Innovation Fund if issues exist.
- Summarize the Application for discussion, taking into account the Peer Reviewers' Comments
- Standardized evaluation of the Application including written comments.

- At the conclusion of the Preselection Phase Ranking, the IC must prepare a written evaluation providing comments and critical analysis for each criterion in the evaluation grid that may be provided to the Applicant if requested.

Applications are ranked based on a weighted average score of Peer Reviewers (30% Weight) and the Investment Committee (70% Weight). Applications which meet the minimum score will qualify for preselection and move to the Financing Decision Phase. For Applicants not preselected, Feedback including the IC Comments will be provided.

<Stage 2: Financing Decision by the Investment Committee>

Pre-selected applicants then undergo an additional screen to ensure compliance with Serbia's Environmental and Social Management Framework before the live presentation of their application to the Independent Committee, similar to a live pitch day. The Investment Committee evaluates the application under the same standardized evaluation criteria and awards financing to the top scoring applicants subject to the budget constraints of the public call.

<Responsibility of Investment Committee>

- Evaluation of the 20-min live pitch presentation and following Q&A to score the application based on the standardized evaluation criteria.
- Rank all Applications by score and based on the available budget for the project, confirm the final list of approve applications selected for financing.
- Prepare written evaluation and analysis of the application and submit the financing decision form.

The Science Fund was established in 2019 to support scientific research[190]. It is operated with the support of the government and the World Bank. The table below shows the projects and programs currently being implemented.

[190] Science Fund of the Republic of Serbia (2021) Welcome to the Science Fund of the Republic of Serbia, http://fondzanauku.gov.rs/?lang=en

Figure 75 Science Fund's Support Projects/Programs

Project/Program Name	Overview	Number of selected projects	Maximum amount (per case)	Source of funds
Program for Excellent Projects of Young Researchers (PROMIS)	■ Supporting for young researchers to participate in scientific research, to strengthen their expertise, to foster their ability to apply for other research projects in the EU and elsewhere, and to create new projects, excellent ideas and scientific research results	59	■ 200,000 EUR	− Serbian government
Program for Development of Projects in the Field of Artificial Intelligence (PRVI)	■ Supporting for research and development in the field of AI	12	■ 200,000 EUR	− Serbian government
The Serbian Science and Diaspora Collaboration Program – Vouchers for Knowledge Exchange	■ Supporting for scientific joint research, publication of joint papers and patents, development and commercialization of new services, etc. with Diaspora (immigrants)	92	■ 10,000 EUR	− Serbian government
IDEJE Program	■ Supporting for projects with excellent ideas that have the potential to have a major impact on the economy and society as a whole, as well as to strengthen the professional capacities of researchers	In progress	■ 300,000 EUR	− Serbian government − World Bank (SAIGE Project)
Special Research Program on COVID-19	■ Funding for projects aimed at solving new social issues under COVID-19, including preparedness for other possible future pandemics and natural disasters	14	■ 500,000 EUR	− World Bank (SAIGE Project)

Source: Prepared by the survey team based on the Strategy of Scientific and Technical Development Annex 1-Serbian Scientific Tradition

In the Create Life program implemented by the Serbian Development Agency, training is first provided to SUs, which are then co-financed with purchases of fixed assets, office renovation and reconstruction, consumable goods and raw materials. Alternatively, SUs can receive 70% of the production and processing costs, or 50% of the service costs, up to 1 million RSD (about 1.1 million JPY). In addition, the Entrepreneurship Decade Program was launched in 2017 under the leadership of the Ministry of Economy, and the following three organizations provide support such as funding to SMEs[191].

[191] OECD et al. (2019), SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

Figure 76 Support for financing SMEs through the Entrepreneurship Decade Program

Name	Overview
Development Fund	■ Provides investment loans and the loans specific to SUs
Export Credit and Insurance Agency of the Republic of Serbia j.s.c. Užice	■ Provides support for export guarantee services, export insurance, etc.
Serbian Development Agency	■ Implements the Small Business Support Program to help purchase equipment procurement ■ Conducts the SMEE Digital Transformation Support Program to accelerate digitization

Source: OECD et al. (2019), SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris

3.2.3.3. Venture capital investors and private equity fund

In spite of the vibrant startup culture, the VC landscape in Serbia is sparse. ICT Hub Ventures is the only local Venture Capital investor but typically only invests in pre-seed to seed stage projects at relatively small ticket sizes of up to EUR 50,000. Since its founding in 2017, the fund notes only 9 portfolio companies, indicating that the fund size is relatively restricted.

South Central Ventures is a regional Venture Capital Fund that manages the EUR 40 million Enterprise Innovation Fund (ENIF) for institutional investors such as the EBRD, EC and EIF along with the national governments of other West Balkan states which the fund is charged with investing in. The fund has supported several Serbian SUs within its portfolio, including Orgnostic, Tradecore, Hunch, Daibau, Agremo, Molo, Videobolt, among others. The proportion of Serbian SUs in the portfolio (nearly half of the companies in the publicly available portfolio could be classified as "Serbian" SUs with either work locations or founders based out of Serbia) is indicative of the potential for growth in the Serbian SUs' scene.

On the other hand, there has been a progress as several domestic and overseas VCs have started investing in Serbia in recent years. Telekom Serbia's CVC fund, called TS Ventures Fund, was approved in February 2021 as the 1st private Serbian VC in the country[192] and will invest EUR 5 million per year over 5 years for a total fund size of EUR 25 million. According to an interview with the fund, the investment targets are SUs in the Balkans that are operated by the parent company, Telekom Serbia, but the focus is on Serbia, and the fund aims to grow the ecosystem in Serbia by investing in the country's ecosystem, which is still in its early stages. SUs for investment are found by applying through the website, approaching through the TS Ventures Fund network, and publicizing through the Science and Technology Park. The investment targets are various advanced technologies such as blockchain, AI, and robotics, which the government is focusing on, rather than manufacturing and agriculture, which are traditionally considered strong in Serbia. It invests in companies in their seed stage, with a view to IPO in a few years. They also have strong ties with academia and are currently gathering information on Deeptech. Telekom Serbia has investment managers from Israel and the US to oversee operational management of the fund. This is a positive development for the ecosystem as it opens the door for new investors to support the local ecosystem. Furthermore, the Digital Serbia Initiative stated, during the interview, that they are considering designing Serbia's first fund of funds with the support of the Swiss Development Cooperation Agency. Thus, it is a promising development that large local corporates recognize the importance of the growth in this area of the ecosystem.

[192] Telekom Srbija (2018) About us https://mts.rs/About-Telekom/About-us.

Figure 77 Venture Capital and Private Equity Investors by Deal Size & Portfolio Value

Organization	Type	Stage	Deal Size	Portfolio Value (USD) – excl. Exits
South Central Ventures	VC Fund	Early Stage	$200k to $2.5M	*Undisclosed (Fund Size - $50M)*
ICT Hub Ventures	VC Fund	Pre-Seed to Seed	Up to $60k	*Undisclosed (9 Investments to date)*
Telekom Serbia	CVC Fund	Seed to Early Stage	$60k to $120k	*Undisclosed (Fund Size - $30M)*

Source: Prepared by the survey team based on corporate websites, publicly available information (news sources)

Earlybird Venture Capital, which is one of the leading European VC firms with more than 1.5 billion EUR in investments mainly in tech companies worldwide since its establishment in 1997[193], just invested 2 million USD in Anari AI, a cloud-based AI chip maker in 2021 as its first investment toward Serbian SUs[194]. Credo Ventures, a Czech VC firm with 170 million EUR in investments in Central European tech companies[195], invested 1.4 million EUR in Trickest, a Serbian SU that develops automated attack security testing tools[196].

For angel investors, the amount of investment between 2015 and 2017 was 8.6 million EUR[197]. According to interviews with several international development agencies, there are angel investors from Germany, the U.K. and the U.S. They also said that Diaspora entrepreneurs who have moved abroad might invest in their home country of Serbia. On the other hand, during the interview with USAID, it was mentioned that although there had been discussions in the past that the diaspora could be angel investors, the current diaspora had no intention of returning to Serbia and could not be expected to be angel investors.

As for domestic efforts, the interview revealed that Digital Serbia Initiative had formed the Angel Group and was working to procure funds to support SUs from Seed to Series A. They are also suggesting the government offer up to 50% of the matching funds for VCs that will co-invest with angel investors. At the time of the interview with the Office of the Prime Minister, they mentioned that they were planning a matching program between angel investors and SUs in 2022. In addition, an NPO called the Association of Business Angels of Serbia (ABAS) matches angel investors with SUs sharing best practices[198].

[193] Earlybird Venture Capital (n.d.) About us. Abailoable at https://earlybird.com/

[194] Anari AI (2021) Anari AI Raises $2M to Rebuild the AI Hardware Industry Through Personalized Cloud Chips. https://anari.ai/2021/04/13/anari-ai-raises-2m-to-rebuild-the-ai-hardware-industry-through-personalized-cloud-chips/

[195] Credo Ventures (n.d.) Credo. https://www.credoventures.com/

[196] Fores Media(2021) Serbian automated offensive security testing tool Trickest raises €1.4 million. https://tech.eu/brief/serbian-automated-offensive-security-testing-tool-trickest-raises-e1-4-million/

[197] OECD et al. (2019), SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

[198] The Association of Business Angels of Serbia (2021) Connecting starts with global business networks. https://www.serbianbusinessangels.com/.

3.2.4. Support from other donors related to the development of startups and ecosystem

Although many donors, mainly in Europe, are providing private sector support to Serbia, the World Bank and the United States Agency for International Development (USAID) have a high presence, especially when it comes to SU-specific support.

3.2.4.1. European Bank of Reconstruction and Development (EBRD)

The EBRD has invested more than 6 billion EUR in 267 projects in Serbia, focusing on private sector development, improved public services, and the transition to a green economy. In the private sector, the Banca Intesa Belgrade is providing support to improve the international competitiveness of small and medium-sized enterprises and to support female entrepreneurs.[199]

Support through Banca Intesa Belgrade[200]

- Project period: 2019 to present
- Partner agency: Banca Intesa Belgrade
- Budget: 16.5 million EUR
- Content:

1) Investment to upgrade small and medium-sized enterprises to EU standards: 15 million EUR
2) Investing in Women Entrepreneurs：1.5 Million

Women in Business[201]

- Project period: 2020 to present
- Partner agency: Banca Intesa Belgrade
- Budget: 23 million EUR
- Content: To date, support specifically for female entrepreneurs has been implemented four times. This fourth round of support will provide 8 million EUR to support female entrepreneurs affected by COVID-19.

3.2.4.2. European Investment Bank (EIB)

The EIB is implementing its first impact finance loan to the private sector outside the EU in Serbia.

Sub-projects under the Economic Resilience Initiative (SME loans)[202]

- Project period: 2020 to present
- Partner agency: UniCredit Bank
- Budget: 1.8 billion EUR for the entire Western Balkans, including Serbia
- Content: Supporting Serbian SMEs to address gender inequality, youth unemployment and groups that tend to be excluded from the labour market.

3.2.4.3. European Commission

EC had been supporting research and development and innovation for seven years until 2020, and is currently working on agritec projects with Novisad University.

[199] EBRD (2020) EBRD and Banca Intesa Beograd expand access to finance for businesswomen. https://www.ebrd.com/news/2020/ebrd-and-banca-intesa-beograd-expand-access-to-finance-for-businesswomen.html

[200] EBRD (2019) EBRD and EU support Serbian small businesses with Banca Intesa Belgrade. https://www.ebrd.com/news/2019/ebrd-and-eu-support-serbian-small-businesses-with-banca-intesa-belgrade.html

[201] EBRD (2020) EBRD and Banca Intesa Beograd expand access to finance for businesswomen. https://www.ebrd.com/news/2020/ebrd-and-banca-intesa-beograd-expand-access-to-finance-for-businesswomen.html

[202] EIB (2020) EIB and UniCredit Bank virtual signature: supporting SMEs and improving their social impact in Serbia. https://www.eib.org/en/videos/eib-unicredit-bank-virtual-signature-supporting-smes-and-improving-their-social-impact-in-serbia

Horizon 2020[203]

- Project period: 2014-2020
- Budget: 80 billion EUR across Europe, including Serbia
- Content: Support to promote research and development and innovation. ICT, agriculture and energy are the main sectors. Serbia is considered the most successful country in the Western Balkans in Horizon 2020 due to the breakthroughs in areas such as ICT, agricultural research, and scientific cooperation in the energy sector, as well as the country's efforts to support innovation, including the 4S.

ANTARES[204]

- Project period: 2017-2024
- Partner agency: Novisad University
- Budget: Unknown
- Content: The Biosense Center at Novisad University aims to evolve into a European Center of Excellence for advanced technologies in sustainable agriculture and food security. They are developing smart sensors and big data technologies that help farmers produce more food in a way that is sustainable to society, farmers' incomes and the environment.

3.2.4.4. West Balkan Enterprise Development and Innovation Facility Office (WBEDIF)

WBEDIF operates two types of funds for early-stage and expanding SMEs.

Enterprise Innovation Fund (ENIF) · Enterprise Expansion Fund (ENEF)[205]

- Project period: 2016 to present
- Budget: 202.6 million EUR (total investment in 1,199 SMEs)
- Content:

1) ENIF is investment in early-stage companies. It supports companies that provide software and project management tools for the specialty chemicals industry, as well as companies that provide a platform for publishing real estate information.
2) ENEF is an investment in a growing company. Support is provided for enterprises engaged in the manufacture and service of automotive parts and distribution, and enterprises engaged in the design, development and manufacture of POS materials.

3.2.4.5. GIZ Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ)

GIZ supports networking between SUs and related parties by organizing Startup Academy in Niš and Mini Startup Academies in Belgrade. It also provides training for the staff of the Chamber of Commerce and the Serbian Agency for Development (RAS), which support SUs.

Private sector development in disadvantaged regions in Serbia[206]

- Project period: 2017-2022
- Budget: Unknown
- Content: The project aims at improving the competitiveness and innovation of micro, small and medium-sized enterprises, including SUs, through public-private partnerships.

3.2.4.6. KfW (the German Reconstruction Finance Corporation)

The KfW is working on sustainable economic development and job creation in Serbia through financial sector support.

[203] EC (2020) Serbia. https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/serbia_en

[204] EC (2020) Serbia. https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/serbia_en

[205] WBEDIF (n.d.) Serbia. http://www.wbedif.eu/wbed if-in-your-country/serbia/

[206] GIZ (n.d.) Promoting the private sector in Serbia. Abailabe at https://www.giz.de/en/worldwide/53657.html

Training and Sustainable Growth for Decent Jobs[207]

- Project period: 2018-Currently being implemented
- Budget: Unknown
- Content: An initiative that targets innovative businesses in general (not just start-ups). It promotes innovation, fosters entrepreneurial mindset, and supports innovators' market-driven approach and commercialization. The duration is 50 months.

3.2.4.7. United States Agency for International Development（USAID)

USAID's main support programs are as follows. When it comes to the program specific to SU support, Serbia Innovates, which aims to create a supercluster from Serbia is playing a main role. At the interview, it was also mentioned that USAID is aiming to establish a new fund specializing in SU support within SERBIA INNOVATES, including amendments to the law.

Serbia Innovates[208]

- Project period: 2021-2025
- Partner agency: ICT hub
- Budget: 6,077,652 million USD
- Content: The project aims to develop the Serbian economy and increase its competitiveness and export potential by accelerating the development, implementation and scaling up of a new innovation-driven economic model. The project aims to create a supercluster, the first of its kind in Serbia.

Venture an Idea[209]

- Project period: 2021-2025
- Partner agency: DSI
- Budget: 4.26 million USD
- Content: The project targets not just SUs but also innovative businesses in general. It promotes innovation, fosters entrepreneurial mindset, and supports innovators' market-driven approach and commercialization. The duration is 50 months.

3.2.4.8. World Bank and IFC

Major programs of the World Bank's Private Sector Assistance are as follows. As for support specific to SUs, various acceleration programs for SUs are being implemented with the Innovation Fund. More details on the Innovation Fund are explained in 3.2.3.2. When interviewing, they mentioned that it was also possible to consider a study tour for entrepreneurs, including supporting Japanese companies to visit Serbia.

Serbia Accelerating Innovation and Growth Entrepreneurship Project[210]

- Project period: 2019-2024
- Partner agency: Science Fund, Innovation Fund
- Budget: US$48 million (Commitment amount by IBRD)
- Content: To improve the relevance of scientific research, foster entrepreneurship, and improve access to corporate finance, three components are being implemented.

1) Reform in the field of research and development through support for the Science Fund
   A) Funding for Science Fund programs

[207] KfW (n.d.) Serbia. https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/Local-presence/Europe/Serbia/

[208] USAID (2021) Serbia Inovates Prtoject. https://www.usaid.gov/documents/serbia-innovates-project

[209] USAID (2021) Venture an Idea Project. https://www.usaid.gov/documents/venture-idea-project

[210] World Bank (2021) Serbia Accelerating Innovation and Growth Entrepreneurship. https://projects.worldbank.org/en/projects-operations/project-detail/P170185

Serbia Accelerating Innovation and Growth Entrepreneurship Project[210]
B) Technical assistance to the Science Fund through governance, organizational structure, monitoring and evaluation, etc. C) Support for Science Fund program design. Specifically, this includes improving the skills of researchers to access international funding and opportunities for joint research. 2) Supporting corporate acceleration through the Innovation Fund program 3) Project implementation and monitoring

3.2.4.9. Japanese organizations (JETRO, local governments, etc.)

In the interview with JETRO, about 300 companies participated in the seminar on investment in Serbia hosted by JETRO in May 2021, and 120 of them responded that they wanted to invest. It seems that Japanese companies are increasingly interested in Serbia, but the inquiries about the IT field and SU were limited.

3.2.4.10. United Nations Development Program (UNDP)

UNDP supported the development of a platform called Open Data - Open Opportunities targeting the improvement of public services and economic growth. The number of data sets on the National Open Data Portal has increased significantly as a result of efforts to open public data, improve the knowledge and skills of government officials in data processing, establish a legal framework, and promote cooperation between the public and private sectors[211].

3.3. North Macedonia

Located in the southwestern part of the European Balkan Peninsula, North Macedonia is a small landlocked country with a land area of about 25,700 ㎢ and a population of 2.07 million (World Bank, 2021). Forests account for 37% of the country's total land area, and 80% of the country is covered by mountains and hills. Since its independence in 1991, the country has been promoting democratization and a market economy, and its current priority is to join the European Union. Accession negotiations had been postponed for a number of years due to the conflict with Greece regarding the name of the country, however, the Council of the EU approved the start of negotiations in March 2020.

In terms of domestic politics, since independence in 1991, the government has been a coalition of two major parties (VMRO-DPMNE and Social Democratic Union of Macedonia) with smaller parties such as Albanian parties. After the 2001 conflict between Macedonian and Albanian groups in the country, the country has been peacefully rebuilding itself as a multi-ethnic state based on the Ohrid Framework Agreement on Ethnic Reconciliation. Following the inauguration of the coalition cabinet in 2017, the country has maintained a relatively stable internal situation.

On the diplomatic front, after independence, the country had a conflict with Greece concerning the name "Republic of Macedonia," which was established in the constitution. Greece opposed the use of the country's name because Macedonia is an ancient Greek name and the use of the name indicates territorial ambitions for the Macedonian region in northern Greece. Later, in June 2018, the two countries signed the Prespa Agreement to change the country's name to the Republic of North Macedonia, and in February 2019, the UN was notified and accepted the name change thus settling the issue of the country's name to North Macedonia. Following this, NATO member states formally approved the country's accession to NATO.

In terms of ethnicity, Slavic Macedonians account for 60% of the population, Albanians, who entered the country in large numbers during the Kosovo War, account for 20%, and there are other ethnic minorities such as Serbs and Roma. The religious composition is 70% Christianity

[211] OECD et al. （2019） SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris, https://doi.org/10.1787/g2g9fa9a-en

(Macedonian Orthodoxy) and 30% Islam, which makes Macedonia one of the most Muslim countries in Europe. The official language is Macedonian, and from 2019 Albanian is a semi-official language[212].

Looking at the economy, although the economic growth rate dropped to -6.1% (World Bank) in 2020 due to the impact of COVID-19, the economy has maintained positive growth in the 2-3% range since 2013 except for 2017 and 2020 under the government's policy to attract FDI. After achieving a growth rate of 4% in 2021 on the back of a recovery in domestic and external demand, the growth rate is expected to fall to 2.7% in 2022 due to Ukrainian affairs (World Bank). Trade agreements include the European Free Trade Association (EFTA), which includes Iceland, Switzerland, Norway, and Liechtenstein; the Central European Free Trade Agreement (CEFTA), which covers Central and Eastern Europe, including the Western Balkans; and free trade agreements with Turkey and Ukraine. The country is seen by some as a gateway to a market of more than 650 million people[213]. The main industries are agriculture, mining, textiles, and ICT. The ICT sector, in particular, has seen an increase in the number of foreign companies entering the country and outsourcing their operations in recent years, backed by measures to attract FDI, including a simple, low and reduced income and corporate tax rate of 10%, a stable macroeconomy, and low-wage labor with technological capabilities.

3.3.1. Current status of startups and ecosystem

3.3.1.1. Definition of startup

The legal definition of SU in North Macedonia is outlined below in the Law on Innovation Activities enacted in 2013.

> "Newly established micro, small and medium trade company startup is founded by one or more individuals and from the time of its establishment until the moment of applying for funding from the budget of the Republic of Macedonia has not passed more than 6 years."[214]

On the other hand, according to Startup Macedonia, which comprehensively supports the growth of the SU ecosystem in the country and functions as a hub organization comprising government agencies, donors, investors and other ecosystem stakeholders, SU is defined as follows. In addition to the legal definition of a company within six years of starting a business, the innovativeness of a company's technologies and the possibilities for business expansion are additional factors.

> "Startup is a newly established company with significant growth potential and scalable business model by developing product process or service."[215]

The legal definition of a country's enterprise is defined in Article 470 of the Trade Companies Act (Law on Trade Companies) of 2004, which defines the criteria for classifying commercial

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[212] Ministry of Economy, Trade and Industry (2019), Report on the International Economic Research Project for the Establishment of an Integrated Economic Growth Strategy for Japan and the World in Fiscal Year 2018 (Survey on Potential Demand in the Western Balkan Region)

[213] JETRO website, https://www.google.co.jp/url?esrc=s&q=&rct=j&sa=U&url=https://www.jetro.go.jp/biz/areareports/2019/84f2e0f4eff7b61e.html&ved=2ahUKEwiyw-jNs5f1AhUHH3AKHSrVChkQFnoECAUQAg&usg=AOvVaw3_Gw-ISCaTB6VERetN0bKn

[214] Ivana Sabo (January 2021), North Macedonia startup ecosystem mini-series, Swiss EP, https://swissepwesternbalkans.blog/2021/01/18/north-macedonia-startup-ecosystem-mini-series/

[215] Startup Macedonia (June 2018), Ecosystem Performance Research: Connecting the Macedonian Startup Ecosystem

enterprises into micro, small, and medium. It should be noted that these definitions are not consistent with the EU standards except for the number of employees, as shown in Figure below. As the SU ecosystem evolves, interviews with government agencies indicate the need to distinguish between SU and small and medium-sized enterprises (SME). They also point out the need to incorporate and reconsider factors such as technological innovation and the potential for business expansion.

Figure78 Definition of SMEs

Company size	EU standards	North Macedonia standards
Micro	■ Less than 10 employees ■ Annual revenue or total amount on balance sheet is less than €2 million	■ Less than 10 employees ■ Gross annual income of €50,000 or less
Small scale	■ Less than 50 employees ■ Annual revenue or total amount on balance sheet is less than €10 million	■ Less than 50 employees ■ turnover and/or balance sheet is €2 million or less
Medium-sized	■ Less than 250 employees ■ Annual sales of €50 million or less ■ Total balance sheet is less than €43 million	■ Less than 250 employees ■ Annual income of €10 million or less ■ Average total assets €11 million or less

Source: OECD/ETF/EU/EBRD, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe

3.3.1.2. Related measures for startups and ecosystems

1) SU-related measures

In North Macedonia, policies on SU and ecosystem have been formulated including "Strategy on Innovation 2012-2020" (2012), "Law on Innovation Activities" (2013), "National Small and Medium Enterprise Strategy 2018-2023" (2018), and "Strategy for Women Entrepreneurship Development 2019-2023" (2018) and so on. The outline of each measure is as follows.

<Strategy on Innovation 2012-2020[216]>

"Strategy on Innovation 2012-2020" formulated in 2012 by the Government of North Macedonia with the support of the OECD is a strategy that contributes to private sector development from the perspective of innovation. In particular, emphasis is placed on human resources development to foster innovation, and specific activities for this purpose are stipulated as follows. However, revisions after 2020 are not considered to have been implemented.

- Application of education policies that contribute to the improvement of the skills required for innovation
- Educational support for capable students and support for educators who train excellent students
- Improvement of the quality of vocational training and promotion of lifelong learning
- Supporting university education with an emphasis on innovation

<Law on Innovation Activities[217]>

[216] JICA (June 2012), Report on Information Gathering and Verification Study on Development of the National Sector of the Former Yugoslav Republic of Macedonia

[217] Jasmina Popovska (March 2017), Financial Support Instruments for Innovation – The case of Macedonia – Fund for Innovations and Technology Development

The Government of North Macedonia formulated “Law on Innovation Activity” in 2013 and established the Fund for Innovation and Technology Development (FITD), a government-affiliated fund for small and medium-sized enterprises including SUs. In order to realize dynamic technology development based on knowledge transfer, the fund aims to encourage and support innovation activities by SMEs, thereby contributing to job creation and economic growth and development.

<National Small and Medium Enterprise Strategy 2018-2023[218]>
“National Small and Medium Enterprise Strategy 2018-2023" formulated in 2018 aims to strengthen the country's comprehensive economic growth and create productive and sustainable employment. The basic goal is to enhance corporate competitiveness by establishing partnerships between the public sector, the private sector, and civil society, and by supporting the development of SMEs and promoting innovation. The Strategy sets out three major pillars to achieve the goals, the third of which relates to the development of the SU ecosystem.

- First pillar: creating a favorable business environment for entrepreneurship and investment
- Second pillar: Increasing and improving growth opportunities for SMEs to promote greater productivity and competitiveness and globalization into Europe and other overseas markets
- Third Pillar: Developing a Dynamic Ecosystem for Entrepreneurship and Innovation

The expected outcomes, specific actions and competent authorities related to the third pillar are as follows:

Figure 79 SU Ecosystem Support Measures in "National Small and Medium Enterprise Strategy 2018-2023"

Expected results	Concrete activities	Competent authority
The skills required for entrepreneurship are incorporated into all levels of education and training	1. Expand entrepreneurial education programs, including social entrepreneurship education, in schools, gyms, and vocational training 2. Establish new partnerships and initiatives among governments, education and research institutions, and industry, and continue to support existing partnerships and initiatives 3. Improving entrepreneurship training for women entrepreneurs through the development of training modules that can be used in various training settings 4. Strengthen systems of vocational and higher education to address challenges facing both industry and research and development institutions	Ministry of Economy
Promoting SME growth through technology transfer and increased	1. Promote networks between academia and other actors, including private companies and financial institutions 2. Develop initiatives to assess the extent to which SMEs are aware of and using the Fund and	Ministry of Economy

[218] Republic of Macedonia Ministry of Economy (March 2018), National Small and Medium Enterprise Strategy (2018-2023)

innovation	address factors that hinder its use, in order to expand FITD and broaden the scope of SME users 3. Commission research on international venture and investment funds 4. Explore options for expanding business angel networks 5. Strengthen and promote partnerships between academia and the private sector, including not only direct funding for R&D and innovation, but also the use of financial instruments such as innovation vouchers	
Achieve a higher level of innovation through the establishment of science and technology parks and incubation facilities	1. Commissioning feasibility studies and identifying the best ways to operate the costs and benefits associated with the establishment of at least two science and technology parks in collaboration with universities and technology institutions 2. Delegate feasibility studies on the costs and benefits associated with establishing at least five incubators or accelerators and SU centers at the municipal and regional levels	Ministry of Economy

According to a report by the OECD and others, the core of the SME policy-making and coordination function is the Department for Entrepreneurship and Competitiveness of the Ministry of Economy. However, the Agency for the Promotion of Entrepreneurship (APPRM) is responsible for the implementation of the policy. Since the Agency suffers from chronic budget shortages, it is forced to rely on external donor funding for the implementation of planned SME-related projects.[219]

<Strategy for Women Entrepreneurship Development 2019-2023[220]>

In 2018, the Ministry of Economy formulated "Strategy for Women Entrepreneurship Development 2019-2023", which is expected to promote gender-sensitive policy formulation in the context of the SU[221]. According to the Market Assessment Report on the SU Ecosystem in the country, this strategy is based on a survey of 1,024 women conducted in 2016 by the Association for Business Women, which aims to reduce the challenges faced by women entrepreneurs in North Macedonia. Specifically, the main reasons for women starting businesses in the country are economic independence and securing employment outside public institutions, and the main problems faced when starting a business are access to funds and related information, improvement of business skills, and securing a work-life balance. Therefore, the Strategy proposes four strategic priorities for reducing the barriers faced by women entrepreneurs over the medium term. These are 1) the development of a business environment (policies and regulations) that makes it easier for women to start up in business, 2) the establishment of a support system necessary for

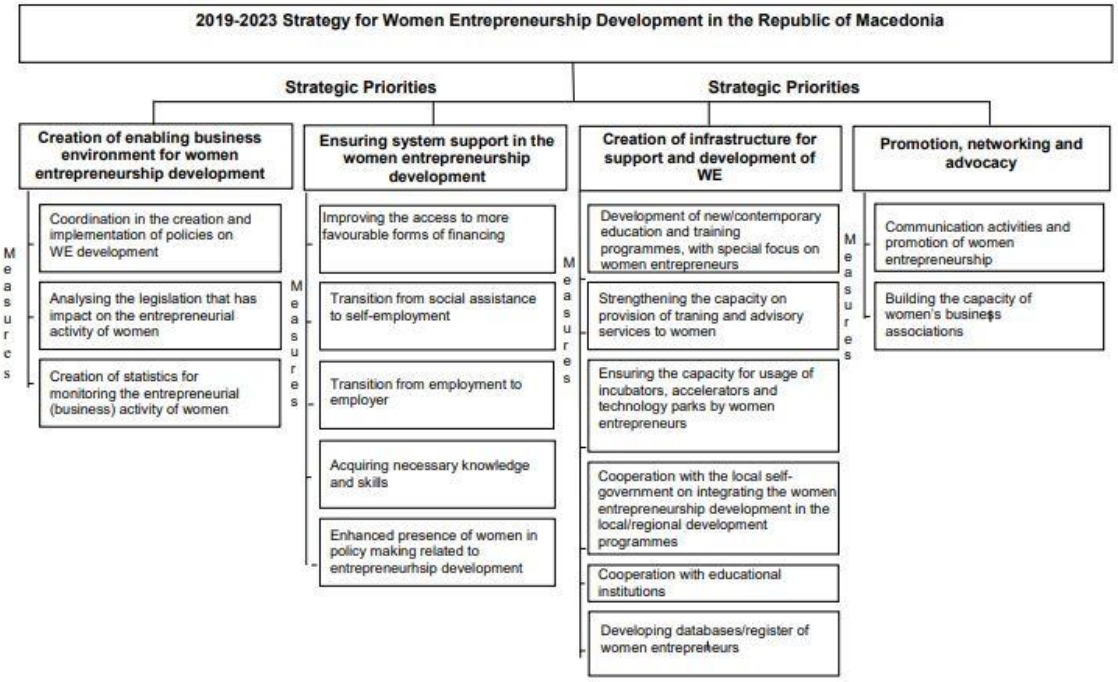
[219] OECD/ETF/EU/EBRD, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en.

[220] Ministry of Economy of the Republic of Macedonia (October 2018), Strategy for Women Entrepreneurship Development in the Republic of Macedonia, 2019-2023

[221] Makedonka Dimitrova (2020), Entrepreneurship Ecosystem in North Macedonia Market Assessment, https://socijalendijalog.mk/wp-content/uploads/2020/09/FINAL-PRINT-Report-SIYB-Market-assessment.pdf

the development of women entrepreneurs, 3) the development of infrastructure to support women entrepreneurs, and 4) networking and public relations.

Figure 80 Strategic Priorities and Action Plans
in "Strategy for Women Entrepreneurship Development 2019-2023"



2) Current status of SU

<Number of SUs and stage of growth>

According to CrunchBase, an information database of SUs, 52 SUs established and headquartered in North Macedonia since 2010 were confirmed as of June 2021 (acquisition: 0 companies; IPO: 0 companies). According to a survey of support agencies, however, it is difficult to grasp the overall number of companies due to ambiguity in the definition of SU in the country. Therefore, the number of companies is estimated to be around 300 according to the definition of Startup Macedonia, for example.

According to the Startup Macedonia report (2021) [222] on the growth phase of SUs in the country, the number of SUs in the early phase increased in 2021 compared to the seed phase of SUs in the conception phase of business ideas in 2018. In addition, some SUs are moving into the middle stage, the stage of developing products with a focus on market needs. On the other hand, there are reportedly obstacles to private financing, including VCs, in order to move to a later stage where profitability is expected. The majority of SUs are concentrated in the capital of Scopje, which is home to many SU support agencies and technical colleges. The second largest are Bitola and Oflid, which are located in the southwestern part of the country.

The majority of SUs are concentrated in the capital of Scopje, which is home to many SU support agencies and technical colleges. The second largest are Bitola and Oflid, which are located in the southwestern part of the country.

<Expected revenue>

Based on data from CrunchBase, most of the 52 SU companies identified in the database were privately held SUs, but 27% (14 out of 52) of them had annual sales of less than $1 million, while

[222] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

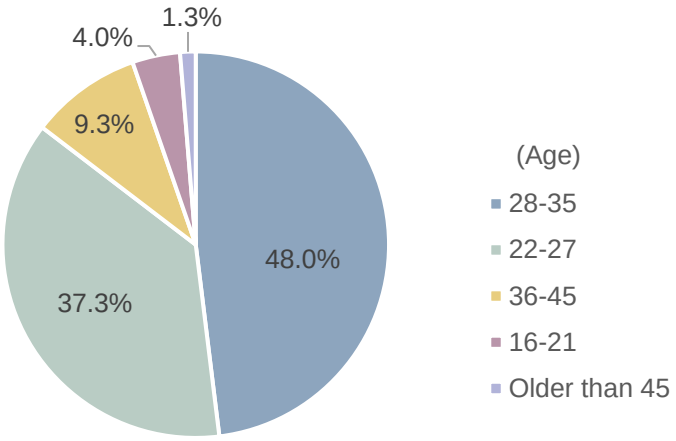
the remaining 27% (14 out of 52) had annual sales of $1 million to $10 million. Profits of individual SU companies were not available because they were not disclosed.

According to a Startup Macedonia survey[223], sluggish sales are thought to be the biggest factor hindering SU growth. According to the interviews with several SU companies, expansion of sales channels outside North Macedonia is a particularly important issue. As the domestic market is small, targeting overseas markets is necessary for business expansion, but this is difficult due to various factors. Specifically, the lack of expertise and personnel in overseas markets and the limited opportunities for matching with private investors make it impossible to develop products, technologies and services that can overcome international competition, and the bureaucratic complexity of the procedures due to the lack of EU membership are other obstacles pointed out.

<Company size>
Regarding the company size (number of employees) of the 52 SU companies obtained from CrunchBase, half of the total number of SU enterprises (27 out of 52) are founded. It can be seen that 90% of all SU companies (47 out of 52 companies) have 50 or fewer employees.

<Breakdown of entrepreneurs[224]>
The majority of SU founders and employees have many university graduates or people with several years (or more) of work experience, and are not just examples of SUs as a student. Indeed, in the Startup Macedonia study, about half of SUs consist of members aged 28 to 35.

Figure 81 Average age of SU team

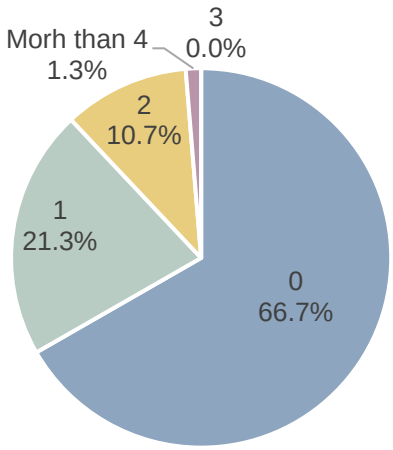


Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

The male-female ratio shows that the ratio of female entrepreneurs is around 1/4 in Europe as a whole. However, in North Macedonia, 1/3 of SU enterprises are operated by female entrepreneurs and maintain a relatively high ratio. Compared to other Balkan countries, women are more aware of gender equality in interviews with entrepreneurs, and overseas donor support targeting women entrepreneurs is included in the interviews. This suggests that women are more likely to take on the challenge of new businesses.

[223] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021
[224] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

Figure 82 Percentage of Female Entrepreneurs



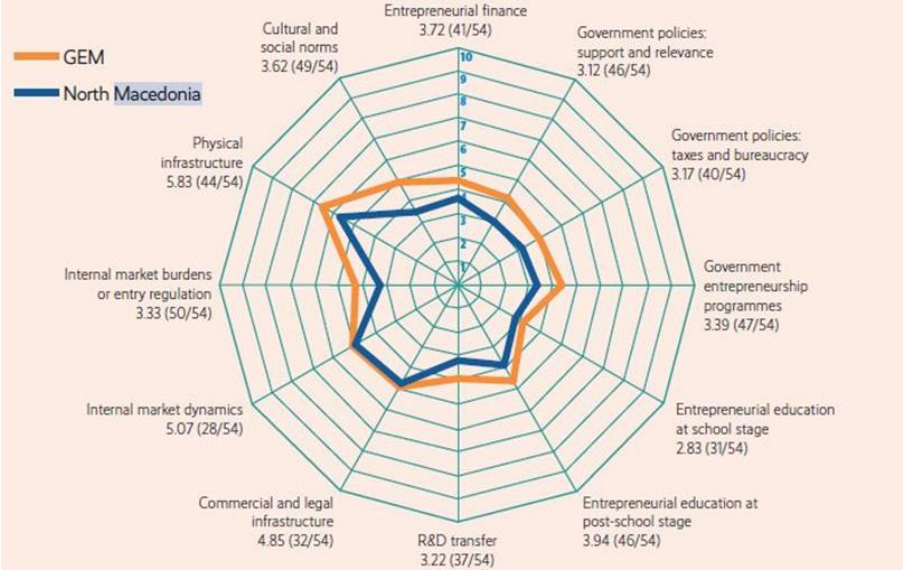
Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

3) Major challenges facing SU companies

According to the results of the environmental assessment[225] of SUs conducted by Global Entrepreneurship Monitor (GEM), the items with the lowest scores in North Macedonia are government support policies, taxation, access to funds for SUs, and entrepreneurship development in compulsory education. In other words, these are the main obstacles to the start and continuation of business of SUs in the country, and they need to be improved. Specifically, with regard to government support, it is said that there is insufficient system to support SUs at the local administrative level. With regard to access to funds, while funding from financial institutions improved in 2019 as the main interest rate of state-owned banks was lowered, the revision of the Personal Income Tax Law abolished the flat tax rate and introduced a progressive taxation system, and it is analyzed that the SUs are working against them. It is also an issue that private investment such as VCs is extremely limited. Furthermore, it has been pointed out that the basic skills needed by entrepreneurs, such as creativity and autonomy, are not sufficiently developed in primary and secondary education.

[225] GEM (February 2020), Global Entrepreneuiship Monitor 2019/2020 Global Report

Figure 83 The Challenges Surrounding SU and Scores in North Macedonia



Source: GEM, Global Entrepreneurship Monitor 2019/2020 Global Report

In addition to the above, the following table summarizes the major issues of SUs pointed out in the public informations and various hearings. In the field of human resources, which is the foundation for SUs, there is an urgent need to take measures to prevent brain drain, especially in the ICT sector. In addition, support measures are needed to attract private investment, including venture capital, from the middle to the later stage, and to expand access to overseas markets where demand is expected.

	Major Challenges
Human resources	■ Particularly in the ICT sector, while competent IT personnel are being trained, they are flowing out of their heads in search of a higher wage employment environment. ■ It is necessary to target the international market, but there is a shortage of experts.
Business environment	■ Bureaucratic procedures are cumbersome, especially when targeting the European market because it is not a member of the EU. ■ Online payment services such as PayPal and Stripe are underdeveloped, and financing methods are limited.
Fund procurement	■ Since its founding, there has been insufficient financing and support services for SUs, especially SUs, which have reached the late stage, to enable them to grow as global businesses. ■ Foreign VCs and investors tend to view large investments as risks, recognizing the country's weak legal system and legal procedures.
Market access	■ Consumption demand in Japan alone is small and limited. For this reason, the expansion of production and services requires access to global markets, including the European and U.S. markets in particular. However, the EU has not yet joined, and the international competitiveness of products and services is lacking, and so on, that the expansion of new customers and markets has not progressed.

Source: Based on various data and interviews[226]

3.3.1.3. Overview of the ecosystem

The SU ecosystem in North Macedonia is now considered the earliest stage of development. Therefore, there is a current need to create an environment to foster SUs with innovative technologies and to develop entrepreneurial communities. With a limited population of about 2 million people and a small market, it is not easy for domestic investors, accelerators, incubators, and other support organizations to maintain sustainability as an organization without additional donor support, and this is a major challenge.

FITD, a government-affiliated fund, is the central agency responsible for implementing the government's SU development strategy in North Macedonia. FITD works with regional development banks such as the World Bank and the European Bank for Reconstruction and Development (EBRD) to provide financial assistance specifically for innovation and SU support. By inviting proposals from companies on a regular basis, FITD provides grants to SUs in North Macedonia as an alternative to equity, making it the largest public investor in the country.

There are five typical accelerators and incubators in the SU ecosystem, and they support the growth of the SU ecosystem from the seed stage, which is the concept stage, to the middle stage, where products and technologies are developed to meet market needs. They also provide technical guidance to Tech SU entrepreneurs and improve their business development skills. However, in order to continue support projects for SUs, the number of SUs is insufficient as a whole, and the country is faced with the challenge of relying on FITD and foreign donors for additional financial support. According to a survey of supporting organizations, the current number of SUs is limited, and competition among existing accelerators may arise for the limited number of SUs with high potential. This suggests that SU firms may have increased access to funding and technical assistance, but that support organizations may need to improve their services and acquire operating funds on a permanent basis.

Figure 84 Overview of the North Macedonian Ecosystem

Source: Developed by survey team based on the website of each institution

[226] Nina Nikolich (May 2020), Startup Blink, Country Guide Macedonia: Startup Ecosystem Summary, Startup Universal, https://startupuniversal.com/country/macedonia/; p135, Startup Ecosystem Rankings 2020, https://report.startupblink.com/; Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

<Market>
In the World Bank's Doing Business ranking[227], North Macedonia is ranked 17th in the world (out of 190 countries) and is highly regarded. As noted earlier, entrepreneurs in North Macedonia are faced with a number of challenges before they can start SUs domestically, but it is pointed out that the regulatory environment is relatively well established when foreign companies operate their businesses in the country. For example, they are highly regarded for their ease of cross-border trading and for their protection of investors. It is worth noting that North Macedonia has the highest reputation in the Balkan region in terms of ease of business and is rated better than other EU countries, such as Estonia (18th), Finland (20th) and Germany (22nd).

Although the scale of the market is small, the productive-age population (2020) is above the EU average, and the average annual income (2019) is considerably lower than the EU average. This suggests that the market has growth potential, and an attractive environment for enterprises and investment destinations. The February 2019 change in the name of the country has led to an improvement in Japan's external relations with neighboring countries in particular, which has led to political and economic stability and revitalization. This could have a positive impact on foreign investment as well.

Figure 85 Macroeconomic Indicators

	Real GDP growth rate 2020	Productive population (Age 15-64) 2020	Average annual income 2019
North Macedonia	-6.1%	69%	2,727 euros
EU Average	-5.9%	64%	17,858 euros

Source: World Development Indicators, Eurostat.

In order to promote foreign investment, preferential taxation measures are relatively well established, which is an advantage for businesses in North Macedonia. Specifically, a system has been established to actively promote FDI investment, including the introduction of a flat tax system with a corporate tax of 10% across the board, the reduction of profit taxes when reinvesting profits into tangible assets (real estate, facilities, machinery, etc.) and intangible assets (software, patents, etc.), real estate sales taxes of 2-4% and fixed property taxes of 0.1-0.2%, low prices, and VAT of 18% (23% for some products) compared to Eastern European countries.[228]

With regard to trade and trade relations with the EU and the Balkan countries, FTAs have been concluded since the early 2000s, and efforts have been made to promote trade through the elimination of tariffs on industrial products and agricultural and fishery products. On the other hand, although expressways connecting EU cities are in place, it takes a day or two to access major cities, and the convenience of product distribution has been pointed out.[229]

3.3.1.4. Educational environment (universities, research institutes, etc.), government initiatives

In North Macedonia, there are 135 higher education institutions nationwide (2017-2018 data), 75 of which are public schools (55%) and 60 are private schools (45%). According to a survey conducted by Ss. Cyril and Methodius University, out of the 135 institutions of higher education,

[227] World Bank Group, Ease of Doing Business rankings

[228] Ministry of Economy, Trade and Industry (METI), Japan (2019), Report on the International Economic Research Project for the Construction of an Integrated Domestic and International Economic Growth Strategy (Survey of Potential Demand, etc. in the Western Balkan Region)

[229] Elena Dimoska (August 2020), Spotlight on N. Macedonia: 10% income tax, high business ease and in the heart of the Balkans, EU-Startups, , https://www.eu-startups.com/2020/08/how-to-do-business-in-north-macedonia/

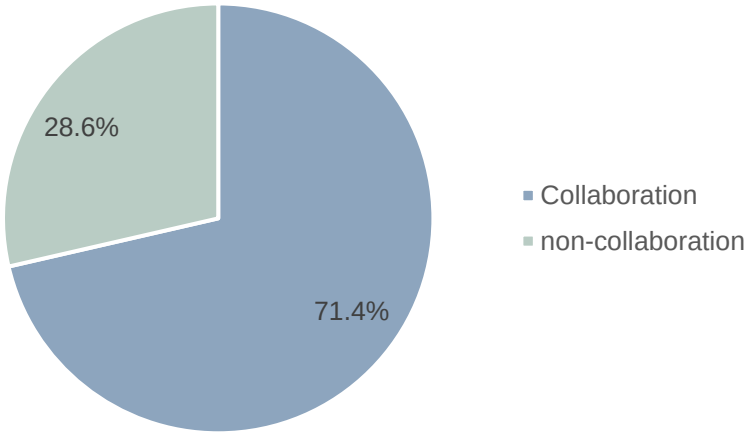
56 (41%) provide classes that incorporate entrepreneurial education into their curricula, and public schools account for about 70% of these. Rather than having entrepreneurial education independent of the faculty, courses are often offered as part of the faculty's classroom in social sciences, biosciences, and technical sciences. Specific courses include management, marketing techniques, legal procedures related to starting a business, management including personnel management, financing, and communication and IT skills [230]. In particular, the following universities focus on technological development and entrepreneurial development.

- Ss. Cyril and Methodius University (Skopje)
- Goce Delchev University (Stip)
- South East European University (Skopje)

Source: Nina Nikolich, "Country Guide Macedonia: Startup Ecosystem Summary,"

In recent years, universities and research institutes have been working to foster entrepreneurs in collaboration with support agencies such as incubators and accelerators, according to a Startup Macedonia survey report[231]. On the other hand, in the interviews with the FITD, it was pointed out that the number of young people seeking to start a business was not large in the first place, and that educational improvements were needed to make SUs more attractive.

Figure 86 Collaboration between Universities and Research Laboratories, etc. and Support Organizations



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

In "National Small and Medium Enterprise Strategy 2018-2023[232]", the government of North Macedonia set out specific support measures for the development of the SU ecosystem. In particular, efforts are being made to 1) promote entrepreneurship in educational institutions, 2) promote technology development and transfer by strengthening collaboration between academic

[230] Katerina Shapkova Kocevska (October 2019), "ENTREPRENEURSHIP EDUCATION IN THE HIGHER EDUCATION SYSTEM IN REPUBLIC OF NORTH MACEDONIA," Balkans Journal of Emerging Trends in Social Sciences, Vol.2, No.210-220

[231] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

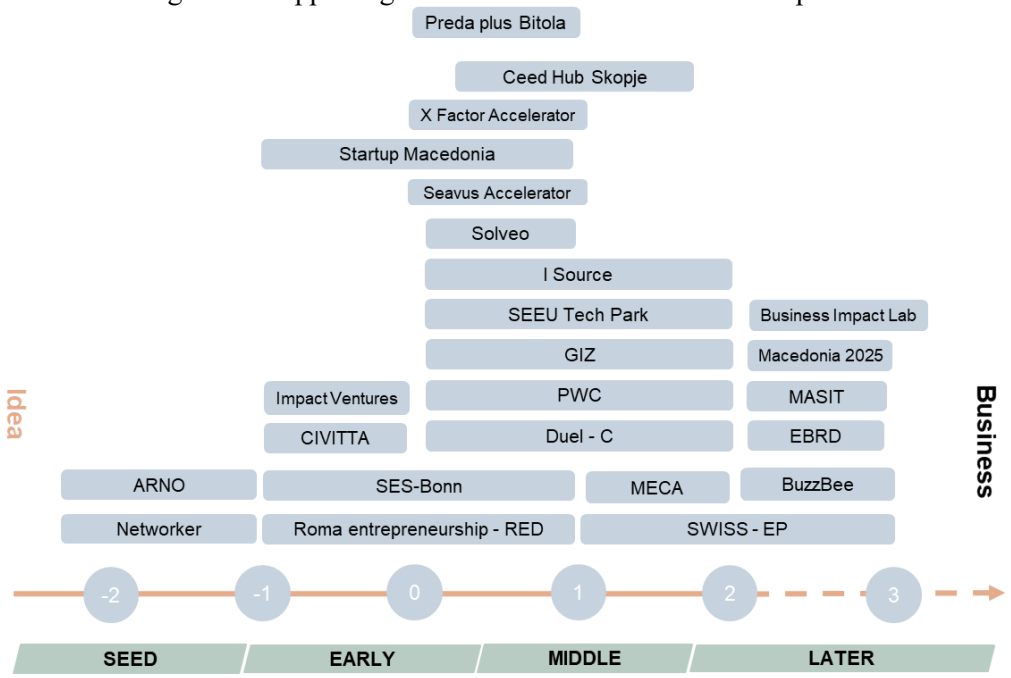
[232] Republic of Macedonia Ministry of Economy (March 2018), National Small and Medium Enterprise Strategy (2018-2023)

institutions and private companies, and 3) increase the number of incubation support institutions. However, according to a report by the OECD and others[233], the Agency for the Promotion of Entrepreneurship (APPRM), which is the main implementing body of the above-mentioned strategy, has fallen into a chronic budget shortage, and therefore, it is inevitable to rely on external donor support for the implementation of planned SME-related projects. Therefore, continuous budgetary allocations are necessary for the implementation of the strategy.

3.3.1.5. Incubators and accelerators[234]

The figure below shows the distribution of support organizations such as incubators and accelerators in North Macedonia by growth phase of SU companies. Supporting agencies have an important role to play in providing SU companies with the necessary business training and networks with investors.

Figure 87 Supporting Institutions Available to SU Enterprises



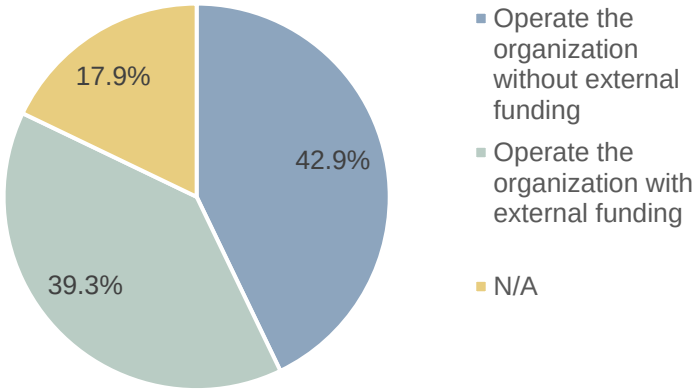
Source: Developed by the survey team based on Startup Macedonia, "Connecting Macedonian Startup Ecosystem 2021."

However, although there are many support agencies that generate some sort of sales, they often rely on external funds and subsidies to run their business. Thus, sustained management as an organization is a challenge. In fact, about 40% of the Startup Macedonia respondents to a survey of aid agencies said that without external funding it would be difficult to continue with the organization's operations.

[233] OECD/ETF/EU/EBRD, OECD Publishing, Paris, SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index

[234] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021 https://startupmacedonia.mk/resources_documents/ECOSYSTEMREPORT2021.pdf

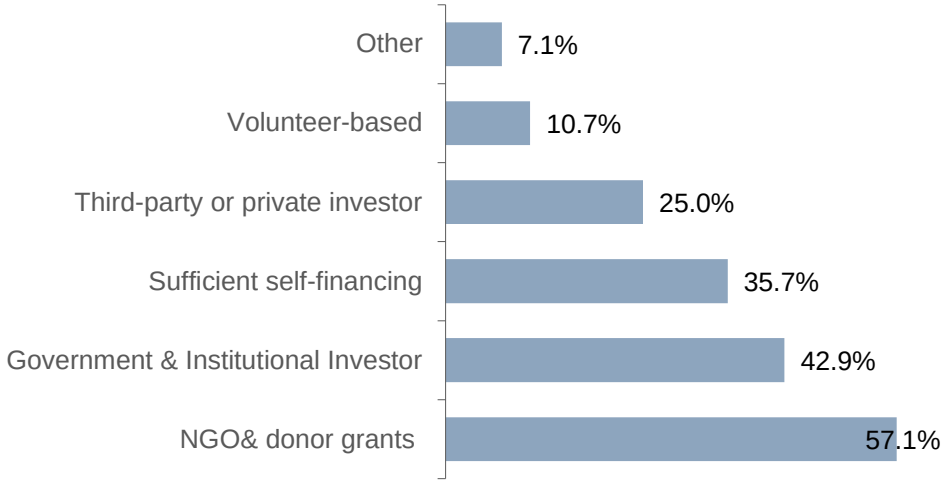
Figure 88 Effects of External Funds on the Organizational Management of Support Organizations



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

Currently, the external sources of funding are mostly aid funds from NGOs and donors, and funds from FITD and investment institutions. In addition, in the case of North Macedonia, there are more support agencies than the number of SU companies, and it is pointed out that there is a possibility of competition among support agencies for potential SU companies.. Of the accelerators, Seavus Accelerator mainly supports tech SUs, while X Factor Accelerator mainly supports impact-generating SUs and SUs rooted in more traditional businesses. Thus, the support organizations have a certain degree of segregation so that they do not suffer damage.

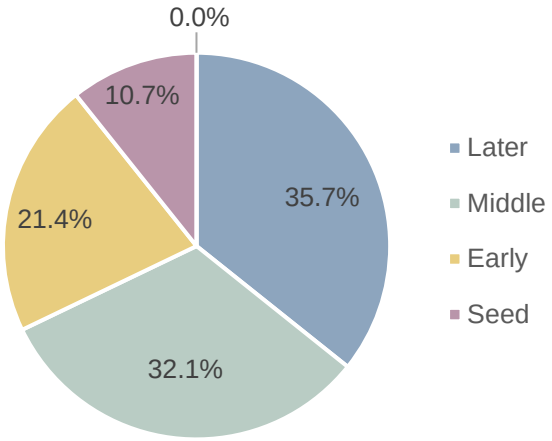
Figure 89 Methods of Financing by Support Organizations



Source: Prepared by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

As shown in the table below, support agencies such as incubators and accelerators are more focused on supporting SU enterprises in the middle and late stages than enterprises in the seed and early stages.

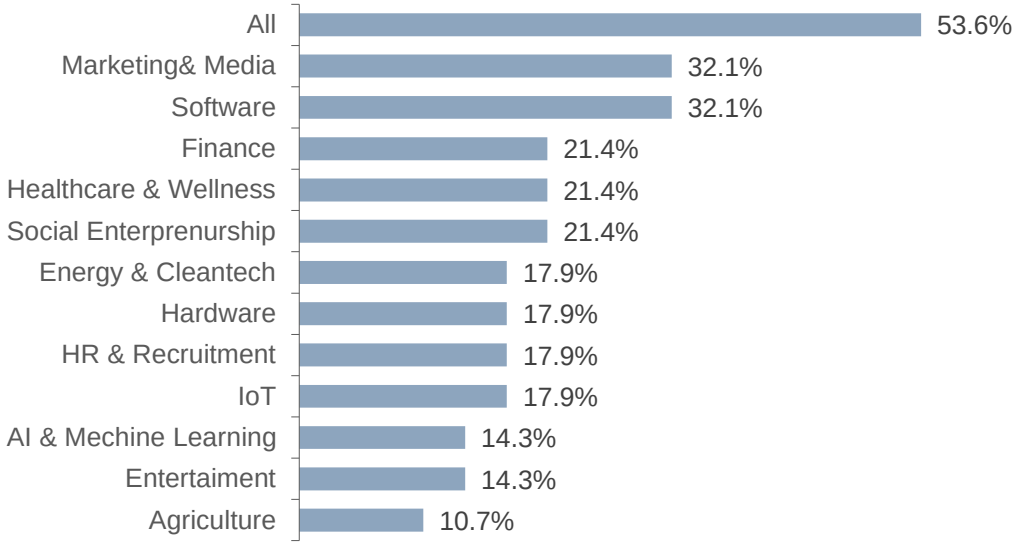
Figure 90 Growth stage of SU enterprises attracting attention from support organizations



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

In addition, the SU sector, which is the focus of support agencies, tends to focus on marketing, media, and software-related SUs, while providing support universally.

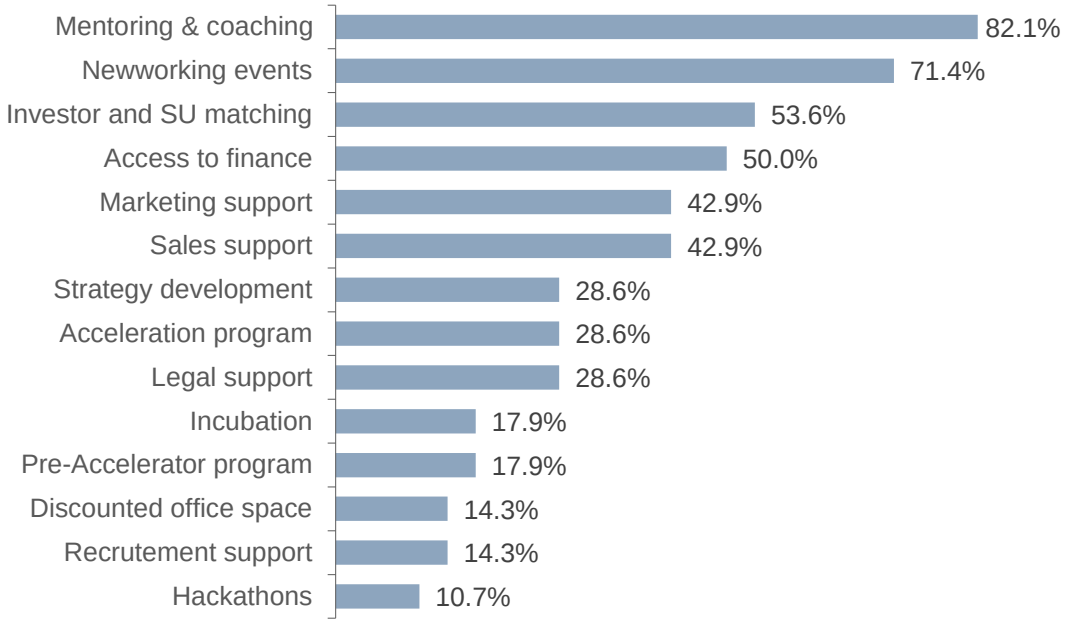
Figure 91 SU Sector Focused by Support Organizations



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

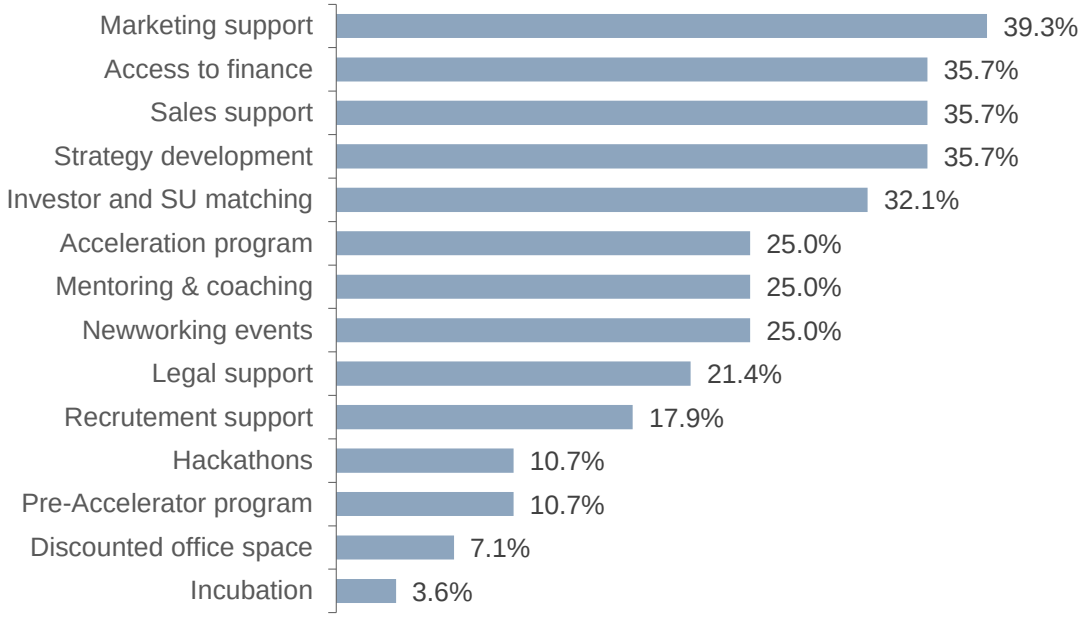
Many support organizations provide assistance, mainly mentoring, coaching, and networking events, if it is free. The overall shift in the SU ecosystem in North Macedonia from the middle to the latter is designed to facilitate access to financing and to improve business marketing and sales skills. In addition, when providing assistance with a loan, marketing support is most often provided.

Figure 92 Details of Grant Aid by Support Organizations



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

Figure 93 Details of Loan Aid by Support Organizations



Source: Developed by the survey team based on Startup Macedonia, "Connecting Macedonian Startup Ecosystem 2021."

Startup Macedonia is also an important supportive organization for the development of the SU ecosystem. This organization, a non-profit organization, serves as a bridge between SUs in the capital and local areas, the government of North Macedonia (including FITD), foreign

investors and donors, and accelerators and incubators[235]. Its main function is to act as a network provider and facilitator, and to provide education and mentoring to entrepreneurs. Networks are very broad and include stakeholders within key ecosystems such as USAID, SwissEP, and FITD. Furthermore, in order to promote the growth of ecosystems, MOFA conducts questionnaire surveys and interviews with SUs and other support organizations to analyze the current situation, identify issues, and disclose the results of these surveys on its website. With a broad network of SUs, Startup Macedonia may be the first contact point for foreign donors and investors interested in investing in and supporting SUs in North Macedonia.

3.3.1.6. Networking opportunity

In North Macedonia, co-workspaces are developing in rural areas, particularly in the capital of Skopje, where entrepreneurs can engage in informal networking. The main co-workspaces are as follows.

- Coffee Skopje (Skopje)
- Cowork Gostivar (Gostivar)
- Coworking Ohrid (Ohrid)
- MK startups Space (Skopje)
- Public Room Skopje (Skopje)

Source: Nina Nikolich, Country Guide Macedonia: Startup Ecosystem Summary

In addition, for the purpose of networking and introducing businesses to entrepreneurs and Tech-affiliated SUs, informal but regular events are held, and large-scale events are held in Skopje, the capital city, targeting overseas participants.

For example, the Global Entrepreneurship Week North Macedonia, held every November for a week, brings together entrepreneurs and university researchers who have launched SUs. It has become an event that can appeal to investors through large-scale contests and networking events in anticipation of commercialization and expansion.

(Domestic only)
- Funky Coworking (Scopje)
- InTech Meetup (Scopje)
- Network UP (Scopje)
- Startup Grand Skopje (Scopje
- Startup Weekend Skopje (Scopje)
- Womenpreneurs Stories (Scopje)

(Including Overseas)
- Global Entrepreneurship Week North Macedonia (Scopje)

Source: Nina Nikolich, Country Guide Macedonia: Startup Ecosystem Summary,

According to interviews with FITD, which is a public organization, is actively involved in the planning and operation of events aimed at networking these SU companies, and plays a leading role not only in providing financial support but also in launching various activities.

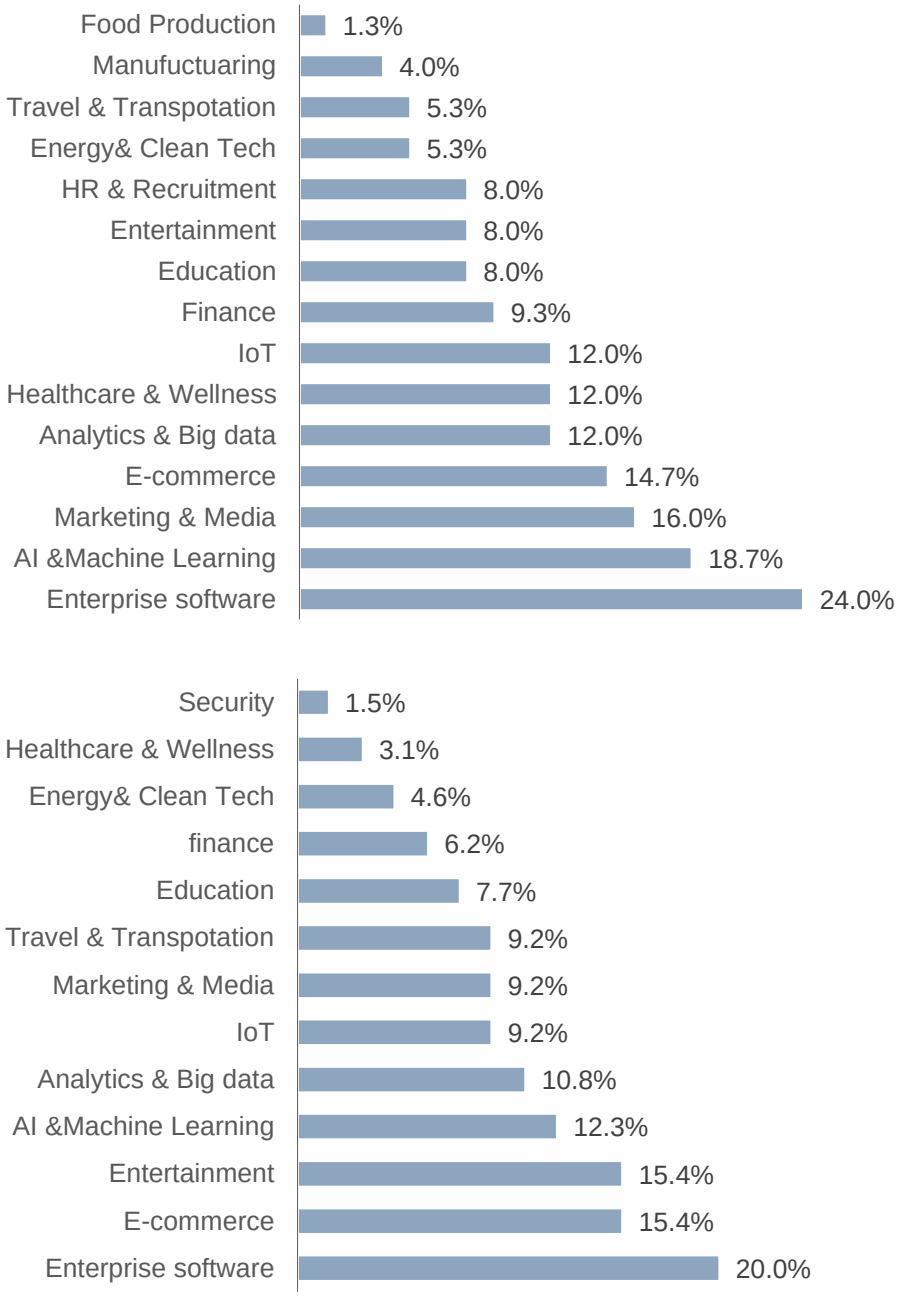
[235] The organization also supports the creation of a National Startup Comitty in 2021, which serves as a coordinating body for government and the private sector and is composed of public and private ecosystem stakeholders.

3.3.2. Challenges for start-up companies and the industrial sector

According to a 2021 survey report[236] compiled by Startup Macedonia, SU's share of each industry sector is shown in the following figure. ICT-related sectors, including software development, account for a very high proportion of the total at about 80% in 2021. This is probably due to the impact of the new coronavirus infection compared to the 2016 survey, but the rapid growth (from 3.1% to 12.0%) in health care-related SU companies can be seen.

[236] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021
(NOTE)This survey is based on interviews with more than 80 SU companies operating in North Macedonia and support agencies, including 28 investors.

Figure 94 The share of SU enterprises in North Macedonia by industry (top: 2021; bottom: 2016)



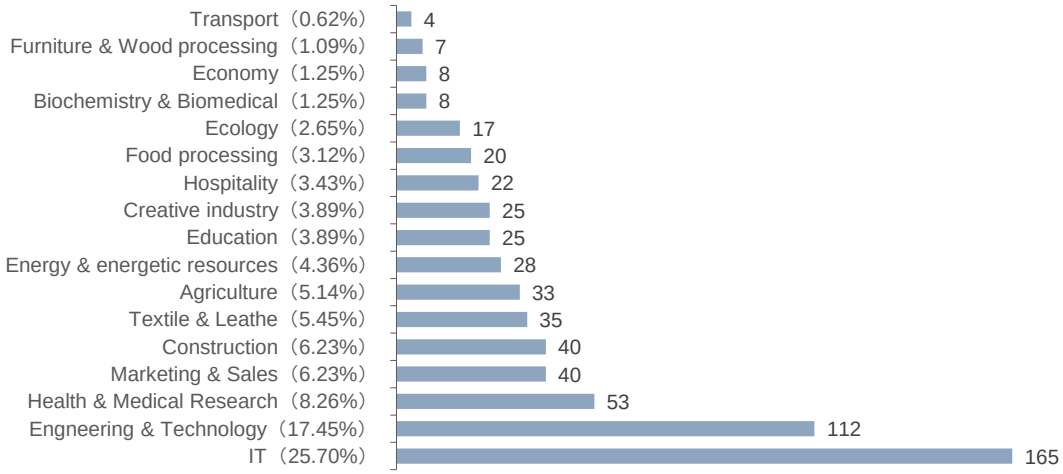
Source: Prepared by the survey team based on "Connecting Macedonian Startup Ecosystem 2021, Startup Macedonia.

The FITD portfolio[237] (as of July 2021) shows high expectations for the ICT industry in the country. FITD invests 326 SUs, or about half of its 642 total investments. It should be noted that the table below shows the number of investments in the IT sector including SU and SME. However, the number of investments in the IT sector is 25% (165 projects), which is by far the highest. In addition,

[237] FITD (July 2021), Fund for Innovation and Technology Development Republic of North Macedonia Portfolio

the number of investments in healthcare-related research ranks in the top three, suggesting promising future potential. On the other hand, the number of investments by industry sector is 33 for agriculture, 25 for education, and 4 for logistics, suggesting that the future prospects for the logistics industry may not be high.

Figure 95 Number of FITD Investments by Industry Sector



Source: Developed by the survey team based on materials received by FITD

3.3.2.1 ICT

The ICT industry in North Macedonia is one of the fastest-growing industries in the country's economy, contributing to employment and export growth, with annual growth rates of 2.5-8% in the past few years. In particular, hardware accounted for 55% of the ICT market in the country, followed by ICT services (30%) and software (15%). This rapid growth has been realized through large-scale investments in IT by governments and telecommunications companies, lower prices for IT equipment, and lower corporate taxes. The advantage of the country's ICT industry is that labor costs for technicians with superior technical skills and high English proficiency are lower than those of other countries. The average salaries of employees working at ICT-related companies are about 60% lower than those in Belgium, Switzerland and the Netherlands, and they are competitive because they offer high-quality services at low prices. Behind the superior technological capabilities are over 60 schools nationwide teaching ICT, mathematics and foreign languages. More than 1,300 students have studied computer science, software development, foreign languages and mathematics. In addition, many of the foreign companies, such as Microsoft, Cisco, Oracle, and IBM, have established agencies and have a presence. Outsourcing by major IT companies has also increased, with outsourcing accounting for 2.1% of real GDP in 2018 and 53% or more of the employment in the ICT industry.[238]

ICT-related SUs hold a large share of about 80% of SUs, especially those that develop software, AI and opportunity learning, e-commerce, big data, and IoT. As of 2016, it accounted for about 68% of the total, accounting for more than half of the total, but it is expected to grow further in the past few years and have high potential. In particular, software development alone accounts for 24% of the total. According to the co-founder of Startup Macedonia, AI-related SUs have continued to grow, especially in recent years. An increasing number of entrepreneurs are trying to create business opportunities using chat bot services for businesses and consumers and AI for fashion. In addition, the growing demand for online shopping due to the corona crisis has

[238] Invest North Macedonia, Information and Communication Technology, https://investnorthmacedonia.gov.mk/invest-ict/

led to the growing popularity of digitization of the market, such as the provision of a platform for serving the market. Representative examples of SUs that have attracted particular attention in the ICT field in recent years are as follows.[239]

- Adeva (market platform)
- EmbedSocial (marketing)
- Pixyle (AI-based fashion service)
- Cognism(SaaS)
- Sales.Rocks(SaaS)
- Slice (Market Platform)

On the other hand, securing high-caliber human resources to support the development of the ICT industry is an issue. In North Macedonia, the ICT sector is often engaged in the form of remote contracts with global companies with high-caliber personnel. However, the problem is that many talented people are flowing out of the country in search of better employment opportunities. Therefore, there is an urgent need to take policy measures to prevent brain drain.[240]

3.3.2.2. Agriculture

Agriculture in North Macedonia is one of the fastest growing industries, with annual growth rates of more than 10% over the past few years. In particular, the food processing sector is seen as promising. Exports of high-quality agricultural products created by a good natural environment have earned a good reputation with Europe as the main market, taking advantage of its good market access to surrounding areas. The adoption of EU standards and the introduction of GLOBALGAP and HACCP certification are also strengths. The government is looking to increase FDI by positioning agriculture as a growth area in the future. It is also tackling the improvement of living and working conditions in rural areas and investment of human capital to farmers as priority issues. The working population of agriculture accounts for about 20% and the average monthly income is €524, which is a comparative advantage of labor costs compared to other countries. In 10 cities, there are secondary education schools specializing in agriculture and forestry. In addition, there are seven universities that can major in agriculture, and the education system is in place. Major export destinations for agricultural products and foods are the EU (17% for Greece, 14% for Germany, 13% for Croatia) and CEFTA countries (31%). The main export destinations are tobacco, confectionery products, fresh and processed foods, and wine.[241]

Agricultural SU (Food Production) accounted for only 1.3% of the total SU as of 2021, which is not as active as other industries[242], although it has been entering the market somewhat since 2016. In the interview survey, it was pointed out that the problem is that the production system relying on traditional techniques is continuing, mainly in the food processing field, and the introduction of the latest technologies is delayed. It is possible that this is behind the sluggish growth of agricultural SU. On the other hand, interviews with FITD and Startup Macedonia indicated that Agritech for the overseas market is a promising field with growth potential.

3.3.2.3. Education

The education system in North Macedonia is 9 years for primary and secondary education, 4 years for high school, and 4-7 years for universities (3 years for private universities), and 13 years for high school is compulsory. As a multiethnic country, in the event that there are more than a certain number of ethnic minority students, in addition to the official Macedonian language, there is an educational system that allows students to take classes in Albanian, Serbian, and Turkish. In

[239] Nina Nikolich (May 2020), Country Guide Macedonia: Startup Ecosystem Summary, Startup Universal, https://startupuniversal.com/country/macedonia/#focusindustries
[240] Startup Blink (2020), Startup Ecosystem Rankings 2020, https://report.startupblink.com/
[241] Invest North Macedonia, Agribusiness and Food Processing, https://investnorthmacedonia.gov.mk/invest-agrobusiness-and-food-processing/
[242] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

addition, the emphasis placed on education and vocational training for adults is distinctive. The Center for Adult Education promotes efforts to meet labor market needs not only for individual self-fulfillment but also for socioeconomic development. In addition, to promote lifelong learning, provincial governments have introduced a system (Project 35/45) that encourages students between the ages of 35 and 45 to register[243]. However, according to ILO data[244], while the ratio of university graduates (25-34 years old) among young workers is relatively high at 37th out of 131 countries, the unemployment rate of university graduates is high at 19th out of 134 countries. Therefore, it can be said that the lack of industrial capacity is a challenge even if young workers receive higher education.

Education-related SU accounted for 8% of the total SU in 2021, a slight increase from the 2016 survey[245]. According to the co-founder of Startup Macedonia, online education is attracting increasing attention, particularly as the recent corona devastation has restricted the conduct of face-to-face classes. Brainster is a typical example of a SU that has been particularly successful in Edtech in recent years[246]. It was founded in 2015 and focuses on training tech talent, including data scientists, UX/UI design, digital marketing, and programming. Outside of the country, this school has expanded to Austria, Croatia, and Slovenia, and as well as its online classes due to COVID-19[247].

3.3.2.4. Logistics

The country's logistics industry is gaining a presence as a manufacturing and bus assembly hub for automotive parts, leveraging its location and competitive transportation costs, which are well developed and accessible in a day or two from the capital of Scopje to various parts of Europe. Automotive parts conform to the standards TS16949 and ISO 9001 and are suitable for export of high quality products. In particular, labor-intensive products such as safety systems (seat belts, airbags), electronic devices (controllers, sensors), and precision devices are considered to be the strengths. It is also supported by young workers with high technical skills, and has the advantage of being able to secure employment at the lowest wages in the Balkans[248].

[243] EURYDICE, Republic of North Macedonia Overview
[244] Global Note, Statistical Data on Higher Education in North Macedonia
[245] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021
[246] Nina Nikolich (May 2020), Country Guide Macedonia: Startup Ecosystem Summary, Startup Universal, https://startupuniversal.com/country/macedonia/#focusindustries
[247] Brainster, https://brainster.co/
[248] Invest North Macedonia, Machine and Automotive components, https://investnorthmacedonia.gov.mk/invest-machine-and-automovite-components/

Figure 96 Access from Skopje to Neighboring Europe

Destination/Origin	Distance (km)	Net Hours	Borders	From Skopje (€) (20 tons truck)
Kragueva, Serbia	320	6	1	550
Pitesti, Romania	730	8	2	1,000
Budapest, Hungary	800	11	2	950
Gebze, Turkey	850	12	2	1,100
Ljubljana, Novo Mesto, Slovenia	950	15	3	950
Vienna, Austria	1,200	14	2	1,250
Ostrava, Czech Republic	1,300	16	2	1,450
Munich, Germany	1,370	17	2	1,350
Aksaray, Turkey	1,470	18	2	1,600
Milan, Italy	1,500	19	3	1,350
Stuttgart, Germany	1,600	19	2	1,450
Frankfurt, Germany	1,700	20	2	1,500
Cologne, Germany	1,900	24	2	1,700
Batilly, France	2,000	26	2	1,800

Source: Developed by survey team based on Kuehne-Nagel, ViaMichelin, 2021

Logistics-related SU (Travel & Transport) accounted for 5.3% of the total SU in 2021, down from 9.2% in 2016[249]. According to interviews with the FITD, there are few SUs in the logistics field targeting the overseas market, such as the U.S., rather than the domestic market.

3.3.2.5. Medical care

North Macedonia is one of the few countries in which the cultivation and export of marijuana for medical purposes is legalized. Private companies are permitted to enter the cannabis industry by introducing a free market economy and obtaining permission from the Ministry of Health and other regulatory agencies. Under existing laws, only final products (extracts, granules, oils, etc.) can be exported, and export of plants is not permitted. The pharmaceutical market is estimated to be more than €145.6 million per year, and more than 50% of the drug is exported.[250]

Healthcare and Wellness SUs accounted for 12% of SUs in 2021, up from 3.1% in 2016[251]. It is presumed that the expansion of the new coronavirus infection has spurred the creation of new technological innovations in response to the growing social needs for infection control. According to Startup Macedonia, cannabis tech, which combines marijuana cultivation and technology, is one of the promising areas for growth.[252]

3.3.3. Startup's capital access and investment overview

<Investor profile>

Private investment in North Macedonia is at its earliest stage of development. The region-specific South Central Ventures (SCV) has offices in the capital of Skopje, but locally-originated venture

[249] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021,
[250] Invest North Macedonia, Pharmaceuticals and Medical Devices, https://investnorthmacedonia.gov.mk/invest-pharmaceuticals/
[251] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021,
[252] Bojan Stojkovski (May 2021), How North Macedonia's startup ecosystem can help revive its economy, https://therecursive.com/how-north-macedonia-s-startup-ecosystem-can-help-revive-its-economy/

capital funds have not developed. SCV is designated manager of the Enterprise Environment Innovation Fund (ENIF) for €40 million funded by development financial institutions such as EBRD, the European Investment Fund (EIF) and the European Commission (EC). In addition to contributions from the governments of other Western Balkan countries, SCV is responsible for managing the fund.

At present, angel investment is relatively underdeveloped, with only a small number of individual investors and few cooperative investment instruments. Several concerns have been raised regarding the exploitative conditions of angel investment. On the other hand, Swiss EP is developing an investment education program called the Western Balkan Angel Academy, in which Engel investors in North Macedonia participate, and future development is expected.

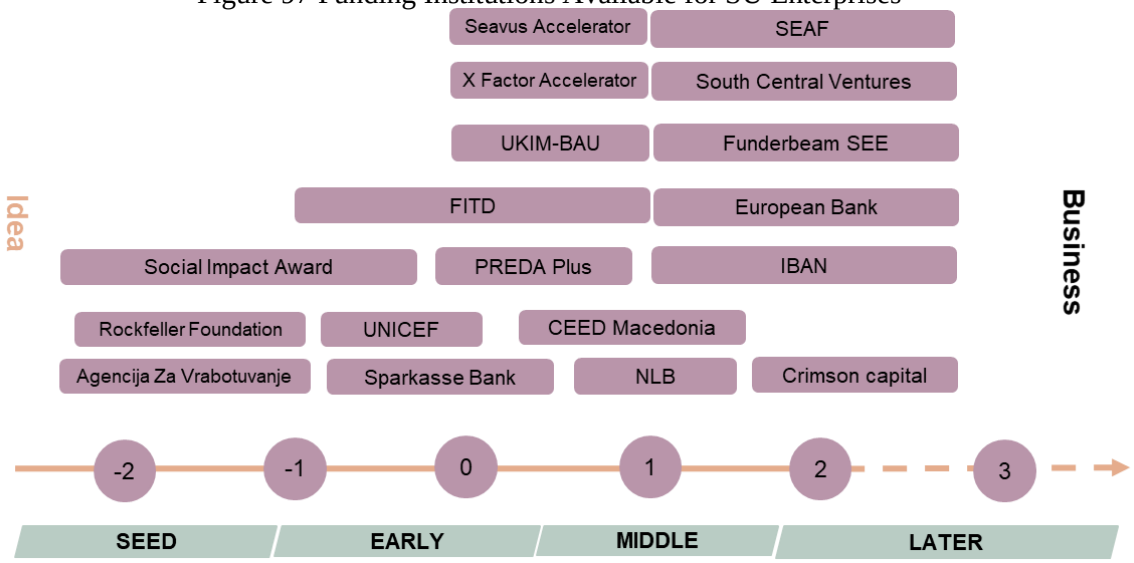
3.3.3.1. Funding status of startups

< Funding agencies>

The figure below summarizes the funding agencies available to SUs by investment phase. "The Innovation Technology Development Fund (FITD)", a government-affiliated fund, invests mainly in SUs from the seed period to the early period. On the other hand, VCs such as South Central Ventures (SCV), which are mainly based in the Western Balkans, mainly invest in SU enterprises after the early period. Overall, investors tend to view SU companies after the middle stage as promising investment targets.

According to the USAID Business Ecosystem officer, financing without knowing the access to the resources available to the SU founder is a major issue in the context of SU financing. Existing VCs also face barriers to finding high-potential SUs that are already in early stages. He pointed out that this would require an environment that supports the financing of SUs with growth potential.[253]

Figure 97 Funding Institutions Available for SU Enterprises



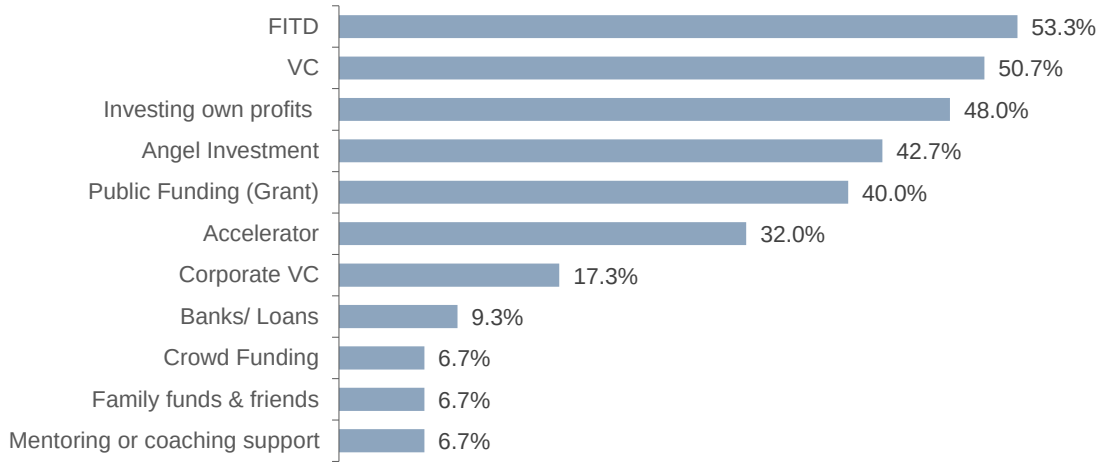
Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

FITD, a government-affiliated fund, is the most widely used method of financing SU companies in the country, followed by VC (SCV, the leading company). According to a study with Startup Macedonia, VC investment has only recently been created, and the number of exited

[253] Startup Blink (2020), Startup Ecosystem Rankings 2020, https://report.startupblink.com/

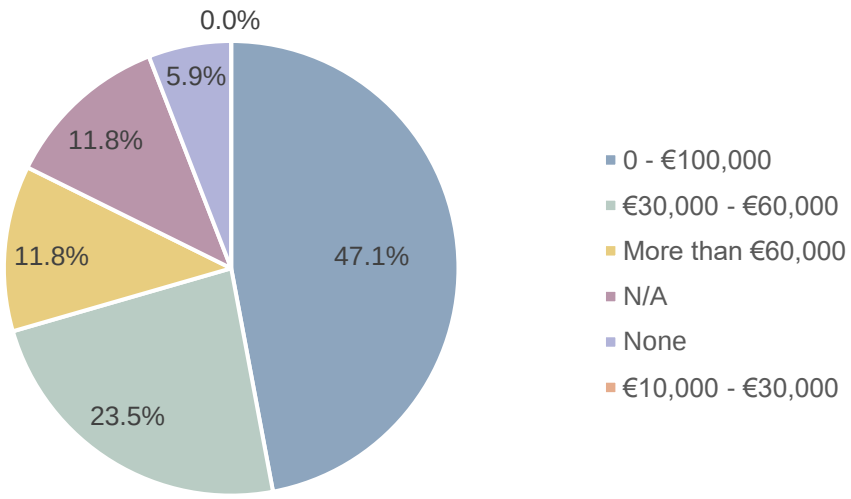
SU companies is smaller and smaller (examples of relatively large companies are Seavus and Grouper). The figure below shows that there are many SU enterprises that provide their own funds without relying on external funds. Approximately 40% of SU companies receive funding from angel investors such as CEED Macedonia. According to the interview survey of support organizations, however, it is not considered to be a mainstream method of financing. In addition, there is a view that appropriate education and information dissemination are necessary to enable domestic investors to recognize SU investment as attractive and low-risk.

Figure 98 Means of financing by SU enterprises



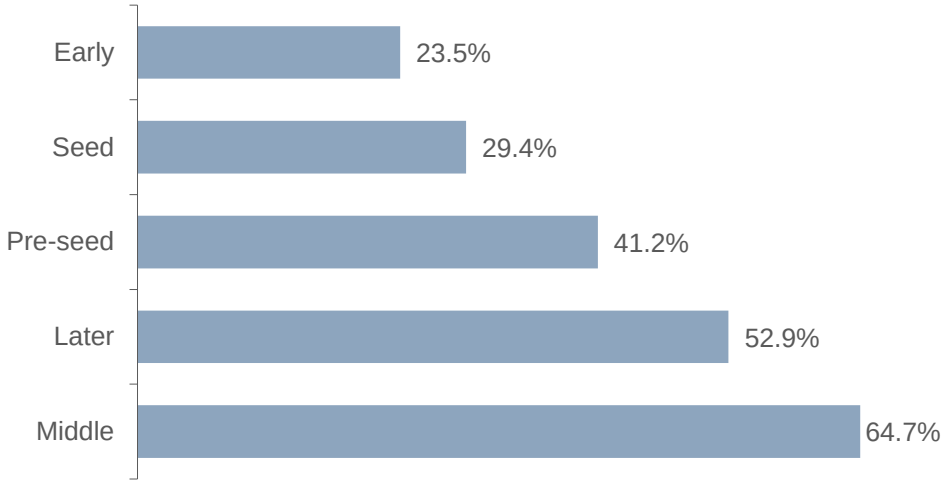
Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

Figure 99 Average investment per SU company



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

Figure 100 Timing of investment in SU firms

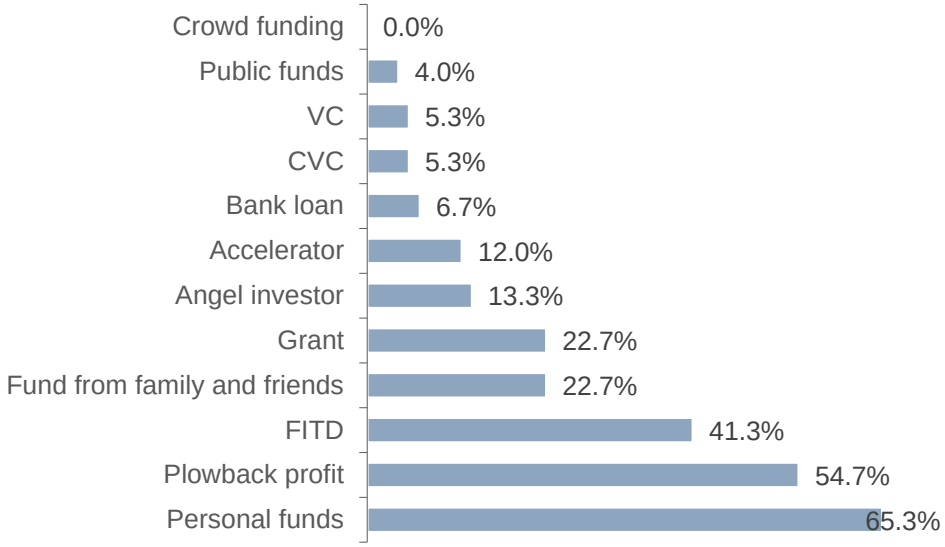


Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

■ Raising funds when starting a business[254]

As it was difficult to grasp the amount of capital investment using public information, information on the amount of funding and the means thereof is included. In the case of North Macedonia, the majority of entrepreneurs start up in business using their own funds without the support of VCs or angel investors. In addition, there are many cases of receiving financial support from the FITD from seeds at the time of SU's founding to the early stage.

Figure 101 Funding sources required when starting business

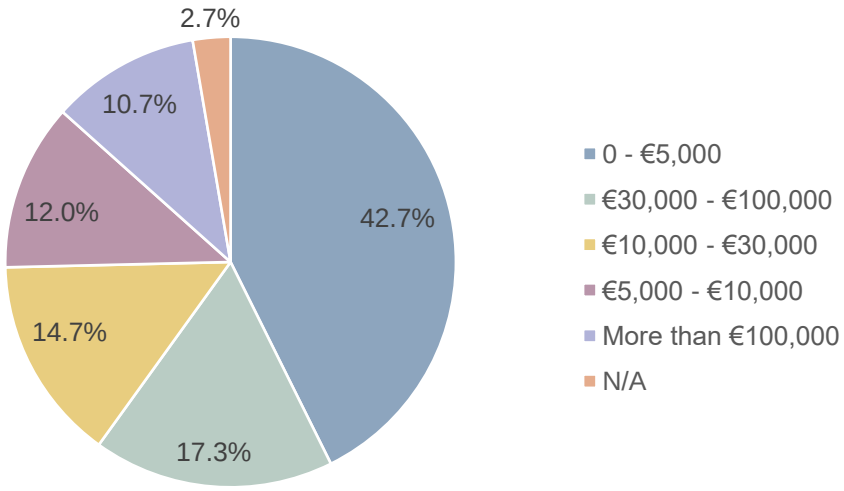


Source: Developed by survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

[254] Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

Moreover, compared with other European countries, the country often does not require a large amount of funds to start a small SU business, and many founders either have experience in work or work concurrently, making it relatively easy to maintain a business soon after startup. In fact, around 40% of SUs are founded with funding of less than €5,000. On the other hand, there are many SUs that need external financing for approximately three months to a year to acquire the first customer from the idea concept.

Figure 102 Size of funds required to start business



Source: Developed by the survey team based on Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021.

< Top SUs in fundraising>

North Macedonia is now at its earliest stage of development, where entrepreneurs and SU communities are small and need to continue to expand and grow. At this stage, the implementation of "entrepreneur education programs" and "youth entrepreneur development programs" may promote the growth of the ecosystem as a whole in the medium term. Also, if entrepreneurs' success stories increase, they may be able to invigorate the entire SU community.

Of note, there are several successful examples of SUs in North Macedonia, including EmbedSocial, which serves large companies such as CNN, National Geographics and Microsoft. However, the amount of funds raised remains undisclosed and is not reflected in the table below.

Figure 103 Top 5 Financing Companies (2019-2021)-Head Office SU outside North Macedonia

Company name	HQ Address	Funding Year	Stage	Procurement amount	Total amount of funds	Main Street investors
Cognism	United Kingdom London	2020	Early period (Series B)	$12.0M	$39.0M	AXA Venture Partners
Cognism	United Kingdom London	2021	Growth phase (Series C)	$10.0M	$39.0M	AXA Venture Partners
Cognism	United Kingdom London	2019	Early period (Series B)	$10.0M	$39.0M	PeakSpan Capital

Company name	HQ Address	Funding Year	Stage	Procurement amount	Total amount of funds	Main Street investors
UpShift	United States Ohio	2020	Early period (Series A)	$2.8M	$4.0M	Indeed
UpShift	United States Ohio	2019	Seed phase (Seed)	$1.2M	$4.0M	Data Point Capital

Source: Developed by the survey team based on Crunchbase

Figure 104 Top 5 Financing Companies (2019-2021)-Headquartered SU in North Macedonia

Company name	HQ location	Funding Year	Stage	Procurement amount	Total amount of funds	MainStreet investors
Claxi	North Macedonia, Skopjer	2019	Early period (Series B)	$0.4M	$0.8M	World Bank
Microtica	North Macedonia, Skopjer	2018	Seed phase Grants	$0.4M	$0.4M	FITD
PowerAD	North Macedonia, Stramika	2018	Seed phase (Preceed)	$0.4M	$0.4M	FITD
Sia Secure	North Macedonia, Skopjer	2020	Seed phase (Preceed)	$0.1M	$0.1M	TechStars Hub71
JetMinds	North Macedonia, Skopjer	2018	Seed phase (Seed)	$0.04M	$0.05M	FITD

Source: Developed by the survey team based on Crunchbase

Although it is difficult to generalize investment trends because of the limited number of companies surveyed, it is clear that local SUs are struggling to raise funds from international private investors. If SUs in North Macedonia are recognized globally and the ecosystem is unable to attract more private investment to support their growth, good entrepreneurs are likely to flow into developed and other emerging markets.

Future policy initiatives for regional "smart specialization" will focus on investments in specific sectors to build clear expertise and competitive advantages. Over the long term, more SUs are expected to emerge from the sector.

3.3.3.2. Public investment scheme for startups

The Fund for Innovation and Technical Development (FITD) was established in 2013 to implement the Skills Development and Innovation Support Project funded by the World Bank. FITD is the only government agency in North Macedonia that works on both SU development and financing. Since the investment was successful, the government of North Macedonia has been playing a central role since around 2017, and the FITD's activities will continue even after the end of the World Bank Program in April 2021. The outline of the fund is as follows.

Figure 105 Support for FITD

Establishment	Supervisory authority	Amount of support	Grant program	Target sectors
December 2013	State Department Managing Board (seven members) established	US$10,000 to US$100,000	Through regular public offerings Subsidies	Innovation and technology

Source: Developed by survey team based on the FITD website, etc.

According to the FITD, about 70% of local SUs use FITD support in the early stages of growth, highlighting the fact that while the challenges of SU financing have been alleviated, there is almost no private investment.

FITD directly supports SUs by providing subsidies through periodic public recruitment. Over the past four years, FITD has cofinanced more than 640 projects totaling more than € 85 million. SUs account for more than 50% of the portfolio and co-invest in three major domestic accelerators. Public offerings are usually focused on specific themes or areas, such as climate change and COVID-19 measures. On the other hand, in a more general theme of "Cofinancing for Technology Development for Accelerated Growth," more than 700 companies submitted proposals, 103 of which were selected and subsidized by €5.7 million. Solicitation of proposals is the primary means of granting grants.

<SU selection process>
The selection process for grant awards is conducted in two phases: the evaluation phase and the selection phase. In 2021, €5.7 million was allocated to 103 projects through FITD.

Stage 1: Evaluation
Applications are evaluated by national experts in various areas of expertise according to the thematic evaluation grid. In the second stage of the assessment, companies that exceed the specified minimum score proceed to the final selection stage.

<Stage 2: Final selection>
Final selections are made by the Investment Approval Committee. The committee is composed of five members appointed directly by the Government of North Macedonia to review all proposed projects and finalize the investment. To qualify for a committee, auditors must have at least 10 years of international experience in the field of investment in innovation. Marvin Liao, former CEO of Yahoo! and former partner of 500 venture companies, is the current chairman of the investment-approval committee. The Committee reviews and finalizes the grant of grants up to the amount budgeted for the invitation of proposals.

The main FITD disbursements up to 2021 are as follows.[255]

- The National Startup Council, the first such organization in Japan, has been launched.
- In February 2020, the Company launched its first "Corporate Innovation Program" in Japan with the aim of strengthening cooperation between companies and SUs.
- With FITD as a turning point, major banks in Japan have introduced an "Innovator" package to support the financing of SU companies.

[255] FITD hearing and Startup Macedonia, Connecting Macedonian Startup Ecosystem 2021

- The FITD mentoring program includes group and individual mentoring sessions for potential entrepreneurs and prospective SU companies.
- FITD is responsible for formulating the first national strategy on AI in North Macedonia.
- Implemented the first digital nomad program in North Macedonia in collaboration with the Ministry of the Interior.
- As a strategic partner of Amazon Web Services, it provides up to US$100,000 to SU companies in North Macedonia.
- In collaboration with the Ministry of Finance and the World Bank, a venture capital fund will be established by 2022 with the aim of investing in tech SU companies with particularly high growth potential.
- We will establish a strategic partnership with Startup Macedonia, strengthen the country's SU companies and innovation ecosystem, and position North Macedonia as the start-up hub on the Balkans.

3.3.3.3. Venture capital (VC)

Currently, there are no locally-originated VC funds in North Macedonia. Given the small number of SUs and the early stages of ecosystem development, local venture funds with a purely domestic focus on SUs may not be able to achieve sustained returns in the face of such limited markets, and hence may not be able to develop VCs.

Under these circumstances, South Central Ventures (SCV) is a venture capital fund investing in SUs and small-and medium-sized enterprises in the Western Balkans and is the only venture capital company with offices in the capital city of Skopje. SCV is the designated manager of the Enterprise Environment Innovation Fund (ENIF) Fund, which focuses on SUs in the Western Balkans, with investments of €1.5 million (up to € 100,000 per SU) limited to seed-phase SUs and €38.5 million (up to €3 million per SU) limited to seed-phase and growth-phase SUs. SCV is investing in the London-based SU Cognism in North Macedonia.

Support from other donors related to the development of startups and ecosystem

An overview of the assistance provided by other donors in relation to the development of SU companies and the establishment of an ecosystem is as follows.

3.3.4. Support from other donors related to the development of startups and ecosystem

3.3.4.1. European Bank of Reconstruction and Development (EBRD)

The pillars of support are: 1) value chain, 2) human resource development, 3) governance, 4) regional integration (including support for linkages with the EU), and 5) environment. EBRD provides direct investment in early-stage SUs and training programs for accelerators by dispatching mentors. The SUs and accelerators supported in the country are as follows[256]

Beneficiaries of the Star Venture Programme
■ SU ▪ Adeva IT (human resources/BtoB) ▪ FitKit (ehealth) ▪ Stornrst (cloud service) ▪ Pixyle (SaaS) ▪ OPick (SaaS/BtoC) ▪ MED-REP (ehealth)

[256] European Bank for Reconstruction Development, https://www.ebrd.com/starventure/investors

- Accelerator
  - SEEU Teck Park

This agency is also responsible for the fund management of the Enterprise Expansion Fund (ENEF), which provides SME loans, and provides consulting services through the Enterprise Growth Programme and Business Advisory Services Project by dispatching mentors to SMEs. Other activities include direct lending to SMEs, as well as lending and technical assistance through commercial banks. Major supports in recent years include the following.

DFF - Varus [257]

- Approval date: November 9, 2021
- Implementing agency (Borrower): VarusDool (exclusive distributor of German Merck's pharmaceuticals and other products in North Macedonia and Kosovo)
- Budget: €2.6 million
- Description:
  - Financing for the company's planned investment in the construction of a logistics/warehousing center and renovation of existing facilities, under the Direct Finance Framework SME Support (EBRD's support scheme for direct loans to local SMEs)

FIF - Regional SME CSP - NLB Banka Skopje II [258]

- Approval date: November 9, 2021
- Implementing Agency (Borrower): NLB Banka ad Skopje
- Budget: €5 million
- Description:
  - Investment support for SMEs to comply with EU standards. Supports a variety of SME investments related to the construction and renovation of production facilities, environmental protection, worker safety, and product quality and safety
  - In addition to financing, it also provides technical assistance, including the dispatch of consultants to support program implementation, marketing, and monitoring

FIF - Regional SME CSP - Ohridska Banka - 2nd line [259]

- Approval date: March 23, 2021
- Implementing Agency (Borrower): Ohridska Banka
- Budget: €4 million
- Description:
  - Support scheme similar to the above mentioned "FIF - Regional SME CSP - NLB Banka Skopje II"
  - Investment support for SMEs to comply with EU standards.

[257] European Bank for Reconstruction Development, DEF-Varus, https://www.ebrd.com/work-with-us/projects/psd/52570.html

[258] European Bank for Reconstruction Development, FIF - Regional SME CSP - NLB Banka Skopje II, https://www.ebrd.com/work-with-us/projects/psd/52614.html

[259] European Bank for Reconstruction Development, FIF - Regional SME CSP - Ohridska Banka - 2nd line, https://www.ebrd.com/work-with-us/projects/psd/53120.html

3.3.4.2. European Investment Bank (EIB)

The main areas of support are 1) transport, 2) energy supply, and 3) water treatment infrastructure. In terms of support to SMEs, the Bank provides loans mainly through the Development Bank of Macedonia (DBNM) and the ProCredit Bank. It is mainly supported through DBNM, which has provided a cumulative total of 550 million euros in loans to SMEs since 2009. The main SME support in recent years has been as follows.

COVID-19 RESPONSE NORTH MACEDONIA-DBNM [260]

- Signature date: June 21, 2021
- Executing Agency (Borrower): Development Bank of North Macedonia JSC Slopje (DBNM)
- Budget: €100 million
- Description:
  - Early recovery support for SMEs affected by COVID-19; financing for SMEs through DBNM

PROCREDIT WB COVID19 RESPONSE FOR SMES & MIDCAPS [261]

- Signature date: December 16, 2020
- Executing Agency (Borrower): ProCredit bank
- Budget: €15 million
- Description:
  - Early recovery assistance for small and medium-sized enterprises (SMEs) affected by COVID-19, which provides loans to SMEs through ProCredit Bank
  - In addition to North Macedonia, ProCredit Bank is also providing assistance to Serbia, Albania, and Bosnia and Herzegovina in the Western Balkans

MBDP LOAN FOR SMES AND OTHER PRIORITIES V [262]

- Signed on September 11, 2018
- Executing Agency (Borrower): Macedonian Bank for Development Promotion (MBDP)
- Budget: €100 million
- Description:
- Financing for SMEs through the MBDP. Similar support has been provided four times in the past
- Including this support, in the past five times, 2,090 projects have been financed and more than 8,000 jobs have been created

PROCREDIT LOAN FOR SME AND OTHER COP OBJECTIVES [263]

- Signed on February 11, 2016

[260] European Investment Bank, North Macedonia: Team Europe - The EIB supports the recovery of North Macedonian small businesses from COVID-19, https://www.eib.org/en/press/all/2021-208-team-europe-the-eib-supports-the-recovery-of-north-macedonian-small-businesses-from-covid-19

[261] European Investment Bank, Western Balkans: EIB and ProCredit unlock €65 million to speed the recovery of small and medium sized companies from the COVID-19 crisis, https://www.eib.org/en/press/all/2020-392-eib-and-procredit-unlock-eur65-million-to-speed-the-recovery-of-small-and-medium-sized-companies-in-the-western-balkans-from-the-covid-19-crisis

[262] European Investment Bank, FYR of Macedonia: EIB and MBDP extend their support for SMEs, https://www.eib.org/en/press/all/2018-225-eib-and-mbdp-extend-their-support-for-smes-in-fyr-of-macedonia

[263] European Investment Bank, https://www.eib.org/en/projects/loans/all/20140513

- Executing Agency (Borrower): ProCredit bank
- Budget: €100 million
- Description:
  - Part of a package of support for SMEs (totaling 170 million euros) targeting seven other countries in the periphery region; support for lending to SMEs through ProCredit Bank.

3.3.4.3. European Commission (EC)

In Instrument for Pre-accession Assistance (IPA) 2, the European Commission is supporting the country's efforts to join the EU. The eight priority areas for assistance are: 1) governance, 2) justice and human rights, 3) environment and climate change, 4) transport, 5) competitiveness and innovation, 6) social development (human resources development), 7) rural development, and 8) intra-regional cooperation (support for favorable international relations with neighboring countries). The outline of each program of support for SMEs including SUs is as follows.

Horizon 2020 [264]

- Project period: 2014~2020
- Executing Agency: SMEs, Universities, and others
- Budget: €80 billion for the whole of Europe, including North Macedonia
- Description:
  - Support aimed at promoting R&D and innovation, including the promotion of public-private partnerships
  - SMEs in North Macedonia have been supported to the tune of 290 million euros. The main sectors supported are health and energy

Enterprise Europe Network (EEN) [265]

- Project period: 2008~
- Executing Agency: Foundation for Management and Industrial Research, St. Cyril and Methodius University, Economic Chamber of Macedonia
- Budget: Unknown
- Description:
  - Support service for companies and research institutes originating in the EU to assist SMEs in their internationalization and search for cross-border business partners.
  - Through the above-mentioned implementing agencies, the service provides SMEs with 1) networking (commercial transactions, technical cooperation, R&D), 2) information (laws, regulations, standards, tender information), and 3) invitations to exhibitions and B2B matching events
- Note:
  - In the Western Balkans 6 Chamber Investment Forum (WB6 CIF), a joint initiative of the chambers of commerce from 6 countries in the Western Balkans region, the North Macedonian Chamber of Commerce provides networking support among SMEs in the region and helps them to enter the regional market.

3.3.4.4. West Balkan Enterprise Development and Innovation Facility Secretariat (WBEDIF)

Rather than direct lending, WBEDIF provides SU support primarily through three services: equity financing, debt guarantees, and technical support. In equity financing, they provide loans to SUs

[264] European Commission https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/europe-world/international-cooperation/north-macedonia_en

[265] Enterprise Europe Network https://een.ec.europa.eu/about/branches/mk/skopje

through the Enterprise Innovation Fund ("ENIF"), a fund managed by South Central Ventures, and the Enterprise Expansion Fund ("ENEF"), a fund managed by the EBRD. As of 2019, it has provided a cumulative total of 36 million Euros/141 projects to SUs in North Macedonia. The main SUs financed by ENIF and ENEF are listed in the figure below[266].

Enterprise Innovation Fund (ENIF)	Enterprise Expansion Fund (ENEF)
■ Letz (workplace productivity app) ■ Cognism (sales promotion tool) ■ InPlayer (media platform) ■ CustomSell (e-commerce) ■ NETi (search engine filter)	■ Cermant (frozen food) ■ Markprogress (confectionery)

3.3.4.5. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) [267]

GIZ provides support in the following priority areas: 1) economic development and employment, 2) governance and democracy, and 3) sustainable infrastructure development. For SUs, the agency is working with the EU to provide support through the EU for Economic Growth (EU4EG), as shown in the table below.

EU for Economic Growth (EU4EG) [268]

- Project period: 2021 - 2025
- Executing Agency: GIZ and Area Science Park
- Budget: €9.75 million
- Description:
  - This project aims to stimulate regional economic activity and improve competitiveness through improved access to financial and support services for SUs and SMEs in the Northeast, Polog, Southwest, and Prespa regions of North Macedonia
  - Specifically, the project will 1) provide technical assistance to support institutions, 2) offer acceleration programs and mentorship programs, and 3) support the promotion of high value-added businesses (circular economy, green economy, IT, and others)
  - In Phase 1 of the project, GIZ is conducting research on the SU ecosystem, investment climate, and key players to identify the needs of the target region

KfW's assistance focuses primarily on 1) the energy sector (energy efficiency and renewable energy expansion), 2) rural infrastructure (water supply, sanitation and heating), and 3) sustainable economic development (support for small and medium-sized enterprises). The outline of the projects related to support for SUs is as follows.

Regional Challenge Fund[269]

- Project period: 2021-2025
- Implementing agency: Western Balkans 6 Chamber Investment Forum (WB6-CIF)
- Budget €150,000 to €600,000
- Content: The Fund provides support through loans to vocational training institutions and participating companies located in six Western Balkan countries: Albania, Bosnia and

[266] WB EDIF, http://www.wbedif.eu/about-wbedif/ WB EDIF, http://www.wbedif.eu/about-wbedif/

[267] Deutsche Gesellschaft für Internationale Zusammenarbeit, https://www.giz.de/en/worldwide/301.html Deutsche Gesellschaft für Internationale Zusammenarbeit, https://www.giz.de/en/worldwide/301.html

[268] Prepared based on interviews with GIZ and materials provided

[269] European Commission

Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia. The project will finance the development of infrastructure for vocational training institutions, the provision of necessary materials and equipment, the preparation of learning materials, and the implementation of capacity building. The aim is to improve the vocational skills of students, promote employment, and enhance the competitiveness of enterprises through these measures. By combining flexible learning training by vocational training institutions and participating enterprises, students aim to acquire practical skills that match the needs of the labour market.

- The expected effects of collaborative training are as follows:

(Firms)

- Improve productivity, competitiveness, and innovation of participating companies.
- Cost reductions in hiring, on-boarding, and training.
- Strengthening competitiveness in the labor market.

(Students)

- Acquisition of appropriate skills by combining theoretical learning with practical OJT.

Identifying digitalisation opportunities for MSMEs in the Western Balkans[270]

- Project period: 2019
- Implementing agency: IPC (Development Consulting Company)
- Budget: Unknown
- Content: This project is an information-gathering survey conducted to understand current needs and to explore the possibility of KfW-based support projects in order to support the digitization of SMMEs located in Western Balkan countries. Specific survey items are as follows.
  - Digitization laws and regulations of the Western Balkan countries
  - Relevant donor assistance
  - Understanding of current state of digitization among SMEs
  - Possibility of investment in digitization of SMEs
  - Potential demand for financing digitization
  - Identification of potential industries and markets for digitization
  - Proposing possibilities for KfW support projects
  - Identification of potential partners (banks, associations, training institutions)

3.3.4.6. World Bank[271]

The World Bank, in its Country Partnership Framework for the Republic of North Macedonia (2019-2023), has placed particular emphasis on supporting efforts to improve private sector competitiveness by supporting innovation, financial access, new employment opportunities, and strengthening international competitiveness. The outline of the projects related to support for SUs is as follows.[272]

[270] IPC, Identifying digitalisation opportunities for MSMEs in the Western Balkans,

[271] World Bank June 2019, Country Partnership Framework for the Republic of North Macedonia (2019 – 2023), https://www.worldbank.org/en/country/northmacedonia/publication/country-partnership-framework-cpf-2019-2022.

Skills Development and Innovation Support Project[273]

- Project period: 2014-2021
- Implementing agency: Ministry of Finance, Ministry of Education and Science
- Budget: US$24 million
- Content: This project will provide support for the reform of higher education and the modernization of secondary vocational training. It will also provide loans to relevant government agencies in North Macedonia with the aim of improving the innovation capacity of companies and promoting collaboration with research institutions. The projects are broadly divided into four categories. In particular, for the purpose of supporting the SU ecosystem, a total of $17.7 million was allocated to the FITD, a government-affiliated fund, to strengthen the organizational capacity of the FITD and provide pilot loans to small and medium-sized enterprises, including SUs. As of December 2020, three new SU companies were established through the FITD acceleration program.

3.3.4.7. United States Agency for International Development

As one of the priority areas of support, USAID has been providing assistance that contributes to strengthening support services, improving access to financial institutions, and facilitating the business environment in the country. The outline of the projects related to support for SUs is as follows.[274]

Business Ecosystem Project[275]

- Project period: 2017-Unknown
- Implementation organization: Ministry of Economy, Ministry of Labor, State Innovation Fund
- Budget: Unknown
- Content: This project aims to improve the productivity, earnings, and employment of SMMEs in the country by building a sustainable business ecosystem. Specifically, it works with industry associations, chambers of commerce and industry, consultants, and business support agencies to support SMME market access and improve the services available to them in implementing the necessary procedures. In addition to supporting SMMEs' access to commercial finance through collaboration with local financial institutions, it is also working to foster subcontractors by promoting partnerships with large enterprises.

Microfinance Development Credit Authority[276]

- Project period: Unknown start date, but 15 years
- Implementing agencies: Saving House FULM and Saving House Moznosti (microfinance institutions)
- Budget: Unknown
- Content: This project is designed to issue microfinance loans to SUs, SMMEs, and individuals who need working capital or capital investment to start or expand their business. By signing guarantee contracts with microfinance institutions, USAID has established a mechanism to guarantee 50% of the loan amount in the event that a borrower becomes insolvent. This has enabled entrepreneurs, who had previously had difficulty

[273] World Bank, Skills Development and Innovation Support Project, https://projects.worldbank.org/en/projects-operations/project-detail/P128378; OECD/ETF/EU/EBRD (May 2019), SME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, https://doi.org/10.1787/g2g9fa9a-en

[274] WB EDIF, http://www.wbedif.eu/about-wbedif/

[275] Deutsche Gesellschaft für Internationale Zusammenarbeit,

[276] Prepared based on interviews with GIZ and materials provided

accessing financial institutions, to provide loans.

Partnership for Better Business Regulation[277]

- Project period: Date of commencement unknown, but period: 4 years
- Executing agencies: Four major chambers of commerce and industry (the Chamber of Economy and Commerce, the Chamber of Commerce and Industry of Macedonia, the Chamber of Northwest Macedonia and MASIT (the ICT Chamber of Commerce and Industry) and consulting companies (EPICENTAR International)
- Budget: US$1.9 million
- Content: This project supports the participation of small and medium-sized enterprises in complying with laws and regulations and in formulating economic policies. To date, training has been provided to over 1,000 SMEs (about half of whom are located outside the Tokyo metropolitan area) on key business laws and regulations, and support has been provided for the launch of a web portal (www.biznisregulativa.mk) that compiles legal requirements and related information related to SMEs.http://www.biznisregulativa.mk/

Supporting Entrepreneurial Education in Europe and Eurasia[278]

- Project period: 2017-Unknown
- Implementing agency: Junior Achievement Europe (educational NGO)
- Budget: Unknown
- Content: This project aims to foster young entrepreneurs through the development and implementation of programs for entrepreneurial education, financial literacy and preparation for employment in collaboration with students, teachers, support organizations, industry associations, financial institutions and companies. To date, it has trained high school teachers as mentors in the student enterprise program, and has encouraged students to teach entrepreneurship. It also provides students with opportunities to develop business plans and pitch product/service events.

3.3.4.8. Japanese organizations (JETRO, local governments, etc.)[279]

In June 2019, the Japan External Trade Organization (JETRO) Vienna Office and the Japanese Embassy in North Macedonia jointly dispatched the first business mission to support exchanges with Japanese and North Macedonian companies. The mission was attended by 17 participants from 11 companies including Japanese companies, and was accompanied by the then Senior Vice-Minister of Economy, Trade and Industry Sekiyoshi.

The mission visited the Technical Industry Special Zone near the capital, foreign-owned bus manufacturers, electronic components manufacturers and IT companies, as well as local electrical equipment manufacturers and pharmaceutical companies. Seavus, a Swedish-affiliated information technology company, is engaged in software development in the country, incubator and accelerator operations, and various developments in 44 subsidiaries in each software business. In addition, JETRO is in charge of coordinating meetings with cabinet ministers in North Macedonia who are in charge of the economy and foreign investment, networking with companies in North Macedonia, and a welcome dinner hosted by Prime Minister Zoran Zaev, and is providing opportunities for active exchanges of views and exchanges.

[277] KfW Development Bank, North Macedonia: On the way towards the EU, https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/Local-presence/Europe/Macedonia/

[278] Regional Challenge Fund, https://rcf-wb6.org/about-the-rcf/; Chamber investment forum western balkans 6, KfW Regional Challenge Fund. https://www.wb6cif.eu/portfolio_page/kfw-regional-challenge-fund/

[279] IPC, Identifying digitalisation opportunities for MSMEs in the Western Balkans

4. Assistance to the Western Balkans region by other donors

4.1. Cross-regional support by donors and others

GIZ is the main donor agency providing multi-country assistance in the Western Balkans. USAID (SME support, not tech-SU support), SwissEP (AP and mentoring support), and UNDP (Accelerator Labs) are the other donor agencies involved in broad-based efforts, however GIZ is the leading agency in the region in terms of support agencies and ecosystem support for tech SUs.

4.2. GIZ Initiatives

Within the "ORF-FT (Open Regional Fund for South-East Europe - Foreign Trade Project)," which is co-funded by the EU to promote intra-regional trade and enhance competitiveness, GIZ is targeting six countries in the Western Balkans region, providing support to: 1) SU support organizations and 2) growth/middle and beyond SUs are targeted for support.

4.2.1. Support for SU support organizations

In terms of support for supporting organizations, GIZ is supporting the establishment of the Western Balkan Startup Alliance (WBSA) in 2022, which is founded by major supporting institutions and accelerators in the six Western Balkan countries, as shown in the figure below.[280] GIZ is providing €70,000 for one year of operational funding from the establishment until the end of 2023. According to GIZ, the possibility of supporting the WBSA for the next year is under discussion with the EU, which co-finances the WBSA through the ORF-FT. [281]

Figure 106 WBSA Founding Organizations

Source: Prepared by the survey team based on the WBSA website

As background to the WBSA, GIZ pointed out that the ecosystem in the Western Balkans: 1) lacks the three elements of "Local Connectedness," "Global Connectedness," and "Funding," 2) is generally small and does not involve and interact with each other in a coordinated manner, and 3) the ecosystem density (number and quality of entrepreneurs) is not sufficient in any country.[282] In addition, the above-mentioned points make it difficult for investors from outside the region to

[280] WBSA Home Page, https://www.wbstartupalliance.org/
[281] Interview conducted with GIZ (December 6, 2022)
[282] GIZ(May2021), The Western Balkans Startup Ecosystem Report Assessment and Development Roadmap, https://www.wbstartupalliance.org/uploads/documents/GIZWesternBalkansEcosystemAssessmentReport_compressed.pdf

invest in individual country ecosystems due to their small scale. Given this background, the objectives of the WBSA are as follows.

- Regional Collaboration: Enhance knowledge and experience sharing among SU support organizations and other relevant organizations in the Western Balkans
- Addressing Common Challenges: Resolving common challenges faced by the region's ecosystems.
- Advocacy: Promote advocacy and lobbying activities for investors, policy makers, etc. in and outside the region.

In addressing the aforementioned common challenges, GIZ established working groups called the Key Stone Groupe (KG) to examine ways to maximize impact with minimal effort. They also provided support in the form of consultants who facilitate the KG[283]. According to GIZ, the establishment of WBSA was originally an idea that came from the support organization through KG discussions. Therefore, GIZ provided support for the first year's operation, which led to the realization of WBSA.

GIZ is also planning to organize Study Visits to the EU ecosystem for hub managers from among the supporting organizations (Paris, Amsterdam, and London are candidates).

4.2.2. Support for SUs

GIZ runs an AP called Growth and Traction Camp for growth/middle stage SUs in the Western Balkans.[284] They support the SUs' participation fees (travel and lodging) and the hire fees of consultants who provide mentoring services. However, no direct funding is provided to the SUs. The eligibility requirements for SUs to participate in the AP are as follows.

- Must have headquarters in one of the six Western Balkan countries (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, or Serbia)
- Have a product or service on the market, or at least a minimum viable product or service (MVP) that users will find valuable
- Have at least one client that operates outside of the country in which the company is headquartered
- Products and services have the potential to spread beyond the Western Balkans

In addition to mentoring services by consultants hired by GIZ, the AP also supports post-implementation networking opportunities so that participants can take advantage of the Alumni network after participating in the AP. GIZ is also planning to support Study Visits to the EU ecosystem for participating SUs (Berlin, Tallinn, and Stockholm are candidates).

4.3. Lessons learned from cross-regional programs

With regard to lessons learned from the cross-regional program, GIZ identified a lesson learned in that while there is a sense of competition among supporting organizations, there are variations in the maturity of the ecosystems (Serbia and North Macedonia, in that order, developed). For example, in the KG, GIZ reported strong interest from institutions in Serbia and North Macedonia in strengthening ties with firms and matchmaking, but low interest from other countries, and relatively less mature ecosystems expressed interest in investment promotion and policy advocacy.

[283] The establishment of a common "SU Emerging Council" for the Western Balkans region, among other recommendations. He has a track record of policy advocacy at the Splet Tech Conference in Serbia (https://wbc-rti.info/object/event/23235).

[284] The program has been held four times in the past by the end of 2022 and is about 2 weeks program with mentoring services.

GIZ indicated that it is important to design the program flexibly according to the interests of participating institutions.

Another lesson learned is sustainability of activities. With a view to sustainability after the support, GIZ is focusing on promoting participants' autonomy in the program so that collaboration among agencies will be activated. GIZ also suggested that it is important to first discuss common issues and necessary future measures thoroughly at meetings such as the KG before deciding on the direction of donor support for the ecosystem.

4.4. Possibility of cooperation with Japan

Regarding areas where support from other donors is needed, GIZ expressed the view that both "support for the support organizations themselves" and "SU support for specific sectors" are needed. The former needs further support to encourage the activities carried out by each organization. Regarding the possibility of WBSA collaboration with JICA and Japanese institutions and companies, the following specific collaboration proposals were raised: 1) Study Visits to Japan for SUs and staff of the supporting organizations, 2) participation of Japanese ecosystem stakeholders in the KG, and 3) joint holding of an AP event for the Western Balkans region. In particular, it was suggested that many support organizations may be interested in the Study Visit to Japan from the perspective of matchmaking with the Japanese market.

5. Concept of country selection for the Acceleration Program Implementation

Based on the basic research conducted on the Startup Ecosystems of the selected countries, we developed a preliminary understanding of the development stage of each ecosystem including the main challenges to the ecosystem, the investment landscape and the current state of ecosystem infrastructure and startup growth. These factors were crucial to our conclusion that Ukraine would yield the highest potential for success of a pilot acceleration program.

Ukraine is the largest and most developed ecosystem of the three countries by a significant margin in terms of number of investments and investment volumes. From an investment perspective, referring to the investment landscape in the former section, Ukraine's startup pipelines are large enough to sustain a growing local venture capital investment sector primarily focused on pre-seed to early-stage SUs. The presence of local, regional and global acceleration programs that are designed to meet specific business growth objectives such as foreign market access, strategic corporate partnerships, sustainability and impact initiatives and different stages of business development, and within different verticals, speaks to the breadth and depth of the SUs in this market. With Ukrainian SUs Grammarly, GitLab and People.AI gaining unicorn status, Ukraine's global presence and recognition for propagating successful SUs with innovative technologies is at a more advanced stage than Serbia or North Macedonia, from which a unicorn has yet to emerge. With local investments and public financial support geared towards SUs from the idea stage to MVP[285] / Seed stages, the main challenge of the ecosystem appears to be in a lack of resources dedicated towards SUs seeking to scale up and reach growth stage developmental milestones. Such SUs often shift their operational headquarters overseas to developed markets or investor-friendly markets to attract foreign venture capital investment and access to the resources they to continue their upward growth trajectory.

Serbia is one of the most promising and exciting startup ecosystems in the Western Balkan region, especially in the areas of Gaming, Blockchain / Crypto and Data / Cloud Infrastructure. Considering the small size of its domestic market, this focused approach should be recognized as a clear strategic direction. With national education systems turning their focus towards early education in coding and the development of post-graduate programs that merge traditional business education with technology and entrepreneurship education, Serbia is positioning itself for long-term sustainability of its startup pipeline. The recent acquisitions of several gaming SUs at valuations between USD 100 million to USD 400 million by global gaming industry leaders are clear evidence of the degree of technological expertise of SUs in these verticals. The size of the overall startup economy and the pace of legal and regulatory changes to improve the business climate has led to the first Corporate Venture Capital (CVC) fund and the first two local Venture Capital (VC) funds gaining regulatory approval for establishment in 2021. Similarly, the development of accelerators and incubators in the ecosystem is relatively underdeveloped given the main challenge of remains an access to finance at the earliest stages of startup growth. Serbia's ecosystem exhibits strong potential and development is trending in the right direction but at the present moment, it has yet to reach a stage of maturity where an acceleration program would yield a high impact in terms of the local acceleration partners present, the cost of scouting sufficient local high potential SUs, and the lack of local investors to support the SUs enrolled in the program.

With the smallest population of our focus countries at only two million, North Macedonia's startup ecosystem is at the earliest stage of growth and its main challenge at this stage is in building up its base of local entrepreneurs and developing its SU pipeline. These issues require

[285] Abbreviation for Minimum Viable Product, meaning "a product with only the minimum necessary functions". It refers to a hypothetical product in the early stages of development for a new business or for which specifications may change in the future.

medium- to long-term policy changes that influence education and the legal / regulatory systems governing the business climate. Although progress is being made in these areas, the present state of the ecosystem is one where the three local accelerators in the market are unable to sustain their operations or focus on a specific vertical because of the lack of a critical mass of high potential SUs, and as such they are dependent on the government-run Fund of Innovation and Technological Development (FITD) for financial support. The FITD similarly dominates the investment landscape, with no local venture capital present and only one regional investor with a local presence but with few local portfolio investments.

Based on the summarization of basic Country Profile research, we determined that Ukraine's startup ecosystem was the most suitable for this project of launching a pilot acceleration program funded by JICA in terms of presence of strong local acceleration partners, high quality of SUs, and presence of local investors that would all support an impactful and beneficial outcome to the startup participants in our program and to the development of the startup ecosystem. Serbia exhibits strong growth potential and remains a good candidate for future projects of this nature, and the key stakeholders in their ecosystem have similarly expressed enthusiasm to collaborate in such a program. North Macedonia's current challenges likely requires a different form of support at this stage to yield a high impact on the ecosystem, and is an area that merits deeper exploration and research.

6. Ukraine Acceleration Program Implementation Overview

6.1. Evaluation and Final Selection of AP Implementation Partner

The selection of the AP implementation partner was conducted by the survey team in accordance with the Terms of Reference of the Request for Proposal (RFP) and the evaluation methods and criteria of the QCBS, and UNIT.City was selected.

Figure 107 RFP Selection Criteria / Proposal Evaluation Criteria

Category	Criteria	Weight
Relevant Experience	■ Past Experience in Acceleration Program Management (Number of Programs / Graduates, Fund Raising of Past Participants, Market Success of Past Graduates) ■ Past Experience in Public-Private Partnerships	30%
Program Content / Proposed Methodology	■ Overall Strength and Creativity of the Proposed Accelerator Program including: ■ Sourcing Plan (Targeted Participants, Recruitment Process) ■ Marketing & Promotion Plan ■ Design of Program Curriculum ■ Demo Day Proposal ■ Organization and Staffing	40%
Personnel and Network Capacity	■ Qualifications of proposed Project Manager ■ Qualifications of Key Personnel assigned to the Program ■ Investor, Mentor and Entrepreneur Network ■ (Evidence of Financial Strength and Stability)	30%

Figure 108 Overall Proposal Evaluation Criteria

Category	Criteria	Weight
Technical Proposal	■ Relevant Experience ■ Program Content / Proposed Methodology ■ Personnel and Network Capacity	80%
Financial Proposal	■ Itemized Cost & Budget Estimation	20%

The survey team visited Kyiv in October 2021 to meet with the senior management of UNIT.City as well as key stakeholders of the Ukrainian startup ecosystem, including the Ukrainian Startup Fund (USF), local venture fund QP Digital, the Ukrainian Venture Capital Association (UVCA). The Concept of NINJA Ukraine was discussed in the series of meeting.

Figure 109 UNIT.City & NEST Hub

Source: The survey team

<NINJA Ukraine Finalized Program Timeline before the launch of the program>
The finalized timeline for the NINJA Ukraine Acceleration Program was as follows:

10 Nov 2021	NINJA Ukraine Acceleration Program Kick-Off Meeting (UNIT.City, JICA, SURVEY TEAM) Confirmation of Content Plan
15 Nov 2021	Signing of Final Contract (UNIT.City, AAIC)
26 Nov 2021	Announcement Day for NINJA Ukraine, Content / Sourcing Plan Implementation
20 Dec 2021	Startup Application Deadline. 3-Stage Selection Process begins.
21 Dec 2021	Completion of 1st Stage – Administrative Evaluation (UNIT.City)
24 Dec 2021	Completion of 2nd Stage – Pre-selection shortlist of Top 15 Startup Applicants (SURVEY TEAM, UNIT.City)
27 Dec 2021	Completion of 3rd Stage – Final Selection Conference (UNIT.City, JICA, SURVEY TEAM)
10 Jan 2022	Signing of Startup Participant Contracts
17 Jan 2022	Launch Day for JICA AP
Mid-Apr 2022	Final Pitch Event / Demo Day

6.2. Program Marketing and Sourcing Plan Implementation

UNIT.City provided the content and sourcing plan for the NINJA Ukraine Acceleration Program at the Kick-Off Meeting held on 10 November 2021. This included marketing and promotion materials designed and distributed by their in-house creative department, with the main marketing materials submitted for prior approval to the survey team ahead of launch.

The program marketing period commenced on 24 November 2021 with the launch of the NINJA Ukraine webpage and application portal on UNIT.City's website. As many Ukrainian SUs are not exposed to the idea of Asia expansion as an early growth option, a multi-channel marketing and promotion strategy to raise awareness of Asian business growth opportunities and Asian corporate partners was crucial to generate interest in the program.

The marketing and sourcing strategy was primarily centered around UNIT.City's social media reach and deep network with key players in the local startup ecosystem, and supported by secondary efforts in startup community social media seeding posts and digital news media coverage.

From their experience in operating NEST Bootcamp, a free-to-participate program for pre-MVP to early growth stage SUs which typically received up to 100 applications, UNIT.City

estimated a qualified startup applicant pool of around 50 to 70 SUs given the target participant profile of NINJA Ukraine (targeted Post-MVP Scale-Ups, with intention to extend to Asian markets)

6.2.1. Program Landing Page

- The NINJA Ukraine landing page was created in-house by the UNIT.City Creative Team and housed within the UNIT.City Homepage. Broad Introduction to the NINJA Ukraine Program
- Program Goals & Objectives
- Program Approach
- Benefits to Startup Participants
- Participant Eligibility / Qualifications
- Program Timeline / Broad Schedule
- Jury Personnel and Brief Bio

Figure 110 Samples of the NINJA Ukraine Landing Page

Source: UNIT.City website

6.2.2. Media Marketing Plan

6.2.2.1 Social Media – UNIT.City Social Media Accounts

The social media awareness campaigns for NINJA Ukraine started on 26 November 2021 and was launched across UNIT.City's main social media accounts representing a total reach of between 50,000 to 70,000 followers. All social media posts were designed by the UNIT.City Creative Team. This included a promotional video taken on-site at UNIT.City where both JICA and UNIT.City representatives could directly promote program's value and appeal to Ukrainian SUs.

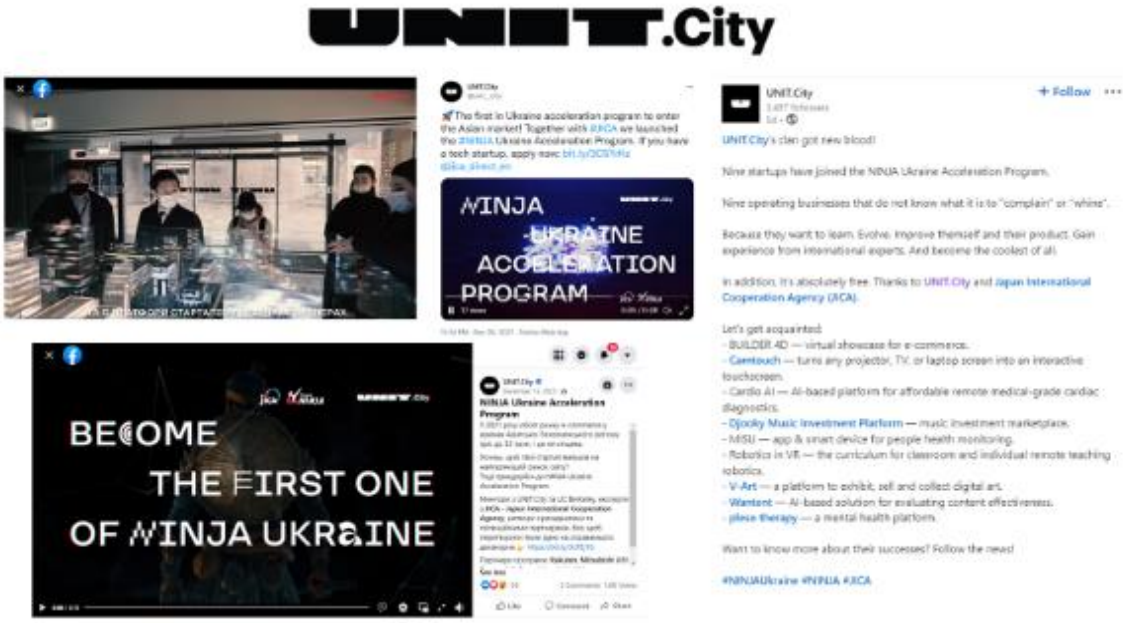
Although active engagement metrics are limited from platform indicators, UNIT.City provided anecdotal evidence to demonstrate the effectiveness, stating the rise in inquiries fielded by the UNIT.City team relating to program application processes or requests for more information on the program or on JICA, the program sponsor.

Figure 111 UNIT.City Social Media Accounts & Program Posts per Platform

Platform	Date (2021)	Purpose	Engagement / Remarks
Facebook (51,266 Followers)	26 Nov	Announcement	17 Shares, 58 Likes
	07 Dec	Reminder 1 (Video)	9 Shares, 141 Likes
	13 Dec	Reminder 2	3 Shares, 58 Likes
	15 Dec	Last Call	
LinkedIn (3,802 Followers)	26 Nov	Announcement	1 Share, 14 Likes
	07 Dec	Reminder 1	3 Shares, 24 Likes
	13 Dec	Reminder 2	0 Shares, 12 Likes
	15 Dec	Last Call	0 Shares, 8 Likes
Telegram (5,217 Followers)	26 Nov	Announcement	
	21 Dec 1	Last Call	
Instagram	07 Dec	Reminder 1	3k Views

Platform	Date (2021)	Purpose	Engagement / Remarks
(21,900 Followers)			
Twitter (154 Followers)	26 Nov	Announcement	3 Likes

Figure 112 Sample of Content posted to UNIT.City Social Media Accounts



Source: UNIT.City Social Media Accounts for Facebook, LinkedIn, Twitter

Source: Social media by UNIT.City

6.2.2.2 Social Media – Startup Community Seeding

To broaden the viewership outreach, UNIT.City's social media team posted similar NINJA Ukraine promotional material across several startup-related community Facebook groups.

Figure 113 Ukrainian Startup Community Social Media: Profile & Reach

Facebook Grp	Reach (Members)	Community Description
Ticket2IT	831	Sharing IT Events, Courses, Opportunities in Ukraine
Training, Webinars, Seminars	17,400	Community Group for Upskilling Events
Business Events Ukraine	2,900	Business / Educational events in Ukraine
Kyiv SUschool	1,000	SU Community in Kiyv
Startup Tracking	15,100	Topics on Venture Investments & SUs
Startup Events	7,600	Information on local / regional startup events
How to Start a Startup	7,700	Learning Community on Startup Related Issues
Startup.In.UA	3,700	Ukrainian Startup Community
UTEW Tech Tribe	3,400	Promoting Ukrainian Participation at World Tech Events
FRI Forum	5,800	Sharing Opportunities for Youth and SUs

6.2.2.3 Digital News Media

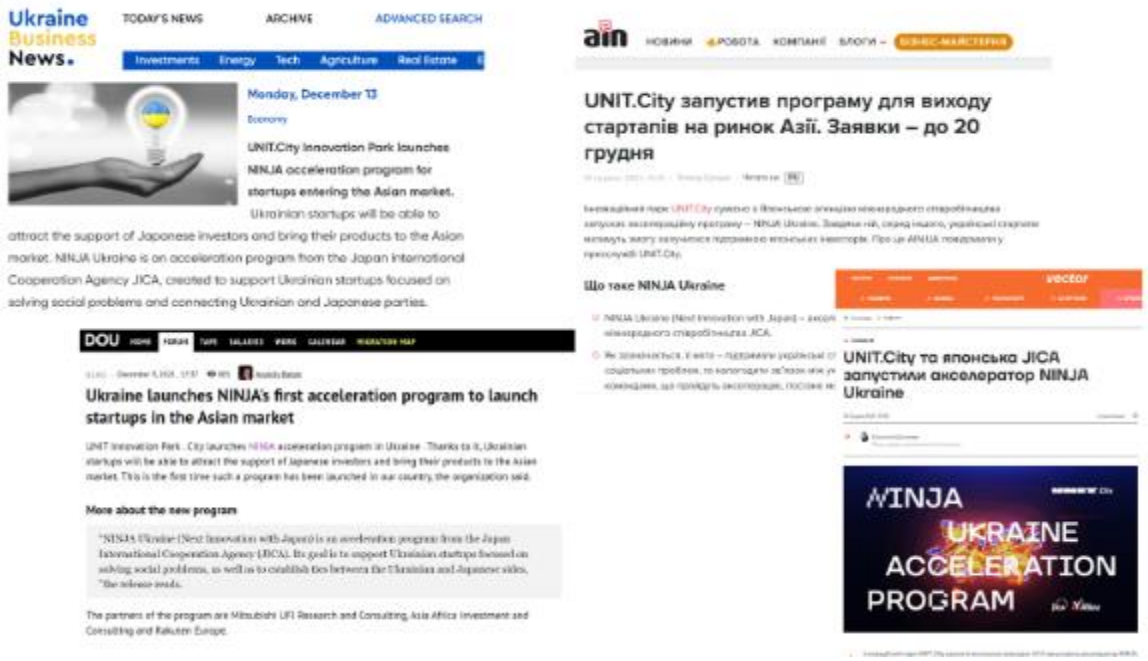
Following the postings on social media to generate initial buzz and awareness, press releases were disseminated to online digital news media outlets, especially those focused on SUs, entrepreneurship

or technology to continue to drive the marketing momentum. The reporting on digital news media dovetailed with the timing of the second wave of social media posts.

The content for digital news media was mainly in the form of a press release publicizing the first Asia-focused Startup Acceleration Program, highlighting the program's unique characteristics and directing traffic towards the NINJA Ukraine launch page and the call-to-action for qualified applications.

Website	Date	Description
AIN.UA	10 Dec 2021	AIN.UA is a Ukrainian online publication on IT business, SUs, technology and entrepreneurship with over 2 million monthly readers
MC Today	10 Dec 2021	MC.Today is a Ukrainian online publication for those who create – active, thinking people about innovative business, development and lifestyle
Fakty	09 Dec 2021	Online News Media
Vector	10 Dec 2021	
Delo.UA	09 Dec 2021	Business, Economy, Financial News
Dou		IT, Technology, Startup Forum
Novyny		
Speka.media	10 Dec 2021	Community-based Technology, Entrepreneurship, and IT news
Mind.ua	10 Dec 2021	

Figure 114 Sample of News Coverage / Digital & Tech Media News Coverage



Source: Website of each media

6.2.3 Sourcing for Target Startup Participant Profiles

6.2.3.1 UNIT.City's Network and Ecosystem Partners

UNIT.City's integration in the Ukrainian startup ecosystem provides a broad network of partners including the government-run Ukraine Startup Fund, and other startup accelerators with their own startup alumni networks and mailing lists.

As Kyiv's largest technology and innovation campus, many of their partners are also residents in UNIT.City and this facilitated clear communication of the program's sponsor, objectives and desired outcomes for success. Given their partners direct relationships and familiarity with the SUs in their networks, either through funding or other forms of support, this channel provided a good opportunity to reach SUs of the desired profile for NINJA Ukraine. Information of the

program was transmitted via partner newsletters / digests, posts on social media and through informal communication and recommendations of potentially suitable SUs.

Figure 115 UNIT.City Partner Networks

Partner	Org. Type	Description
Ukraine Startup Fund	Govt. Fund	Government Fund for providing grants to local SUs
TechUkraine	Govt Platform	Government-backed Technology Platform
Kyiv IT Cluster	IT Cluster	-
RadarTech	Accelerator	First Ukrainian Corporate Accelerator
Sector X	Accelerator	-
Demium	Accelerator	Regional Accelerator with a Local Ukrainian Presence
W.Tech	Association	International Community for Women Entrepreneurs
UNIT Sch. of Business	Business School	-
UNIT.Kharkiv	Tech Campus	-

6.2.3.2 UNIT.City Internal Networks

UNIT.City is a not only major technology and innovation hub in Kyiv but also a co-working campus housing many local SUs and ecosystem stakeholders including the Ukrainian Startup Fund (USF) and Eō Business Incubator (USAID) among many others. This proved to be a significant advantage in sourcing for potential SUs in that many SUs are formerly or currently in residence and are part of the UNIT.City startup community. Through internal networking events and informal interactions, the benefits of participation in NINJA Ukraine were directly transmitted to potential startup applicants, and queries could be immediately addressed.

As communication to SUs and their founders was largely through informal sessions and meetings, UNIT.City was unable to provide a specific list of SUs or the number of SUs who were contacted through these internal networks.

The sourcing period spanned from 26 November 2021 with the launch of the Program landing page and ended on 20 December 2021 at the deadline for application submission. In total, 54 Startup Applications were received by the deadline.

6.3. Evaluation and Final Selection of Startup Participants

The evaluation and final selection process was conducted in three stages over the period beginning 20 December 2021 and ending 27 December 2021. The evaluation stages and parties responsible are as follows:

Stage	Period	Participants	Objective	Deliverable
1	20 – 21 Dec	UNIT.City	Administrative review of all applications for completeness	Pre-Selected List for Screening
2	22 – 24 Dec	UNIT.City Survey Team	Initial evaluation and ranking of qualified applications	Final Selection Shortlist (Top 15)
3	24 – 27 Dec	Final Selection Panel	Evaluation, discussion and final selection of program participants	Final List of Participants

The full list of the 54 startup applicants and the results of evaluation are as follows:

No	Startup	Short Desc	Outcome
1	**BUILDER 4D**	**Enterprise Software - 3D / AR SaaS**	**NINJA Ukraine 2022**
2	**Camtouch**	**Consumer Hardware - Projector TouchScreen**	**NINJA Ukraine 2022**
3	**Cardio AI**	**Health & Wellness - ECG AI**	**NINJA Ukraine 2022**
4	**Djooky**	**Entertainment - Music Platform**	**NINJA Ukraine 2022**
5	**MISU**	**Health & Wellness - Vitals Monitoring + Emergency**	**NINJA Ukraine 2022**
6	**pleso therapy**	**Health & Wellness - Online Therapy Platform**	**NINJA Ukraine 2022**
7	**Robotics in VR**	**EdTech - Robotics VR**	**NINJA Ukraine 2022**
8	**V-Art**	**Entertainment - Digital Art Marketplace**	**NINJA Ukraine 2022**
9	**Wantent**	**MarTech - AI Marketing Content Optimization**	**NINJA Ukraine 2022**
10	[redacted]	Enterprise Software - No-Code Database Query	Top 15 Shortlist
11	[redacted]	AgriTech - Fruit Marketplace Platform	Top 15 Shortlist
12	[redacted]	Enterprise Software - HRM	Top 15 Shortlist
13	[redacted]	Marketplace - Beauty Salon Platform (CRM)	Top 15 Shortlist
14	[redacted]	HR - IT Employment Agency ISA	Top 15 Shortlist
15	[redacted]	Health & Wellness - Hardware Bed Sterilization	Top 15 Shortlist
16	[redacted]	Health & Wellness - Coaching CRM	Stage 2 - Screening
17	[redacted]	Saas - Mentorship Platform	Stage 2 - Screening
18	[redacted]	MarTech - Banner Developer	Stage 2 - Screening
19	[redacted]	Enterprise Software - CRM for Aesthetics	Stage 2 - Screening
20	[redacted]	Entertainment - Tarot Avatars	Stage 2 - Screening
21	[redacted]	Hardware - Bike Helmet	Stage 2 - Screening
22	[redacted]	Health & Wellness - Personal Medical Records	Stage 2 - Screening
23	[redacted]	Automotive - Hardware Emissions Reduction	Stage 2 - Screening
24	[redacted]	Health & Wellness - Hydrogen for Sports	Stage 2 - Screening
25	[redacted]	Security / Blockchain - Protect Digital Art / Images	Stage 2 - Screening
26	[redacted]	Consumer Hardware - Off-Grid Navigator	Stage 2 - Screening
27	[redacted]	Consumer Software - Mass Hotspotting	Stage 2 - Screening
28	[redacted]	Consumer Software - AR Phone Skins	Stage 2 - Screening
29	[redacted]	Health & Wellness - CRM for Psychotherapists	Stage 2 - Screening
30	[redacted]	Deep Tech - ML Optimization	Stage 2 - Screening
31	[redacted]	Consumer Hardware - Compost Bin	Stage 2 - Screening
32	[redacted]	Blockchain - NFT Martketplace	Stage 2 - Screening
33	[redacted]	HR Tech - Connectivity Analysis Platform	Stage 2 - Screening
34	[redacted]	EdTech - Games	Stage 2 - Screening
36	[redacted]	Hardware - Sanitizer	Stage 2 - Screening
35	[redacted]	Energy - Solar Blinds	Stage 2 - Screening
37	[redacted]	HR Tech - Learning & Development Platform	Stage 2 - Screening
38	[redacted]	Energy - Bio-Fuel	Stage 2 - Screening
39	[redacted]	Energy - Plasma Effects	Stage 2 - Screening
40	[redacted]	Health & Wellness - ExoSkeleton	Stage 2 - Screening
41	[redacted]	Energy - Atmospheric Pressure Energy	Stage 2 - Screening
42	[redacted]	Energy - Solar Paneling	Stage 2 - Screening
43	[redacted]		Stage 1 - Admin
44	[redacted]		Stage 1 - Admin
45	[redacted]		Stage 1 - Admin
46	[redacted]		Stage 1 - Admin
47	[redacted]		Stage 1 - Admin
48	[redacted]		Stage 1 - Admin
49	[redacted]		Stage 1 - Admin
50	[redacted]		Stage 1 - Admin
51	[redacted]		Stage 1 - Admin
52	[redacted]		Stage 1 - Admin
53	[redacted]		Stage 1 - Admin
54	[redacted]		Stage 1 - Admin

6.3.1. Stage 1 – Administrative Pre-Selection (54 Startup Applications)

UNIT.City's program managers are the designated parties responsible to determine if the received applications are complete and appropriately prepared for evaluation by the final judging panel. This includes the completion of all required application fields, access to uploaded documents (pitch deck and cover letter), and for materials to be submitted in English.

6.3.2. Stage 2 – Evaluation, Screening and Shortlisting (42 SUs Evaluated)

UNIT.City program managers and the suurvey team representatives jointly determined the standardized evaluation matrix across four broad evaluation categories: Investment Potential, Achievement Metrics, Purpose & Goals, Pitch Deck. Evaluators scored SUs on each evaluation categories on a scale of 1 (lowest) to 5 (highest) and ranked the SUs based on aggregate score. Through both a ranking process and a further detailed discussion to assess compatibility, diversity, and preparedness, the Stage 2 evaluators jointly determined the Final Selection Shortlist of 15 SUs.

Figure 116 Standardized Evaluation Matrix

Main Criteria	Scoring	Description
Investment Potential	0 - 1	Is the Product-Market Fit well-defined and relevant?
	0 - 1	Does the chosen market exist and is it growing at a high rate?
	0 - 1	Is the Business Model / Revenue Model clearly defined and sustainable?
	0 - 1	Is the Customer Acquisition Model clearly defined and scalable to international markets?
	0 - 1	Does the Product offer a unique, valuable innovation that provides a competitive advantage in the market?
Achievement Metrics	0 - 1	Stage of Product Development (0 = Idea. 1 = MVP, FWP)
	0 - 2	Revenue Traction (0 = No Rev. 1 = < $50k Rev. 2 = >$50k Rev)
	0 - 1	Market Traction (0 = No Clients. 1 = > 1 Client.)
	0 - 1	Previous Funding (Not Self). (0 = No Prev. Funding, 1 = Achieved 1st Funding)
Purpose & Goals	0 - 1	Is Startup an ICT-enabled Business?
	0 - 1	Does the Team have the relevant experience to execute its solution
	0 - 1	Is Startup seeking Overseas Expansion / Exposure (esp. in Asia)?
	0 - 1	Do the goals of this program match the goals of this startup?
	0 - 1	Are the reasons stated for participation relevant and demonstrates commitment to the program
Pitch Deck	0 - 1	Does the Startup clearly articulate their Company's Vision and Value Proposition
	0 - 1	Does the Startup clearly articulate the Problem identified and the Product solution
	0 - 1	Does the Startup provide a clear picture of its business model / revenue model
	0 - 1	Does the Startup provide a clear picture of its customer acquisition model / retention model
	0 - 1	Does the Startup specify its ask, its expected use of funds and its next achievable milestone.

6.3.3. Stage 3 – Final Selection Panel (15 SUs Shortlisted)

The Final Selection Panel consists of the following persons:

Name	Designation
Dominique Piotet	CEO, UNIT.City
Rick Rasmussen	Industry Fellow and Lecturer, University of California Berkeley Sutardja Centre for Entrepreneurship & Technology
Shingo Morihata	Senior Director, JICA Economic Development Departmen
Kiyotaka Miyazaki	Director, JICA Europe Division
Satoshi Sugimoto	Resident Representative, JICA Ukraine Office
Ryoichi Fukaya	Director, Rakuten Europe EMEA Strategy and Operations,

The selection panel received the full list of startup applicants with the shortlisted top 15 SUs highlighted for their consideration. Panel members were given free access to all relevant application materials including the startup's pitch deck and cover letter and encouraged to evaluate the SUs on the same basis as done in Stage 2 to facilitate a ranking discussion and final

decision. Final selection panel members were informed that their ranking and selections are not confined to the top 15 SUs, and any additional SUs that caught their attention should be brought up for the panel's consideration.

The Final Selection was held on 27 December 2021 with panel members joining remotely. UNIT.City facilitated the session to set up the structure and form of the final selection proceedings. First, panel members agreed to restricting their consideration to only the top 15 SUs shortlisted with no exceptions for inclusion. The panel then opted to proceed through a process of elimination rather than active selection, such that each member would highlight their lowest 5 ranked SUs. For SUs where there was unanimous or near unanimous agreement, these were eliminated from further consideration. With the remaining SUs where the panel held conflicting views, members debated the strengths, weaknesses and relevance to the program's objectives in order to reach a consensus decision.

The panel settled on the following nine SUs for participation in the inaugural JICA NINJA Ukraine Acceleration Program 2022:

Startup Name	Industry	Short Description
Djooky	Arts / Entertainment	Music platform for emerging artists
V-Art	Arts / Entertainment	Digital art platform
Robotics in VR	EdTech	Learning robotics through VR platforms
CamTouch	Enterprise Hardware	Enhanced visual presentation hardware
Builder 4D	Enterprise Software	3D / AR SaaS
Pleso therapy	Healthcare	Online therapy platform
MISU	Healthcare	Vitals monitoring + emergency alerts
Cardio AI	Healthcare	ECG AI
Wantent	Marketing Tech	AI marketing content optimization

6.4. Review and Evaluation of Marketing and Sourcing Implementation

6.4.1. Positive Outcomes

- The sourcing plan produced a result that was within the range of expectations in terms of the number and quality of startup applications received.
- Level of interest in an Asia-focused Acceleration Program grew at an increasing pace throughout the sourcing period. Most Ukrainian Startup Programs focused on Western expansion / market access and shows that Project NINJA possesses a strong value proposition for this ecosystem as more SUs recognize the potential and viability of expansion into Asia.
- Even SUs that did not meet program qualification criteria (Pre-MVP stage SUs) expressed a strong degree of interest in the program, suggesting possibility for future expansion of the program framework and further partnership to develop an eastern-focused pathway for startup expansion and growth.

6.4.2. Areas for Improvement or Further Consideration

- The idea of expanding towards Asia is not common in the startup community and a longer sourcing period for this pilot program may have been preferable to promote awareness and understanding of the program objectives, the program partners and awareness of the conditions in Asia for foreign SUs.
- The sourcing period was around 3.5 weeks towards the end of the year and close to the holiday season. This is traditionally a slower period where many are on vacation or are spending time visiting family. This could have impacted the effectiveness of the marketing outreach plan.
- Unfamiliarity with the Program Sponsors, their market positioning, and how they would be able to directly provide support to startup expansion plans were areas that received several inquiries. Considering that video format posts were the most well-received or easily digested,

perhaps an introduction video of JICA and their corporate positions / role in the Asian Market would have been helpful.

- Startup founders from previous Project NINJA programs would be the best program ambassadors for marketing purposes as they understand the expectations, needs and concerns of SUs and can provide clear testimonials on the value that can be expected and extracted from the program.
- Locating a centralized source of all news / information on other Project NINJA programs is a challenge towards understanding this JICA Global Initiative better. A central web portal of all past NINJA programs and participants may be beneficial.

6.5. NINJA Ukraine Program Implementation

The NINJA Ukraine Program launched on 17 January 2022 and was suspended on 24 February 2022 due to the significant escalation of Russian-Ukrainian military conflict. The survey team and UNIT.City program representatives maintained regular contact throughout the period of suspension to keep abreast of updates on the ground, the status of our program partners and the status of the program startup participants.

The circumstances of the armed conflict led to many of the SUs shifting their personnel and operations into neighboring countries, whereas some others elected to remain in Ukraine to volunteer in the military defense effort. During this period of instability and uncertainty, it was mutually agreed that the program would be suspended until the situation in Ukraine is resolved or stabilizes. Although the contract includes *force majeure* clauses, no action or discussion was deemed necessary at this stage on this topic as both UNIT.City and JICA expressed a clear intention to resume the program when circumstances permit, rather than seeking to end the agreement and bring matters to an appropriate resolution.

This section describes the program implementation from the program soft launch to the date of suspension due to the Russian invasion of Ukraine.

6.5.1. Finalized Program Schedule

Week	Date	Topic	Content
0	17 – 21 Jan 2022	Program Onboarding	Logistics / Admin, 1-on-1s with SURVEY TEAM Survey team – 1-on-1 Meetings 1st Round
1	24 – 28 Jan 2022	Opening & Introductions	Official Opening, Program Introduction, Entrepreneurship
2	31 Jan – 4 Feb 2022	Problem – Solution Fit	Market Segmentation, Market Research, Customer Interviews
3	7 – 11 Feb 2022	Primary & Secondary Market Research	Problem Validation, Competitive Mapping, Market Sizing (TAM, SAM, SOM) Survey team – 1-on-1 Meetings 2nd Round
4	14 – 18 Feb 2022	Product – Market Fit / Marketing	Scalable, Repeatable Sales Process – Online / Offline, Sales Models – B2B, B2C, SaaS
5	21 – 25 Feb 2022	Pipeline Development, CM Acquisition, Direct Sales	Sales Pipeline, Lead Generation, Marketing Automation Tools, Sales Force Motivation & Compensation

Week	Date	Topic	Content
6	Suspended	Financial Model Business & Revenue Model	Unit Economics, Fixed / Variable Costs, P&L, Cash Flows, Traction Gap, Growth Strategies, Growth Hacking
7	Suspended	Legal	Legal Aspects of Fundraising, Employment Agreements, NDA, Top Mistakes Made / Lessons Learned
8	Suspended	International Growth & Strategic Partnerships	International Growth, Strategic Partnerships, Cultural Differences
9	Suspended	Fundraising & Working with Investors	Types of Investors, Types of Investments, Expectations Equity Math, Stock Plans, Fundraising, Incorporation
10	Suspended	Pitching and Presentation	Pitch Deck, One Pager, Presentation Skills, Presentations (Clients, Partners, Investors)
Demo day			

6.5.2. Core Curriculum Design and Designated Program Touchpoints

In regards to the core curriculum, the broad design of the NINJA Ukraine Program revolves around a weekly lecture or workshop (around 1.5hrs) facilitated by a business expert or mentor to provide basic entrepreneurial education, reinforce business fundamentals and drive the startup towards understanding and increasing its investable potential. This workshop is supplemented by 1-on-1 mentorship sessions (around 45min to an hour per startup) with the featured mentor and is tailored to the specific identified needs of the startup. Informal networking events with NEST Bootcamp startup alumni and other companies which are resident in the UNIT.City campus also provide avenues for increasing connectivity to the Ukrainian startup ecosystem.

To ensure that the program is appropriately focused and relevant to our startup participants, UNIT.City's dedicated program manager holds weekly 1-on-1 meetings with each startup for a progress report, needs analysis and program feedback. This feedback allows for an agile posture to adapt and adjust the program to best focus on the areas of greatest need across all startup participants, and also to identify areas of strength or possible collaboration and synergy within the cohort. SURVEY TEAM

As a major value proposition of the program is the potential for networking and connections to Asian markets, Survey team members hold formal 1-on-1 meetings with program participants every 2 to 3 weeks to gain a deep understanding of our program participants' business model, product and go-to-market strategy, develop a plan of support or feasibility discussions on Asian market entry, and to leverage existing corporate and personal networks to provide relevant connections and resources where possible.

6.5.3. Program Implementation Partner Profile & Team

UNIT.City is the first Ukrainian innovation and technology park designed to bring technology companies, SUs, IT education programs, R&D centers and creative industries all within one city block of each other, to collectively boost the development of Ukraine's technology Industry. UNIT.City is home to startup investors, startup accelerators, laboratory facilities, and education programs and continues to build out its ecosystem infrastructure and cement its status as a prominent pillar of the local startup community[286].

The UNIT.City ecosystem for entrepreneurs and SUs includes:

[286] https://unit.city/en/residents/

- Mentoring support from resident companies and invited experts
- Access to over 500 internal events and networking opportunities annually
- Benefits such as UNIT.Advice and UNIT.Perks programs, and access to fabrication labs
- A Community of over 100 resident companies from different industries including Bolt, Delfast, Innovation DTEK, BBDO Ukraine, TechUkraine, etc.
- Co-Working & Office / Meeting / Event Space
- R&D Centers Initiative – 2 Research Labs (FabLab, Sensorama Lab) with intention to launch an internal UNIT.City R&D Center in the future
- Smart City Initiative where smart technologies reduce the challenges of urban life to create a comfortable, safe and secure community.
- Governmental Support (Ukrainian Startup Fund is a resident)
- Venture Capital Initiative – VC Offices in UNIT.City, Investor Events, Investor Conferences
- Educational Initiatives – uCode, UNIT School of Business and several technical academies & education programs.
- Acceleration Program Network (EO Business Incubator, NEST, INDAX, Sector X, RadarTech, etc.)

UNIT.City created the NEST Hub which gathers all activities and programs for SUs into a single touchpoint. In July 2020, UNIT.City launched a free-to-participate, 3-month acceleration program – the NEST Bootcamp – that was designed and implemented with the support of Rick Rasmussen, Industry Fellow for UC Berkeley's Sutardja Center for Entrepreneurship and Technology. The program focused on advanced SUs or "scale-ups" who already achieved market traction and were seeking to accelerate growth and business market expansion. The program is designed to meet the following objectives:

- Support the development of SUs in Ukraine in technology entrepreneurship;
- Facilitate collaboration between participants and investors, local and global business communities and the Ukraine-based technology entrepreneurs and private companies;
- Encourage development of new technology products and services and their commercialization in local, regional and global markets;
- Connect with the best mentors and business experts for mentoring and business support.

Companies and partners supporting the NEST Bootcamp Programs include: U.Ventures, Ukrainian Startup Fund, Amazon Web Services (AWS), DTEK, GoLocal, EO Business Incubator, Sector X Accelerator, Radar Tech, INDAX, UNIT.School of Business, Digitizing.Space among other corporate partners who provide mentorship support and sharing of best practices to speed the growth of NEST Program SUs.

The UNIT.City NINJA Ukraine 2022 Implementation Team is as follows:

Name	Position	Responsibilities
Dominique Piotet	CEO / Advisory Board	Provides strategic advice and sets deliverables for project implementation. Final decision-making authority and accountability for project completion. Note: Dominique Piotet stepped down from the CEO role in July 2022, but remains on the advisory board[287].
Rick Rasmussen	Program Advisor /	Advisor and subject matter expert who supports program design conceptualization and implementation, is consulted

[287] AIN.UA website, "Dominique Piotet is Leaving the Post of UNIT.City CEO. How an Innovation Park works in War Time Conditions," https://ain.ua/2022/07/25/dominik-piote-pokydaye-post-seo-unit-city-yak-innovaczijnyj-park-praczyuye-v-umovah-vijny/?fbclid=IwAR2BU-_Y4ZtHzsIeYILkRhzwGXecTdOt_SaNBSqy_NEA9TLSVVOBOABh2LU

	Advisory Board	before decisions or actions.
Valentina Rakitina	Head Ecosystem Dept	Assigned as main point of contact for Survey team, is tasked with operational control and responsibility over project tasks and deliverables
Dariia Voloshchuk	Snr Project Manager	Dedicated project manager for NINJA Ukraine, responsible for operational aspects of program and coordination / management of startup participants
Yurii Ramarenko	Project Manager	Operational manager to provide support for project implementation.

6.5.4. Profiles of Program Startup Participants

NINJA Ukraine welcomed 9 SUs into the program on 17 January 2022. The inaugural cohort was made up of SUs not only from different industries, but also from different stages of maturity, product development and preparedness for international market expansion. The short marketing and promotion campaign for NINJA Ukraine, coupled with general unfamiliarity with Asia as a destination for early business expansion, led to a wide range in preparedness and market awareness among the SUs.

Their corporate profiles (in alphabetical order) are as follows:

Builder4D, Cardio.AI, CamTouch, Djooky, MISU, pleso therapy, Wantent, V-Art, VRobotics

6.5.4.1. Builder 4D [Pre-seed]

Builder4D products and services are a platform of interactive innovation, introducing augmented reality (AR) and 3D technology that will help businesses improve the processes of sales and presentation of products. Builder4D has a finished base of interactive technology solutions that can be adapted to any business or events. Services include:

- Development of Interactive 3D and AR Content
- 3D Configurators for customized business solutions
- Solutions with "Trying-on"
  - AI-enabled technology to allow buyer to visualize product on their own camera image.
- Ready-made tools for Independent Implementation of 3D & AR Functions
  - Comprehensive platform of 3D & AR services and tools to independently implement product demonstrations in 3D or AR.

6.5.4.2. Camtouch [Seed]

Camtouch is an innovation in interactive screen technology that works wirelessly with any display or projector together with a stylus with 360-degree touch sensitivity, allowing users to easily interact directly with any presentation, lesson or projected material. Camtouch is easy to set up (15 seconds, no additional software installation), precise (within 0.5mm), responsive (~5 ms) and compatible across standard operating systems (Windows-based, Andriod, Mac OS, Linux).

6.5.4.3. Cardio.AI [Seed]

Cardio.AI is an AI-based platform for efficient and affordable remote medical-grade cardiac diagnostics. Current Electrocardiography (ECG) monitoring is resource intensive (equipment and personnel), time-consuming (several days of processing by technical specialists) and a highly inconvenient experience for patients, resulting in inefficient deployment and low accuracy from hardware inefficiencies multiplied by human factors in manual annotations.

The Cardio.AI solution provides end-to-end remote cardiac diagnostics service with single-use personal monitoring device backed by cloud and AI technology. Cardio.AI delivers a wide range

of analytics in a ready-to-print format with a UI designed with the attending professional in mind, to deliver the best possible outcome for a patient conveniently and quickly.

Cardio.AI allows healthcare providers to grow their diagnostic business far beyond their human resource limitations (ECG technicians), improve their Service-Level Agreement (SLA) standards to hours instead of days, with 24/7 online access to raw data for clinicians through browser-based software.

<Cardio.AI Current Business Status>

- 17 Medical Clinics in Ukraine (500+ Tests monthly)
- 2021 Revenue: $35,000
- Currently in process for North America FDA Clearance
- Funds Raised to Date: USD 2 million
- Current Investment Round: USD 5 Million Seed Round

6.5.4.4. Djooky / DjookyX [Seed]

Djooky is a music and fintech startup, the first an only global music discovery and investment platform offering artists from all over the world access to a global investment community, and to music lovers and investors the opportunity to invest in the music they love. Building on the growing interest in music as an asset class, DjookyX offers a means for music creators and rights-holders to finance their projects, while fans can purchase rights in tracks of their choice and benefit from future royalties.

DjookyX provides the auction or primary marketplace platform and operational structure for the related transactional activities including the receipt and disbursement of future royalties collected. DjookyX expects to launch a secondary marketplace in the next phase of development that allows fans to actively trade the music rights acquired on the primary marketplace, creating a tradable alternative asset class. Both market places are operated by Germany-based Djooky and have received approval from their local regulator, the Federal Financial Supervisory Authority (BaFin).

Djooky is building out an ecosystem that will include its flagship Djooky music platform, the DjookyX marketplace, Djooky Records, Djooky Music Investment Summit and HitHunter – a free-to-play gamified version of DjookyX.

<Business Metrics>

- Strong Conversion Metrics: Avg. Conversion Rate of App Install Campaigns 11.5%
- Relatively low CAC: Avg. cost per lead acquired of EUR 1.30
- Strong Engagement Metrics:
  - 5,500+ songs uploaded
  - 177,000+ Users and 24,000 artists from 194 countries
  - Social Media follower growth up by 80% per season

6.5.4.5. MISU [Seed]

MISU is a combination of wearable health tracking technology and AI-based deep learning algorithms that track and forecast critical events related to heart conditions to prompt healthcare interventions at an early stage. In over 72% of deaths from cardiovascular disease in Europe are the result of late reactions to heart attacks. With MISU's algorithms and wearable tracking device, MISU is pushing the frontier of primary medicine by providing easy and affordable monitoring, together with disease forecast and early notification to head off any potential critical situations as early as possible. MISU also allows for the creation of emergency contact notifications to family and medical health professionals that can aid in life-saving emergency situations where the patient becomes unresponsive.

MISU is distributing its product in Ukraine and Poland, and is considering further expansion in Western Europe, Asia or Africa. The MISU App is best paired with the native MISU Watch, but will also retain most key functions when paired with existing smartwatch devices such as the Apple Watch (iOS) or any android-based smartwatch.

<Business Metrics>

- Revenue in 2021: USD 19,000
- Funds Raised in 2022: USD 450,000

6.5.4.6. Pleso Therapy [Seed]

Pleso Therapy is an online mental health platform that employs advanced matching algorithms and a simple questionnaire to provide a shortlist of suitable therapists, thereby simplifying the search process and significantly reducing the decision effort in seeking out support for mental health. For users, the platform offers standardized content (detailed descriptions, video introductions, professional qualifications, etc.) of therapists, streamlined booking and payment processes, and assurances of data privacy and security.

For mental health professionals, the Pleso Therapy platform supports customer acquisition, booking and scheduling, payment handling and online therapy infrastructure, allowing small, private practices to focus on therapy rather than administration.

Pleso currently offers the most advanced mental health platform solution in its local Ukrainian market and is seeking to expand regionally to Poland and Russia.

<Business Metrics>

- Operational Revenue: Over $50,000
- Customers: more than 500
- Bookings to date: more than 2,000 appointments booked within 1st year

6.5.4.7. Wantent [Seed]

Wantent is an AI-powered content intelligence platform providing insights from screening audience through gaze tracking, emotion classification and attention classification. Wantent helps video content producers and distributors to determine their target audience reactions, saving their time on production, marketing budgets and making product launch results more predictable. Wantent is working towards transforming the media entertainment testing & research industry.

Wantent operates in the US, Europe, Australia and runs on a SaaS business model.

<Business Metrics>

- Clients: 15
- Revenue: over USD 100,000
- Investment Funding: USD 600,000 (QPDigital + Angels), Seeking to raise Seed Round

6.5.4.8. V-Art [Seed]

V-Art is a platform for digital art assets, combining a NFT Marketplace and IP Rights to trade and manage digital assets with immersive exhibitions to experience and interact with art. V-Art's business model encompasses both B2B and B2C elements, with market place commissions featuring as the main revenue source, and SaaS for onboarding clients (galleries, museums, public & private collections) to increase retention and extend LTV.

V-Art is situated at the intersection of at least four partially overlapping but nevertheless distinct markets: NFTs, Art, Metaverse and AR/VR. Providing a full cycle of user experience with digital art results in higher retention and engagement.

V-Art Marketplace combines NFT and IP rights to digital artwork, and provides different possibilities to use the digital art assets via a system of licenses. Both physical and digital "biography" of the artwork in addition to the provenance is recorded to support its value.

Virtual Exhibition Tech – 3D and VR spaces elevate the immersive experience with art, and AR to make it a part of your physical ambience as well.

V-Art App (Freemium model) puts a gallery in your pocket. Get immersed in virtual exhibitions, interact with art in your physical surroundings with the advanced AR functions, communicate in virtual chats and share experiences on social media.

V-Art Lab is a space for learning, researching and networking for anyone interested in digital art. A home to webinars, podcasts, interviews and articles featuring market leaders discussing the sphere.

<Business Metrics>

- Community: 6,000+ artists / collectors / dealers / gallerists. 18 Partnerships.
- Exhibitions: 17 Virtual Exhibitions, 29 Collaborations and Projects
- Investments: USD 150,000 in grants + USD 350,000 Pre-Seed Funding

6.5.4.9. VRobot Education [Pre-seed]

VRobot Education develops robotics education software for VR environments for children aged 9 to 14. With the growing popularity of STEM, Robotics and Coding education, VRobot provides a virtual solution to physical robotics classes where physical hardware is a limiting factor in class size and creative content. Through interactive VR lessons and games where students and tutors can interact within the game environment, VRobot supports remote learning access, allowing private tutors to expand their student reach and class sizes, or with standalone education modules for parents looking to engage their children in STEM-education in their home.

VRobot operates on a B2B subscription model with over 25 schools in North America and Canada, 450 Private customers (tutors, parents, etc.) and counting over 20,000 student users.

6.5.5. Detailed NINJA Ukraine Program Activities (Jan 2022 to Feb 2022)

6.5.5.1. Onboarding / Week 0 (17 Jan 2022 to 21 Jan 2022)

<Key Activities>

- Onboarding + Intro to UNIT.City
- Initial Group Check-In Session with Dominique Piotet (CEO UNIT.City)
- 1-on-1 Introductory Meetings with Benjamin Lim (Survey team / Collective Platform)

Survey team and UNIT.City agreed to a "soft-launch" or "onboarding week" for the program to allow SUs to settle into the UNIT.City NEST Hub premises, complete necessary paperwork and documentation, and to start with a round of 1-on-1 introductions with the survey team.

These introductory meetings served as the first contact between Survey team Representatives and the program participants, and structured as an informal session to get to know the SUs, their overall state of business development, stage of growth, plans for expansion, and areas of need. From a program perspective, we learned their expectations and objectives for entering the program, but also a sense of their preparedness and awareness of Asian markets in terms of potential partners, competition or key challenges. This information will form the initial base for the framework of our support for each startup going forward in the program.

6.5.5.2. NINJA Ukraine Week 1 & 2 (24 Jan 2022 to 4 Feb 2022)

<Key Activities>

- Official NINJA Ukraine Program Opening
- NINJA Ukraine Group Sessions
  - Customer Development Method – Rick Rasmussen (UC Berkeley)

- Cooperation between Corporates and SUs – Emanuele Volpe (DTEK)
- Public Relations Strategy – Oleksandra Pogorelaya (UNIT.City – Head of PR)
- Chat with Jean-Christophe Bonis (Entrepreneur, Tech Influencer, Speaker)
- International Expansion – Rick Rasmussen (UC Berkeley)
- Customer Experience – Andrii Milinevskyy (V-Art, Biz Dev Advisor)

■ NINJA Ukraine 1-on-1 Sessions
- Mentorship Sessions with Emanuele Volpe (Chief Innovation Officer, DTEK)
- Weekly 1-on-1 Program Check-In with Dariia Voloshchuk (UNIT.City)
- Weekly Group Session with Dominique Piotet (UNIT.City, CEO)

■ Events
- Evening on Ukrainian Animation
- NEST Hub Beer Pitching

On January 24th, Japan's Ministry of Foreign Affairs raised the threat level warning for Ukraine up to Level 3, suspending plans for JICA and Survey team representatives to travel to Kyiv. However, in consultation with UNIT.City, the NINJA Ukraine Program continued as planned.

NINJA Ukraine's official Opening Ceremony was held on 24 January 2022 in the NEST Hub facility of UNIT.City. Representatives from all 9 Program SUs were physically present in the space and representatives from JICA (Kiyotaka Miyazaki), Rakuten Europe (Ryoichi Fukaya), MURC (Michikazu Koshiba) and AAIC / Collective Platform (Shigeru Handa, Benjamin Lim) were present in a virtual capacity to welcome all participants into the program. Following the opening addresses, each startup had 5 minutes for an opening pitch to introduce their business and for commemorative photos / gifts to be distributed.

Figure 117 NINJA Ukraine Official Opening Ceremony @ UNIT.City's NEST Hub

Source: The survey team

Following the opening, the NINJA Ukraine Program proceeded according to the scheduled curriculum, with the early sessions led by Rick Rasmussen from UC Berkeley's Sutardja Center for Entrepreneurship and a key advisor on the design and implementation of UNIT.City's acceleration programs. The first 1-on-1 mentorship sessions on corporate cooperation was taken on by DTEK's Chief Innovation Officer Emanuele Voelpe.

From a Program Operation and Administration perspective, Dariia Voloshchuk set up weekly update meetings with Survey team Representatives to update program progress, troubleshoot any issues raised, and make adjustments to program plans based on feedback from the SUs and identified areas of need. To this end, UNIT.City facilitated the completion of Individual Development Plans (IDPs) for each startup within the first 2 weeks to pinpoint key areas of

development and craft appropriate objectives and goals for program participation. This update process also uncovered a common concern with program SUs in understanding how European SUs initially break into Asian Markets, and Rakuten Europe committed to supplementing the program with a group session to address this key issue in the next week.

6.5.5.3. Week 3 to 5 (7 Feb 2022 to 24 Feb 2022)
<Key Activities>

- Survey team Group Session
  - Asian Market Entry Overview – Shotaro Yamanaka (Rakuten Europe) & Akos Deliaga (Talk-a-Bot Co-Founder & Managing Director)
- Survey team 1-on-1 Sessions
  - MISU, Pleso Therapy, VRobot – Shigeru Handa (AAIC)
  - Wantent, Cardio.AI, Builder4D – Michikazu Koshiba (MURC)
  - V-Art, CamTouch, Djooky – Ryoichi Fukaya (Rakuten Europe)
- NINJA Ukraine Group Sessions
  - Sales and Marketing – Edmundas Balcikonis
  - Customer Experience & Customer Development – Andrii Milienevskyy
  - Entering Japanese Market – Ivan Selezniov
  - Marketing, Positioning & Branding – Olga Roenko
  - Go-To-Market Strategy – Rick Rasmussen
  - Market Research – Dominique Piotet
  - How to Build Efficient Marketing Strategy – Margo Lee
- NINJA Ukraine 1-on-1 Sessions
  - Mentorship Sessions with Rick Rasmussen
- Peer-Learning & Expertise Sharing
  - Wantent Group Session
  - Djooky Group Session
- Events
  - Business Speed Dating with UNIT.City Residents
  - Investment / Venture Networking
  - Trade with Ukraine – by Embassy of Japan in Ukraine
  - Group Meeting with Vlad Kotov (Ukrainian Startup founder in Japan)

In Week 3, Sho Yamanaka from Rakuten Europe facilitated a group session on Market Entry to Asia and brought in Akos Deliaga (Co-Founder of Talk-a-Bot) whose Hungarian startup opened up a regional office in Singapore and counts several Asian corporates including some Japanese corporates as its partners. This information sharing session addressed a key issue identified by UNIT.City from earlier feedback and update sessions, and received strong positive feedback from program SUs who could hear directly from a fellow entrepreneur who could share from his personal experience on this topic. The session was highly relevant and future programs may benefit from the incorporation of a similar supplementary sessions on Market Entry.

In Week 3, the survey team Representatives followed up with the 2nd round of 1-on-1 meetings with Program SUs, this time focusing on some of the issues, objectives or expectations identified in the first introductory 1-on-1 meetings. This included pairing up the SUs with SURVEY TEAM Representatives who were best suited towards supporting the SUs in their areas of need. As such, the sessions were more focused towards understanding business models, go-to-market strategies and applicability to Asian (or African) Markets and some of the challenges that may require deeper inspection or market research. Where applicable, SURVEY TEAM Representatives helped to connect SUs with Japanese Corporates through their own personal and corporate networks, to support their efforts towards expansion into Asian markets.

By February, tensions between Ukraine and Russia continued to escalate and the program operated under a constant threat of armed military conflict between Ukraine and Russia. Towards the end of January and into early February, several countries including the US and UK began evacuating non-essential personnel and family members from their embassies in Ukraine. As a result, several program sessions were shifted online instead of in-person as travel conditions were untenable and out of an abundance of caution for the safety of the invited experts. Some of the participating SUs also began to make contingency plans to shift operations and staff into neighboring countries to ensure a continuity of business. These conditions made it difficult for participants to maintain full focus, as there were matters of grave national and personal importance coming into play.

On 24 February 2022, Russia launched a full-scale military assault on Ukraine from several fronts, and in communication with UNIT.City managers, the NINJA Ukraine program was suspended until further notice.

Following the initial suspension of the NINJA Ukraine Program on 24 February 2022 due to the escalation in military conflict between Russia and Ukraine, the survey team continued to maintain regular contact with UNIT.City.

NINJA Ukraine SUs and UNIT.City personnel were safely evacuated to other countries in Western Europe, though some elected to stay in Ukraine to support the military defense efforts. UNIT.City maintained contact with all NINJA Ukraine participants, to stay abreast of their whereabouts, personal circumstances and state of business operations. Although many program participants temporarily relocated their base of operations outside of Ukraine during this period, the heavy emotional and mental toll on the SUs as well as the program managers was a key determinant in arriving at the final decision to continue the suspension of program activities until such time that a measure of stability and safety can be restored in Ukraine.

The survey team communicated through UNIT.City that during the period of program suspension, should any NINJA Ukraine SU need any help, mentorship, or business support, the survey team would maintain open lines of communication and an open offer of informal mentorship or business assistance.

In June 2022, UNIT.City informed the survey team that the situation in Kyiv is stabilizing and businesses are starting to return to work. As such UNIT.City will re-open its doors in June, but expects a return to full functionality in perhaps six months. Both parties agree that with the disruption in momentum of the program, we will need to revisit the program structure and re-assess the status and willingness of the SUs to participate as their objectives and focus may have shifted during the period of disruption. UNIT.City made an initial proposition for a timeline to resume the program starting in September or October, but acknowledges that the situation is still fragile and escalation of tensions is a real possibility for further program disruption. UNIT.City and the survey team will revisit the discussion again.

6.5.6. Update on MISU, program participant

MISU relocated its base of operations to Poland during the armed conflict to continue its work on expanding into the Polish Market. MISU represented Ukraine at the VivaTech conference in June 2022 in Paris, France and met with French President Emmanuel Macron, and is now working towards a partnership with the French government. Through this conference, MISU established connections with one of the largest French business incubators in Lille, as well as contacts to over 30 MNCs including TATA, Huawei, Sanofi and Novo Nordisk.

MISU's CEO and Founder Vova Shevchuk reached out to Shigeru Handa (Director, AAIC Investment) to continue conversations about exploring expansion into African markets. Following a few meetings to be updated on their current situation and understanding their objectives for African expansion, Mr. Handa introduced MISU to Dr. Amit Thakker, Executive Chairman of African Health Business (AHB) and luminary in the African Healthcare Industry. Dr. Thakker

established AHB in Kenya in 2015 to stimulate the business of Healthcare in Africa and facilitates an annual Pan-African health business symposium as a platform to engage multi-sectorial stakeholders to strategize on overcoming healthcare challenges in Africa through public-private partnerships, with the goal of an all-inclusive dialogue as well as development.

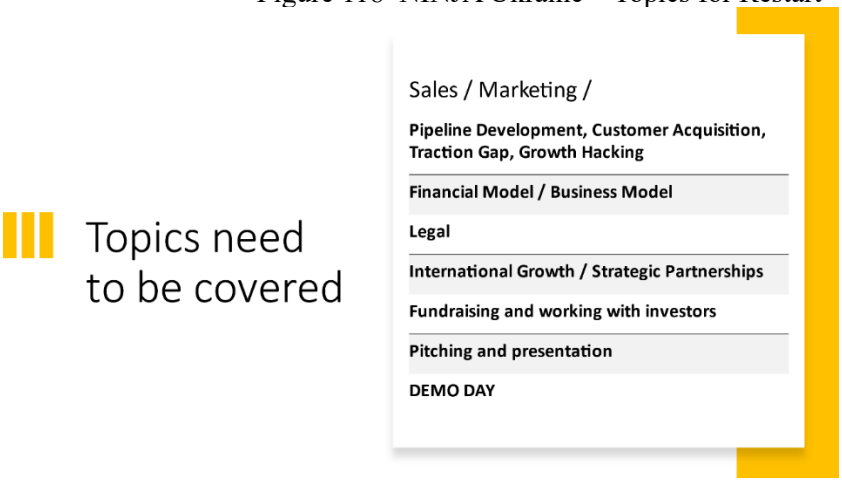
Through this connection, AHB met with MISU and sees strong potential for adaptation to the African Healthcare System and suggests designing and launching a pilot program with both public healthcare institutions and private healthcare providers, to test the market and provide initial proof of concept and applicability. Further negotiations are currently on-going.

6.6. NINJA Ukraine Restart

In August/September 2022, UNIT.city and the Survey team discussed whether the NINJA program could be resumed and how many SUs would be able to return to the program.
UNIT.city confirmed that 7 out of 9 would be eager to resume the program and suggested the following schedule;

- Restart Date : October, 24th
- 1 week – 2 sessions for rehearsal + pitch
- 5 weeks of the program
- Demo day – December 7 (8)

Figure 118 NINJA Ukraine – Topics for Restart



Topics	Mentor
Sales / Marketing /	Oleksandr Diatlov/ Rick Rasmussen
Pipeline Development, Customer Acquisition, Traction Gap, Growth Hacking	Rick Rasmussen
Financial Model / Business Model	Rick Rasmussen
Legal	Andrew Porada
International Growth / Strategic Partnerships	Galyna Paliychuk/ Rick Rasmussen
Fundraising and working with investors	Andrii Sorohan
Pitching and presentation	Oleksandr Zayoma

Due to the availability of mentors, the restart date was postponed to 14 November.
On 14 November, 7 SUs, Representatives (Camtouch and VRobotics did not participate) from UNIT.City, JICA and Survey team held a kick-off (Restart) online meeting. All SUs shared their

current state of business in brief and expressed excitement for the restart of the program. At this time, startup business updates are as follows:

<V-Art>
Expanded their team to 14 members, and pivoted to B2B with blockchain powered licensing and developing virtual spaces. V-Art and Djooky are also exploring a partnership to use NFTs and blockchain to support music royalty ownership and distribution.

<Djooky>
In addition to their partnership with V-Art, Djooky is now incorporated in Delaware, Germany and Ukraine, to facilitate fundraising across US and EU. They maintained a team of 10 members in Ukraine. With the conflict in Ukraine ongoing, Djooky still employs a global platform but is strengthening focus on Ukraine through sub-projects to support Ukrainian artists and musicians.

<Wantent>
Half of the Wantent team remains in Kyiv, with the other half in Europe / Georgia. Wantent is currently focused around launching their SaaS Platform for market researchers and content producers, and are testing and conducting interviews for market feedback on platform design and integration into their target client workflows.

<Cardio AI>
Cardio AI's platform for ECG Analytics paired with a single use monitoring device is still in progress for gaining FDA approval in the US and Canada. With the escalation of armed conflict, Cardio AI is supporting rehabilitation of injured with heart diagnostics solutioning. Cardio AI is currently focused around the North American and European markets, but would be interested to explore Japan as a potential market.

<MISU>
MISU's team is partly in Ukraine and partly in Poland. They've updated the UI/UX for their application and added in PTSD functionality to support military efforts. MISU is exploring collaborations with Insurance Companies and Pharmaceutical companies, in addition to deep cooperation with governments and health ministries to change the way primary medicine is currently conducted.

<Pleso Therapy>
Since the onset of the conflict, Pleso Therapy has seen a rapid scaling of demand for their mental health services, and now provides 5-6x more sessions that pre-conflict. They've received support from Google's Support Fund and the Polish Government to start operations in Poland and already have a team there to provide services in Poland with Polish-speaking therapists. Pleso Therapy is providing free sessions for Ukrainians as part of their efforts to aid and support their Country.

<Builder 4D>
Builder 4D has placed their project on hold to reassess their motivations and product at this time.

The first group session was held on 22 November with Rick Rasmussen as the lead mentor, with active participation and interaction between SUs, the mentors and other advisors in attendance. The second group session scheduled for 25 November was cancelled at the last minute due to increased tensions in the armed conflict resulting in electricity shortages throughout the city and parts of Ukraine. UNIT.City and JICA jointly agreed to suspend the program and monitor the situation until such time that stability is restored. In January 2023, UNIT.City informed JICA that with backup diesel generators installed in UNIT.City's tech campus, the electricity

situation is stable and SUs are returning to work on campus. With this positive outcome, JICA and UNIT.City began discussions on resuming the program in March / April 2023 with the Demo Day tentatively scheduled in May.

<Initiating plans to restart NINJA Ukraine with new UNIT.City team>
Although the armed conflict between Ukraine and Russia remains unresolved, citizens and residents have returned to Kyiv and with a committed resolve to keep moving forward, and discussion to restart the NINJA Ukraine project began in February 2023 with the new UNIT.City program director and manager, Ms. Ievgeniia Bespalova and Ms. Daryna Pavliuchenko.

Agreement was reached between JICA and UNIT.City that the program would proceed from where it left off. Of the 9 NINJA Ukraine SUs, 3 SUs were unable to continue their participation – Camtouch, Builder 4D and Robotics in VR – with the remaining 6 SUs – Cardio AI, Djooky, MISU, Wantent, V-Art – confirming their attendance.

SUs had 1-on-1 sessions with Rick Rasmussen and the respective workshop mentors, as well as a check-in 1-on-1 with JICA and the Survey team.

It was determined that the Demo Day would be organized by hybrid model (offline at Unit.city and online) at 1100 on 18 May 2023 (Ukraine time).

Week	Date	Topics
0	17 Jan 2022	Program Onboarding
1	24 Jan 2022	Opening & Introductions
2	31 Jan 2022	Problem – Solution Fit
3	7 Feb 2022	Primary & Secondary Market Research
4	14 Feb 2022	Product – Market Fit / Marketing
5	21 Feb 2022	Pipeline Development, CM Acquisition, Direct Sales
6	3 Apr 2023	Financial Model, Business & Revenue Model
7	10 Apr 2023	Legal
8	17 Apr 2023	International Growth & Strategic Partnerships
9	24 Apr 2023	Fundraising & Working with Investors
10	1 May 2023	Pitching and Presentation
Demo day – 18 May 2023		

The remaining workshops reinforced considerations for scaling, raising funds and how to address investor concerns. Given the current climate in 2023 of rising interest rates across major global financial markets and consequently tightening conditions around venture funding across all stages, this set of topics reinforced the need for strong business fundamentals and solid unit economics to underscore a startup's product or technological competitive advantages. For each workshop, program SUs attended a virtual lecture, followed by 1-on-1 sessions with the workshop mentor to delve deeper into the startup's specific business needs.

In addition to the above workshops, SUs attended 1-on-1 sessions with JICA and Survey team representatives in mid-April 2023 to help the program sponsors understand the challenges in each startup's circumstances since the suspension of the program in 2021. This included changes in business model, business expansion focus, team composition, or in fundraising opportunities. This 1-on-1 session allowed some SUs to directly express their motivations for joining the NINJA Ukraine program and their intentions for working with specific Japanese or Asian industries or companies, and how they envisioned their product-market fit with Asia. With this understanding,

JICA and Survey team representatives were better equipped to make relevant business connections to support the program SUs when appropriate, depending on their business expansion priorities.

<V-Art>
Committed to the B2B focus and white label[288] model in addition to IP/License Management. 15 full-time staff based in Portugal, Austria and Ukraine and are now working closely with their collaborating companies as they expand from digital Art to Fashion and Luxury. With over 22 Partnerships built and current fundraising of additional USD 1.5 million for business development from Asia-based VCs and European / US VCs. V-Art has interest in Japan for future market expansion, and is at the earliest stages of market research and exploration.

<Djooky>
Djooky was selected and completed for a Google for SUs program. The Djooky platform currently has artists from over 100 countries and more than 200,000 app users. Through a partnership with fellow NINJA Ukraine startup V-Art, Djooky created NFT of music made by Ukraine musicians and are planning auctions to raise funds to support Ukrainian children. Djooky expressed interest in working with JETRO to explore further connection and opportunities for partnership with Japan.

<Wantent>
Wantent continues to make inroads in the US, LATAM and Europe markets with their facial and emotional analysis software for long-form video. Recent pivot towards focusing on animation and children-focused media where gaps in traditional market research techniques exist. Wantent Team has expanded to 16 people and is incorporated in Delaware, USA. SaaS platform models continue to be developed. Wantent is also part of Google for SUs program and STADIEM for media SUs un EU, and has discussed prototypes with SNS companies in the US to gather market feedback and validation. Wantent has expressed interest in working with Japanese media exporters or international marketing corporates to support their market research for foreign market entry.

<Cardio AI>
Cardio AI's team is wholly based in Ukraine in times of war and continues to work towards FDA and CE approval in Canada and US with its existing partnerships. Cardio AI adapted their technology to field evacuations to aid and supports heart activity monitoring that automatically alerts paramedics of abnormalities and streams data & medical information ahead to the receiving medical facility. Cardio AI's device can be used across different stages in the medical process including casualty and evacuation as well as during rehabilitation phases.

<MISU>
MISU continues to focus on building out its early market expansion in Poland with an eye towards France and Germany thereafter. In addition to their health wearable, MISU is engaged with farming companies seeking to monitor health cycles in animals to predict increases in animal-produce yield (e.g. milk from cows). MISU is interested in international expansion and has made connections through the program to Kenya and some regions in Africa, and has an interest in exploring partnerships in Japan in the future.

<Pleso Therapy>
Pleso Therapy launched in Ukraine in 2021 and in Poland in late 2022. Currently focused mainly on B2C, but with an expansion to B2B partnerships in Ukraine. Pleso has received support from the Google Ukraine Support fund and the Poland Government Support Program, and this has

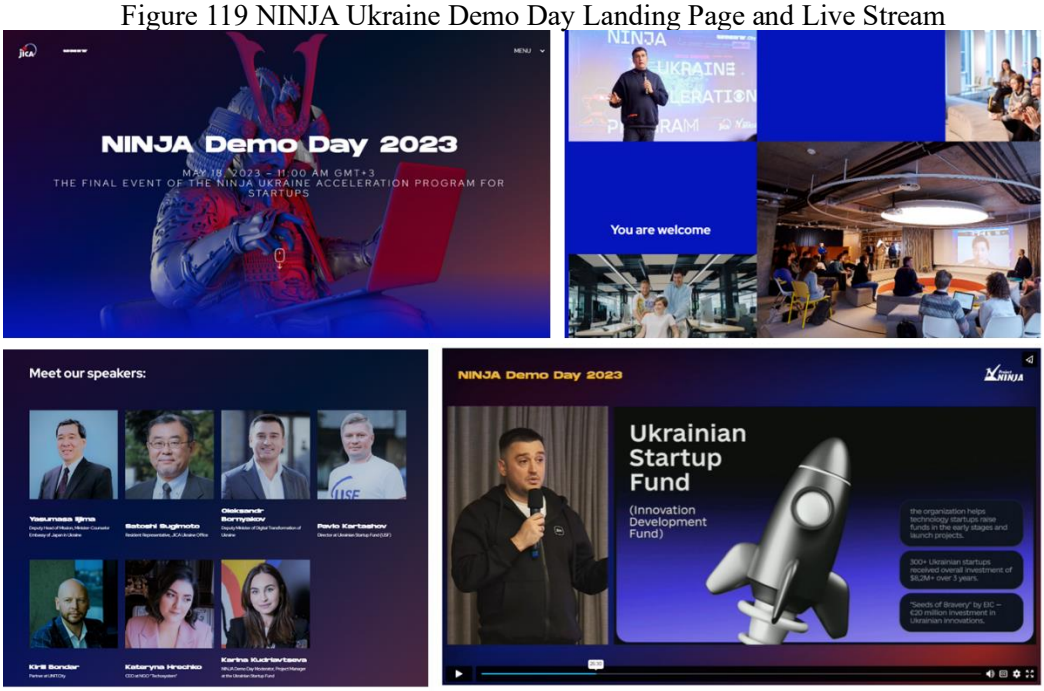
[288] A white-label product is a product or service produced by one company is sold by another company as its own brand.

helped to further develop the platform and provide free sessions to Ukrainian Refugees. Pleso demonstrates strong GMV growth of 8x year-on-year, with 4x more therapists on-platform. Pleso is focused on its early expansion in Poland, and has interest to explore Japan for future market expansion at a later stage.

<Event Concept and Organization>
Following the program workshops, Demo Day is the concluding capstone event of the NINJA Ukraine Program and gives SUs a platform to showcase their business proposition to regional and international investors, corporates and ecosystem stakeholders, including those participating online in Japan. One of the key success factors for NINJA Ukraine is designed for selected SUs to attract new business opportunities and/or secure an opportunity for investment and fundraising.

Demo Day was held in a hybrid format, with the in-person event held at NEST in UNIT.City and the session streamed live on YouTube. A separate YouTube stream was set up with simultaneous Japanese translation for ease of understanding for our Japanese audience.

Figure 119 NINJA Ukraine Demo Day Landing Page and Live Stream



Source: NINJA Ukraine Demo Day website and live streaming video

<Event Coordination and Development>
Promotion and Organization of Demo Day began around 1 month in advance to allow sufficient time to invite key dignitaries in the respective government and diplomatic corps for both Ukraine and Japan, as well as designate keynote speakers.

Figure 120 NINJA Ukraine Demo Day Overview and the Event Program

Item	Description
Name of the event	NINJA Ukraine Demo Day
Date and time	Thursday, 18th May 2023, 17:00 ~ 19:00 (11:00〜13:00 at Ukraine time)
Style	Onsite: UNIT.City NEST + YouTube live streaming
Objectives	■ To raise the interest of Japanese companies and investors in the current status and challenges of SU companies and the ecosystem in Serbia and Northern Macedonia
Possible target	■ Those who are interested in SU ecosystem in Ukraine and would like to know the latest situation of the country where Russian attacks continue
Number of participants	Pre-registration: 69 (Number of live streaming viewers is unknown)

Time (JST)	Contents	Speakers
17:00	Opening	■ Yasumasa Iijima, Deputy Head of Mission, Minister-Counselor Embassy of Japan in Ukraine ■ Oleksandr Bornyakov, Deputy Minister of Digital Transformation of Ukraine ■ Pavlo Kartashov, Director, Ukrainian Startup Fund
17:18	Current startup ecosystem briefing	■ Kateryna Hrechko, CEO, Techosystem
17:28	Pitching and Q&A session	■ Cardio AI ■ Djooky ■ MISU ■ Pleso Therapy (online) ■ V-Art (online) ■ Wantent (online)
18:40	Closing	■ Satoshi Sugimoto, Resident Representative, JICA Ukraine Office

Figure 121 Photos from NINJA Ukraine Demo Day

Source: UNIT.City

<Event Review and Evaluation>

NINJA Ukraine's Demo Day attracted 69 registrations to attend the event. The online participants included potential investors, business partners. However, with the event livestreamed on YouTube, actual attendance and viewership tracking data was unavailable at the time of this report.

Having this event in-person was especially important for NINJA Ukraine to clearly demonstrate to the world the resilience, strength and capabilities of the Ukrainian SUs. The event did not shy away from the facts and impact of the ongoing armed conflict, and yet was not political or nationalistic in its messaging. The overarching sentiment conveyed was simply this is the challenge before us, let's move forward. And that in itself was a powerful statement on display.

There are some technical areas where we can improve in future events. To increase viewer interaction, insert quick feedback pop-ups for viewers to indicate interest in following up with specific SUs straight after their pitch is completed. This mechanism has been used in other regional accelerator Demo Days and also in NINJA Serbia and garnered several connections for deeper discussions with SUs.

The scheduling, marketing and promotion of this event was challenging from a timeframe perspective, given that the "restart program" was only for 5 weeks, rather than the typical 10-12 weeks. From a coordination perspective, unlike in NINJA Serbia, the Survey team could not travel into Kyiv to jointly organize Demo Day and remotely following up with the status of preparation was a challenge. These two factors were further exacerbated by the change in program management for the Restart Program as both parties lacked familiarity of each other's working styles and expectations. From a logistics and administrative perspective, the last-minute availability of the livestream link for online participants was a significant challenge in the dissemination of event information and proper PR and marketing.

These factors combined resulted in almost no lead time to confirm all operational and technical aspects of Demo Day, as well as getting out marketing material, securing speaker commitments and sending out invitations to government officials and regional investors. However,

despite these constraints of time and resources, the actual event was coherently pulled together and well executed.

6.7. Overall Program Evaluation – NINJA Ukraine

The circumstances that overtook NINJA Ukraine were unforeseen and out of the control of the parties involved. The fact that this pilot program fulfilled its originally stated program scope was a success in itself considering the challenges faced. Both JICA and UNIT.City demonstrated willingness and resilience to finish the program that was started, even at times when there was no definable timeline for when stability could be achieved. This resilient collaboration was anchored on the larger objectives of the program, which is primarily contributing to the development (and re-development) of the Ukrainian SU ecosystem and promoting cooperation between Ukraine and Japan. This underscores the initial selection criteria when choosing a local implementation partner, that their larger corporate objectives should also fit in with that of JICA's broad objectives. UNIT.City has been and will continue to be in Kyiv, Ukraine to support its SU ecosystem regardless of instability or challenging circumstances.

Even for the SUs involved, many of them were forced to change how they operate by the realities and tragedies of the conflict with their team relocated in different locations. This program cannot be assessed or evaluated or objectively separated from the surrounding circumstances under which it was conducted. However, even while the program was suspended, most SUs continued to make progress in continuing the growth of their business by achieving product enhancement or increased revenue traction as well as obtaining awards and grants to further advance their development. On their return to the NINJA Ukraine program, the SUs were clear in their objectives of what they needed to achieve for the remainder of the program, such as fundraising or making inroads with connections in Asia. SUs like Djooky and Wantent in particular had come into the program with clear intentions and more familiarity with Asian markets having done preliminary market research before the program. Wantent for example hoped to connect with media exporting firm, or Japan-based global marketing firms, where they could fit their product into the workflows of those companies. This was aligned with the designed program output.

On the other hand, although the Demo Day was broadcasted online to Japan and the video of the day's pitches were posted on the Web for a certain period of time, no concrete matches were made between the participating SUs, and Japanese/Westen companies/investors during the period of this survey. There could be several factors behind this, and lessons learned for the next opportunity are as follows.

- ✓ After resuming the AP in April 2023, the implementation of the program itself and the preparation of the Demo Day concurrently during an extremely limited period of time. The publicity activities, especially to Japanese stakeholders, was unavoidably limited.
- ✓ Based on the overall response from UNIT.City, the survey team, and the Demo Day participants, it could be recognized that the quality of the presentations made by the SUs was high. However, from a different perspective than the individual SU, the high country-risk in Ukraine must be admitted: as mentioned in 3.1.5.2, as of October 2022, Japanese companies have identified "review the travel advice and warning by the Ministry of Foreign Affairs," "normalize transportation infrastructure. as issues to be addressed in order to fully implement their initiatives in Ukraine. These challenges have not changed to date and are considered to have been barriers for Japanese companies.
- ✓ If PoC were conducted in advance as products and solutions for overseas markets in Europe, the US, and Asia, rather than Ukraine's domestic market, and if a business model suitable for overseas markets could be developed, there is ample potential for investment and collaboration from Japanese and Western parties in the wake of the AP. However, since this program has been conducted under emergency circumstances, there were limitations to such careful design and coordination.

✓ Given the fact that business between Japan and Ukraine was not so familiar before the current war, ways to increase the attention from Japanese stakeholders might be considered, such as ensuring the areal spread by programming not only an AP in one country but also in the entire Eastern Europe region including neighboring countries.

While APs need to be designed based on the above lessons learned, it is difficult for SUs in the pre-seed or seed stage to directly enter the Japanese or Asian market in terms of investment and human resources. Therefore, it may be possible to consider designing the future NINJA program in the following direction.

✓ It will be designed to gradually increase the closeness of both markets as a phased approach to expand into Japan and East Asia. In particular, one idea is to consider collaboration with JETRO and chambers of commerce and industry to match global Japanese companies already operating in Ukraine or Eastern Europe with Japanese companies related to the participating SUs' fields of expertise and areas of activity. Obtaining a match would allow SUs to utilize their existing knowledge and experience in their area of activity, and sometimes even assist Japanese companies, leading to a greater intimacy between the two markets. For some projects, the objective is not for SUs to expand into Asia, but to create synergies between Japanese companies and SUs to take advantage of the strengths of both, and to develop new markets in collaboration with each other. Although a more detailed analysis is needed, the following are some examples of possible partnerships between SU participants of NINJA Ukraine and Japanese companies or industries.

✓

参加SU	連携可能性のある領域（案）
Cardio AI	■ 心電図解析に関わる医療機器メーカー、医療施設など
Djooky	■ 音楽を扱うエンターテイメント企業や音楽制作の周辺サービスを提供する企業（Djookyのサービスにはミュージシャン向けだけではなく、ロイヤリティ販売で得られる収益を投入して新たな音楽エコシステムを投入できる可能性があるため）
MISU	■ 保険会社、高齢者医療研究機関、民間クリニック、厚労省（または各国保健省）
Pleso Therapy	■ 研究機関またはメンタルヘルス領域関連企業
V-Art	■ デジタル資産のライセンス、IPに特化しているため、デジタル空間におけるあらゆるビジネスやアーティストとの連携可能性がある。直近では欧米の美容企業との連携を開始しているため、類似のサービスを持つ日本・アジア企業との連携可能性もある
Wantent	■ オリジナルコンテンツ（映画・ゲーム等）をグローバルに輸出している企業や、市場調査を独自に行っている広告企業など

✓ Design to guide the creation of remote engagements to attract Japanese companies and individual users who are expanding overseas in search of solutions that are not offered in Japan. For individuals, this could involve engaging Japanese users through SNS and web advertising, and for companies, it could involve working with Japanese advertising and media companies. This can be seen as a form of "Japan/Asia expansion" even if the operation is not localized to Japan or Asia.

- ✓ Rather than having participating SUs pitch their businesses and solicit investment as in a traditional Demo Day, the design should be to pitch a pilot program in Japan and seek funding, investment, and support from Japanese companies, ecosystem stakeholders, and investors for the program. This will allow SU to focus on proper market research and viability (product-market fit, challenge-solution fit).

Finally, During the rest of the program, UNIT.City, NINJA SUs as well as UVCA made clear the challenges of fundraising and business partnerships for scaling up business growth, while many SUs were focused around advancing their business model and increasing revenue traction. As described in the proposed JICA support scheme in Chapter 9, it would be important to address the funding gap which is faced by Ukrainian SUs to enhance its startup ecosystem growth prospects, and contribute to the Ukrainian recovery where the ICT sector was the only sector that grew its exports in 2022.

Asia is a relatively new potential market for expansion for Ukraine, Eastern European SUs, and the JICA NINJA Program is part of this movement to introduce this region to the possibilities of Asia. Expansion into Asia may be a secondary objective after SUs achieve traction in their primary target markets, notably Europe and the US. This requires a patient, measured and long-term approach. However, the program gained recognition in both government and private sectors as a start, and will benefit future follow-on programs focused on this region.

7. Serbia Acceleration Program Implementation Overview

7.1. Background and Preliminary Fact Finding

Following the suspension of the NINJA Ukraine program and considering the indefinite timeframe until a return to stability in Ukraine would allow for a resumption of that program, JICA and the survey team proceeded with a preliminary fact finding to assess the viability and potential of implementing a Project NINJA Pilot Program in Serbia as part of this current project.

Survey team representatives traveled to Belgrade in June 2022 to meet with ecosystem stakeholders, accelerators / incubators and local SUs to gauge the level of interest in JICA's proposed program, and how to calibrate the program structure to most effectively meet the needs of the ecosystem and achieve the project objectives.

Our on-the-ground learnings largely corroborated our general understanding from the basic country research completed earlier in the project, but provided a crucial added level of insight into potential implementation partners from the perspective of operational resource capacity, conflicts with existing donor programs and connectedness to other ecosystem stakeholders and the corporate community.

Figure 122 Serbian Startup Ecosystem (updated July 2022)

Source: Developed by the survey team

7.1.1. Preliminary Fact-Finding Field Survey: Executive Summary

The Serbian Ecosystem is growing at a rapid pace and there are several notable changes to the investment landscape. To summarize the key points:

- In terms of investors, local VC and CVC funds are in the earliest stages. Business angel investors and angel investment groups are growing but are relatively inexperienced and requires investor education support.
- Government-financed Grant Programs and Incubation Programs remain the main source of local funding for promising local SUs. These programs are supported by the Serbian Government with additional support from Development Finance Institutions (World Bank, European Bank of Reconstruction and Development), or from other national / supranational governments or government-related donor organizations (European Union, Swiss Government, USAID, Swiss Entrepreneurship Program).

- With only an estimated 400 – 500 SUs in Serbia, most financing and development programs are targeted towards Pre-Seed / Pre-MVP SUs to support the growth of the pipeline of SUs and entrepreneurs in the ecosystem.
- Most acceleration programs are focused on Pre-MVP stage SUs and provide an element of grant funding (around USD 15,000 – 25,000). Access to Finance is a high priority for Pre-Seed SUs to develop their MVP and build out sales and business models. Without such a funding element, programs may face difficulty attracting SUs to participate.
- "Scale-Up" stage SUs (Seed to Series A) often have secured sufficient funding from existing grant programs and private investors, and their focus is on expansion of business and growth opportunities. This requires mentorship to extend their go-to-market strategies into different markets, and to provide connections and networks within the target markets to facilitate market entry. Currently, Katapult is the only program servicing this segment and took in the first cohort only in 2022 with 11 Scale-Ups and 8 Pre-MVP SUs.

Figure 123 Meetings with Serbian Startups, Accelerators & Ecosystem Stakeholders in Belgrade

Source: The survey team

From our findings, as an Asian-donor program, the JICA Project NINJA Initiative holds a unique value proposition in this market for facilitating corporate and investor connections in Japan and Asia. This is a value proposition that applies more to scale-up stage SUs than to Pre-MVP SUs, and fills an identified gap in the ecosystem. However, challenges remain in identifying a local implementation partner who can support such a program with appropriate mentors and a flexible curriculum that caters to specific business problem solutioning and the cultural / legal / regulatory adjustments needed for international market entry.

In terms of sourcing, for our pilot program where our target cohort size is only around 5 SUs, there should be sufficient interest and qualified applicants in the local startup pool. However, in thinking of follow-on programs or program expansion, the Serbian ecosystem alone may be insufficiently developed and the possibility of expanding the scope to the whole Balkans region should be considered. This serves the purposes of meeting the program needs, fostering regional collaboration and supporting smaller countries who could not meet requirements for a stand-alone in-country program (e.g. North Macedonia).

7.2. Selection of AP Implementation Partner

Evaluation was carried out by the survey team in accordance with the criteria laid out in the RFP Terms of Reference (Section 8.2 Selection Criteria / Proposal Evaluation Criteria) and under the QCBS methodology. As a result, Digital Serbia Initiative (DSI) was selected for NINJA Serbia implementation partner.

Figure 124 Technical Proposal Evaluation Criteria

Category	Criteria	Weight
Relevant Experience	■ Past experience in acceleration program management (number of programs / graduates, fund raising of past participants, market success of past graduates) ■ Past experience in public-private partnerships	30%
Program Content / Proposed Methodology	■ Overall strength and creativity of the proposed acceleration program including: ■ Sourcing plan (targeted participants, recruitment process) ■ Marketing & promotion plan ■ Design of program curriculum ■ Demo Day proposal ■ Organization and staffing	40%
Personnel and Network Capacity	■ Qualifications of proposed project manager ■ Qualifications of key personnel assigned to the program ■ Corporates, investors, mentors and entrepreneurs network	30%

Figure 125 Overall Proposal Evaluation Criteria

Category	Criteria	Weight
Technical Proposal	■ Relevant experience ■ Program content / proposed methodology ■ Personnel and network capacity	80%
Financial Proposal	■ Itemized cost & budget estimation	20%

<Finalized Project Timeline>
The finalized timeline for the NINJA Serbia Acceleration Program is as follows:

26 Aug 2022	Signing of Final Contract (DSI, AAIC)
31 Aug 2022	Detailed Marketing & Sourcing Plan & Key Visuals
02 Sep 2022	NINJA Serbia Kick Off Meeting (JICA, The survey team, DSI)
05 Sep 2022	Announcement Day for NINJA Serbia; Applications Open
20 Sep 2022	1st Tranche Payment to DSI for Marketing / Sourcing Activities
01 Oct 2022	Program Application Deadline; Selection Process Begins
03 Oct 2022	Completion of 1st Phase – Administrative Evaluation (DSI)
05 Oct 2022	Completion of 2nd Phase – Screening (DSI, The survey team)
10 Oct 2022	Completion of 3rd Phase – Final Selection (DSI, The survey team)
12 Oct 2022	Launch of NINJA Serbia at SPLET Technology Conference
24 Jan 2023	Mock Pitch Day
28 Jan 2023	"How to Make It in Asia from Serbia" Event / Seminar
03 Feb 2023	Final Pitch Event / Demo Day
08 Feb 2023	Final Tranche Payment to DSI for Program Activities

7.3. Program Marketing & Sourcing Plan

DSI provided a detailed content marketing and sourcing plan along with key visuals for program promotion on 31 Aug 2022. The plan encompassed the following areas:

- Analysis (Competition, Project Objectives and Challenges)
- Marketing Strategy
- Creative Approach
- Communication Plan
- Tactics and Activities

- Timeline

The marketing strategy was focused around four target groups:

- Local SUs
- Startup Ecosystem Stakeholders
- Government Institutions and Agencies
- General Public

This broad-based approach affords JICA a high degree of visibility and coincides with the 140th Anniversary of Cooperation between Japan and Serbia. The marketing efforts target not only immediate applicants to the program, but the broader ecosystem and startup community to increase the awareness and recognition of JICA and its Project NINJA global initiative.

Specifically, within the Government Institutions and Agencies, DSI maintains strong ties to the Ministry of Education, Science and Technological Development, the Prime Minister's Office (Director of IT and Entrepreneurship), the Ministry of Economy, the Innovation Fund of the Republic of Serbia, and the Development Agency of Serbia (RAS) among others.

The Communication Objectives are

- Establish the Project NINJA brand in Serbia and raise brand awareness in the startup community for current and future iterations of the program.
- Promote the access to renowned domestic and international mentors and experts through a specially crafted program
- Position JICA and DSI as partners dedicated to the growth and support of the Serbian startup community

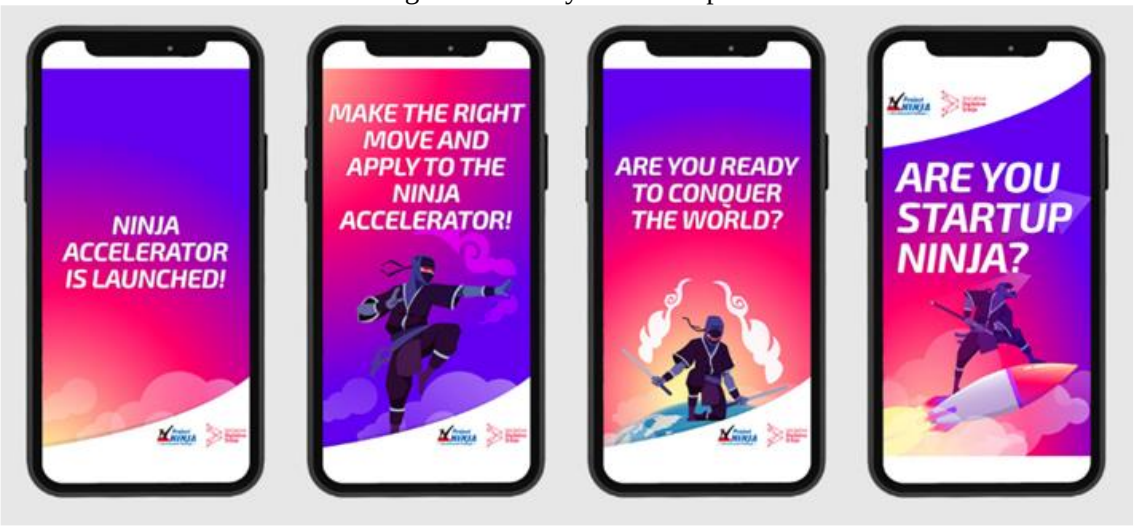
These objectives are fulfilled through these key messages

- NINJA Serbia is dedicated to a limited number of SUs to focus on delivering highly interactive workshops and individual mentoring.
- NINJA Serbia is a flexible program that provides both workshops and individual mentoring on the most relevant current topics.
- NINJA Serbia connects SUs with regional angel investors and VC funds, as well as partners from Japan and Asia who can open up business opportunities and networks for SUs looking to expand into new markets.

< Marketing Channels and Content Delivery >

DSI will utilize a multi-channel strategy to delivery broad-based awareness of the project. Social Media Channels and partner networks / email newsletters will focus on the business community, SUs and the professional public, with the goal of increased engagement, generating interest in Asia as a potential market for expansion, and attracting applications.

Figure 126 Storyboard Samples



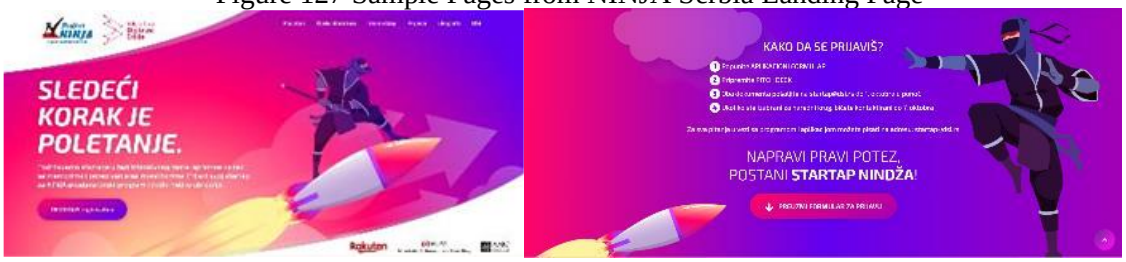
Source：Marketing plan by Digital Serbia Initiative

DSI will engage with Traditional and Digital News Media through press releases, interviews and articles in widely read portals on the topics of SUsupport and investing in domestic SUs. The DSI Project Team will negotiate for guest appearances in TV / Radio / Podcasts shows in news and investment news media, to discuss the importance of the NINJA Program and invite SUs to apply. These appearances and interviews may include, but are not only limited to:

- RTS – Beogradska hronika (Morning TV Program)
- TV Prva – 150 minuta (Afternoon TV Program)
- TV Nova S – Medu nama (Afternoon TV Program)
- Netokracija.rs (Digital Media – Local SUs)
- Netokracija Talks (Podcast)

The NINJA Program will officially launch at the SPLET Tech Conference – a one-day conference on innovation and entrepreneurship, which DSI is jointly organizing with other partners and sponsors on 12 October 2022. This conference gathers SUs, ecosystem stakeholders and other supporting agencies in a single location, and provides high visibility for the current and future iterations of JICA's Project NINJA in Serbia and the region.

Figure 127 Sample Pages from NINJA Serbia Landing Page



Source: NINJA Serbia Website

7.3.1. Sourcing and Marketing Plan Implementation

In September 2022, DSI published 11 posts on various social media channels. The same content was shared on Facebook and Instagram. On LinkedIn, the initial posts were the same but following posts focused on presenting the program experts and their workshops

DSI's Facebook page reached over 459,000 people, which is 21% more than usual, and reached over 295,000 people on Instagram, 41% more than usual. In terms of new followers, DSI's Facebook page acquired 57 new followers and their Instagram profile acquired 289 new followers.

The uptick in attention received on their social media channels demonstrates the interest generated in the community over the NINJA Serbia Program.

NINJA project ads were on screen more than 890,000 times and over 4,300 clicks to the website on the social networks. In the 26 days of the campaign, 5,000 visits were made to the DSI website, of which 4,286 were unique visitors, and the application file was downloaded 132 times.

Figure 128 Top Facebook Posts

People Reached: 95,535
Post interactions: 2
Post clicks: 452

People Reached: 22,477
Post interactions: 18
Post clicks: 1,059

People Reached: 15,473
Post interactions: 185
Post clicks: 1,189

Source: Facebook posts by DSI

Figure 129 Top Instagram Posts

People Reached: 148,840
Post interactions: 45

People Reached: 44,435
Post interactions: 28

People Reached: 26,087
Post interactions: 47

Source: Instagram posts by DSI

Figure 130 Top LinkedIn Posts

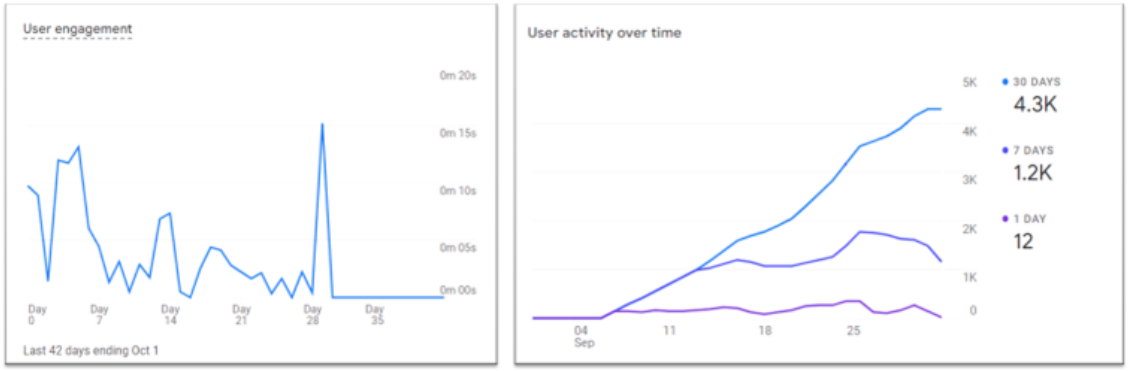
Total impressions: 4,037
Post interactions: 198

People Reached: 1,652
Post interactions: 58

Total impressions : 1.591
Post interactions: 83

Source: LinkedIn posts by DSI

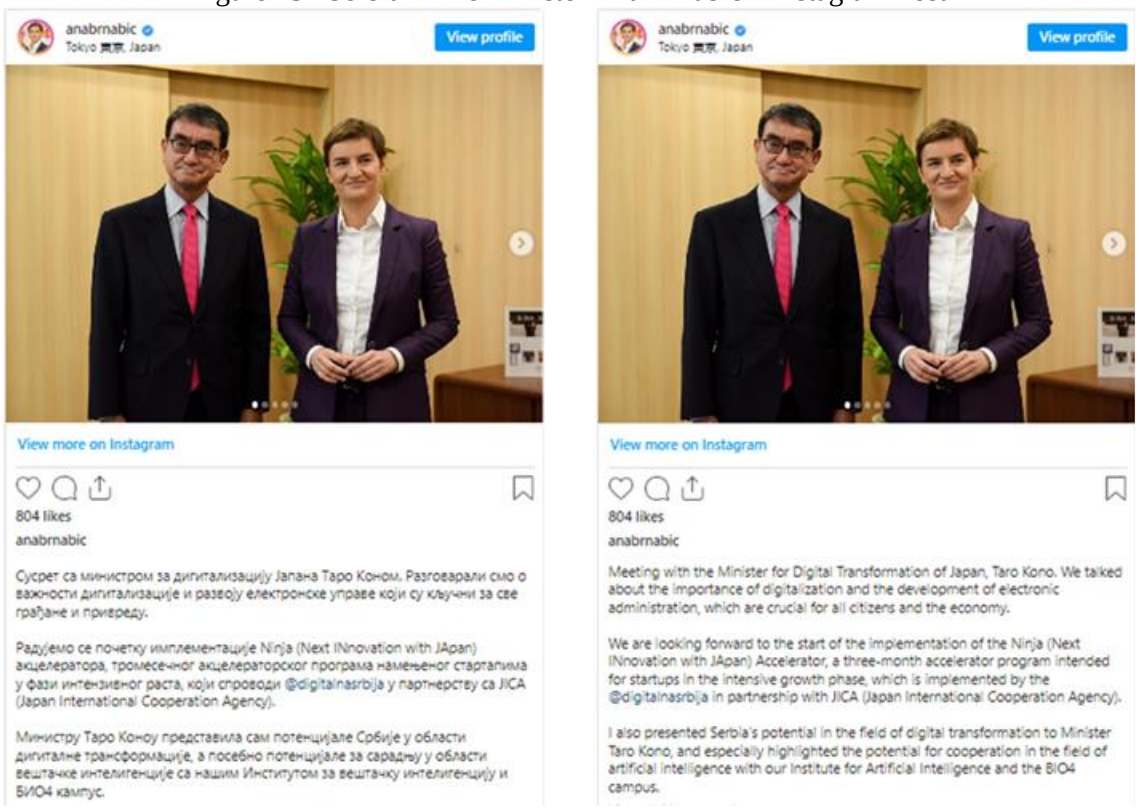
Figure 131 Google Analytics of User Activity to the NINJA Serbia Page



Source: Google analytics from DSI account

In addition to Media Marketing and Promotion, JICA's NINJA Program was raised to the attention of the highest levels of government, with the Serbian Prime Minister posting on her verified Instagram account of her meeting with Japan Minister of Digital Transformation, Taro Kono, and highlighting the NINJA Serbia Program.

Figure 132 Serbia Prime Minister Ana Brnabic – Instagram Post



Source: Instagram posts by Ana Brnabic

7.3.2. Program Marketing & Sourcing Plan Review and Evaluation

Although the Program Marketing and Sourcing Plan generated a significant amount of press coverage, governmental attention, and excitement and curiosity in the startup community, the final number of program applicants was 17, and fell short of our expectations for at least 25 scale-ups.

There were several lessons learned from our review of the Marketing and Sourcing Activities and results.

Firstly, due to a short timeframe for implementation of the program, the marketing and sourcing period was confined to one month (September 2022). Our preliminary fact finding of the Serbian Startup Community confirmed that there is an unfamiliarity with Asia as a potential market for early expansion, and JICA's Project NINJA may represent one of the first opportunities of connecting Serbian SUs to East Asia. As such, SUs may not feel prepared or ready to invest their time without having done sufficient prior market research. There is also an unfamiliarity with JICA and its project partners, and some may choose to wait to evaluate the pilot program before applying for any future iterations. We understood the challenges involved with overcoming local unfamiliarity with the Asian Market and with the program sponsor, and feel the marketing efforts should be considered successful in raising awareness and the visibility profile of JICA and Japan in the startup community and in the eyes of the broader public.

Secondly, NINJA Serbia does not offer any monetary incentives in the form of grants or investment in the program participants. This stands in contrast to most local acceleration programs which are not only free-to-participate, but also provide for grant funding for qualified SUs. The Katapult program offered by the Innovation Fund of Serbia provides EUR 25,000 or EUR 50,000 for pre-seed and seed stage SUs respectively on entering the program, as part of a EUR 300,000 matching grant for any private investment secured in the 12 months after the program concludes. The Raising Starts program operated by the Science Technology Park Belgrade and sponsored by

the Swiss Government, offers CHF 15,000 for SUs who qualify for the 2nd stage of the acceleration program. To increase the competitiveness of future programs, an element of grant funding for the top program participants or non-monetary incentives such as sponsorship to participate in tech conferences in Asia would be beneficial. This could be factored into the program budget, or negotiated with corporate sponsors with similar developmental objectives.

Thirdly, even though JICA's Project NINJA occupies a unique niche in the market, the timing of program operation should place higher consideration on the startup event calendar. In this instance, Katapult's 2nd cohort is scheduled to start in February 2023. Given that our program runs from October 2022 to February 2023, most SUs are unwilling to commit 6 - 9 months of time towards participating in two separate acceleration programs as it detracts from their ability to focus on building their business, and therefore have to choose between applying to NINJA Serbia and Katapult. Considering a key limitation in the ecosystem is access to financing, it is not surprising that Katapult's 2nd cohort amassed over 400 applications as it offers the highest amount of potential funding as well as access to a strong program structure and a distinguished panel of mentors. If the NINJA Serbia program was scheduled after Katapult's selection was completed, we might have attracted a stronger response.

7.3.3. Evaluation and Final Selection of Startup Participants

The evaluation and final selection process was conducted in 3 stages:

Figure 133 Evaluation and final selection process

Stage	Period	Participants	Objective	Deliverable
1	1 - 3 Oct 2022	DSI	Administrative review of all applications for completeness	Pre-Selected List for Screening
2	3 - 5 Oct 2022	DSI SURVEY TEAM	Initial evaluation and ranking of qualified applications	SUs for Interview
3	5 - 10 Oct 2022	Final Selection Panel	Interviews and Assessment of Shortlisted SUs	Final List of Participants

The full list of applicants is as follows:

Figure 134 Full list of applicants

Startup Name	Short Description	Outcome
Data DO	Product Assortment Optimization Platform	NINJA Serbia 2022
Digital Spark	Brand Learning & Incentivization Platform	NINJA Serbia 2022
Easy Pass	Private Tutor Matching Platform	NINJA Serbia 2022
OmniShop	Native Mobile App Development	NINJA Serbia 2022
Smart Watering	Smart Irrigation Sensors & Analytics	NINJA Serbia 2022
Tapni	B2B Sales Contact Management & Analytics	NINJA Serbia 2022
ZenHire	AI Interviewing and CV Screening Platform	NINJA Serbia 2022
[redacted]	No-Code Messaging Marketing Platform	Stage 3 – Interviews
[redacted]	Cloud-based Media Management & Storage	Stage 2 – Pre-Screening
[redacted]	Consulting Construction Company	Stage 1 – Admin. Eval
[redacted]	Mobile Jukebox	Stage 1 – Admin. Eval
[redacted]	Flexible sensors for physiological monitoring	Stage 1 – Admin. Eval
[redacted]	Marketing & Business Consulting	Stage 1 – Admin. Eval
[redacted]	Serbian Audio Book Platform	Stage 1 – Admin. Eval
[redacted]	Sales Data Analytics for FMCG	Stage 1 – Admin. Eval
[redacted]	Pet-Friendly Travel Planning	Stage 1 – Admin. Eval
[redacted]	Retail Smart Cart	Stage 1 – Admin. Eval

<Stage 1: Administrative Pre-Selection (17 Startup Applications)>
DSI's project team and program managers are the designated parties responsible for determining if the received applications are complete and are appropriately prepared for evaluation by the Selection Committee. This includes completion of required application fields, proper documentation and at an appropriate stage of growth for this program.

<Stage 2: Screening and Shortlisting for Final Interviews (9 SUs Evaluated)>
The Final Selection Panel consists of 5 members:

- Shigeru Handa (AAIC Investment; Survey team Representative)
- Benjamin Lim (Collective Platform; Survey team Representative)
- Nebojša Bjelotomić (CEO, Digital Serbia Initiative)
- Nataša Škrbić (Program Manager, Digital Serbia Initiative)
- Uroš Sikimić (Angel Investor, Serbian Business Angels Network)

Evaluators completed a standardized scoring sheet to assess the quality of the startup's pitch deck and a general team assessment. Evaluators concluded with a Yes/No response to whether the SU should be shortlisted and interviewed. Responses were aggregated by DSI, and 8 of 9 startups qualified for interviews.

Figure 135 Evaluation scoring sheet

Category	Sub-Category	Scoring	Remarks
Pitch Deck	Problem-Solution Fit	5 Pts	Assess Problem Statement and Reasonableness of solution
	Business Model	5 Pts	Is Biz Model Appropriate for Solution and Market?
	Go-To-Market	5 Pts	Appropriate, Reasonable, Considered
	Industry Vertical	3 Pts	Social Impact
	Overall Pitch Deck	5 Pts	Strength of Pitch Deck
GENERAL	Team Assessment	5 Pts	Team Structure, Experience, etc.
	Interview	Yes / No	Proceed to Interview Rounds?
	Questions for Interviews	-	

<Stage 3: Final Interviews and Selection (8 SUs Interviewed)>
The Selection Committee interviewed 8 SUs and arrived at a consensus for 6 SUs, and were divided over 1 remaining startup (Omnishop). On further deliberation and based on DSI's understanding of the management team, their previous experience and expertise, there was agreement to expand the cohort to 7 SUs. All 7 SUs are B2B (Business-to-Business) or intend to pivot in that direction.

Figure 136 NINJA Serbia cohort

Startup Name	Short Description	Industry
Data Do	Product Assortment Optimization Platform	Consumer Retail
Digital Spark	Brand Learning & Incentivization Platform	Consumer Retail
Easy Pass	Private Tutor Matching Platform	Education
OmniShop	Native Mobile App Development	Mobile Development
Smart Watering	Smart Irrigation Sensors & Analytics	Agriculture
Tapni	B2B Sales Contact Management & Analytics	Enterprise Software
ZenHire	AI Interviewing and CV Screening Platform	Human Resources

7.4. Program Implementation

The NINJA Serbia Program officially launched at the SPLET Tech Conference on 12 October 2022. A dedicated session was allocated for this launch, and was opened by JICA Balkans Representative Hajime Fukuda, followed by a panel consisting of Shigeru Handa and Benjamin Lim (AAIC / Collective Platform) representing the Survey team as well as Luka Prišunjak (NINJA Serbia Mentor / Swiss EP) and moderated by Nataša Škrbić (DSI). JICA Representatives Ami Sasaki (JICA European Office), Yoshiaki Nagata (JICA Balkans Office) were also in attendance at the launch event.

7.4.1. Finalized NINJA Serbia Program Schedule

Week	Date	Topic	Content
0	Oct 12	Program Launch & Onboarding	Launch Event @ SPLET Tech Conference Opening Meeting (JICA, The Survey team, DSI) 1-on-1 Meetings with The survey team
1 - 2	Oct 17 – 28	Goal Setting (Luka Prišunjak)	Goal Setting Workshop (2 Days) Output: 3Mth, 6Mth, 1Yr Goals

			1-on-1 Meetings with Luka Goals determine focus of additional mentors + experts
3 - 4	Oct 31 – Nov 11	Customer Discovery & Value Proposition (Luka Prišunjak)	CM Discovery Workshop (2 Days) 1-on-1 Meetings with Luka 1-Page Startup Teasers Startup Goals Reports
5	Nov 14	1st Touch Point: Startup Feedback to Date	
5 – 6	Nov 14 – Nov 25	Community as a Tool (Dusanka Ilic)	Community Workshop (2 Days) 1-on-1 Meetings with Dusanka
7 – 8	Nov 28 – Dec 9	Team Development (Nana Radenkovic)	Team Development (2 Days) 1-on-1 Meetings with Nana Connecting with additional mentors and experts to start customized startup programs
7	Dec 1	Fireside Chat: Tax Incentives (Sveta Kostic)	Local Tax Incentives for SUs and how to take advantage of them.
8 - 9	Dec 7 – Dec 16	Financial and Administrative Hygiene (Nina Tasic)	Fin. & Admin Hygiene Workshop (1 Day) 1-on-1 Meetings with Nina Individual Customized Mentoring
10 – 11	Dec 19 – Dec 30	Investment and Valuation Vocabulary (Keo Sar)	Investment & Valuation Workshop (2 Days) 1-on-1 Meetings with Keo Individual Customized Mentoring
Week 12: New Year & Christmas Break			
13	9 Jan – 13 Jan		Individual Customized Mentoring
14	16 Jan – 20 Jan	Pitch Training (Peter Bruner)	Workshop + Pitching Individual Customized Mentoring
15	**24 Jan**	**Mock Demo Day – Pitch Evaluation by DSI Business Angels**	
15	27 – 28 Jan	Investor Sourcing (Maria Carolina Romero)	Workshop (2 days) Individual Customized Mentoring
15	**28 Jan**	**Event: How to Make it in Asia from Serbia**	
16	**3 Feb**	**Event: Demo Day & Closing of NINJA Serbia Program**	

7.4.2. Startup Participant Profiles

The first NINJA Serbia program has seven SUs from various sectors, with business models such as B2B and SaaS. All SUs have products that can be offered to users and generate revenue, and are in the early stage (Pre Series A), but there are variations in the maturity of their businesses, product development, and degree of market penetration.

<Smart Watering>

Smart Watering is helping fruit growers to automate drip irrigation using sensors and an app thus saving 30% on irrigation costs and increasing yields by 10%. Using devices and sensors in the field, they automate the irrigation process and using the data from the field, they provide daily irrigation recommendations to the farmer.

<Digital Spark>
Digital Spark is reinventing the way how brands manage sales and reward retail teams performance by using process driven innovation in order to boost revenue and increase profit margin. They improve retail sales revenue up to 22% and profit margin by 48%

<ZenHire>
ZenHire is a hyper-realistic, real-time, conversational AI Recruiter that automates the first interview round and substitutes the HR. they are cutting down HR workload by 80%, boosting talent quality fit by up to 5,000% and shortening the hiring cycle time by 60% with our automated AI Recruiting solution for multidimensional candidate assessment.

<Data DO>
Data DO developed Spectra, a shopper centric assortment optimization platform that combines data science with market and consumer understanding in order to help companies discover new opportunities and increase revenues. Covering previsouly neglected shopper's needs brings revenue growth of at least 3% and increase savings by at least 50%

<Tapni>
Tapni is a digital business card based on NFC technology, which allows you to store and share all your desired contact information simply by attaching it to another device. With Tapni for business solutions, Tapni enables bigger corporations to understand how their employees' network, sharing information and collecting leads, and also giving them space for integration with different CRM systems and active directories to enable managing of thousands of user from one central place.

<Omnishop>
Omnishop is turning the existing webshop into an e-commerce mobile app. They provide mobile shop apps for merchants and help store owners increase their brand value by communicating directly with customers for free.

<EasyPass>
EasyPass is a multi-sided platform, and it connects students and tutors. They make it possible to promptly find help to learn any subject or improve skill with an individual approach.

All SUs in the program were Early stage SUs (Pre-Series A).

7.5. Detailed NINJA Serbia Program Activities

7.5.1. Week 0 – Launch & Onboarding (12 Oct 2022 to 14 October 2022)

Key Activities:

- SPLET Tech Conference – NINJA Serbia Program Launch (12 Oct 2022)
- DSI – JICA Joint Meeting (13 Oct 2022)
- on-1 Meetings with Survey team representatives (13, 17 Oct 2022)

<SPLET Technology Conference Overview>
The SPLET Technology Conference 2022 was a joint initiative by ICT Hub and Digital Serbia Initiative, backed by the USAID programs Serbia Innovates and Venture-an-Idea respectively. The conference was held on 1 day with 8 speaking venues and numerous interactive booths set up by Donor Organizations, Startup Associations, SUs, and other Ecosystem players. With over 50 event speakers covering a broad range of topics related to the region, SUs, entrepreneurship and investment, the SPLET 2022 event drew approximately 2,000 attendees and organizers expect that with this strong showing, SPLET can become an established annual event in the Serbian Startup Calendar.

<NINJA Serbia Launch and Panel Discussion Event>
The NINJA Serbia Program was formally launched at SPLET with a panel discussion session specifically dedicated to the program. With around 100 in attendance, Hajime Fukuda from the JICA Balkans Office delivered an opening address highlighting JICA's ongoing efforts in the region, followed by a panel discussion featuring Shigeru Handa, Ben Lim, and Luka Prišunjak – a key mentor for the NINJA Program, and moderated by Nataša Škrbić from DSI. Topics covered included:

- Views on the Serbian startup ecosystem
- Broad structure of the Program and JICA's motivation, objectives and expectations
- Background of supporting partners and mentors
- What startup participants can expect from the program
- Why this iteration of the program does not include grant financing

Feedback on the panel was generally positive and expressions of interest in participation in future iterations of Project NINJA.

<Introductory Meeting – DSI and JICA HQ, JICA Balkans Office>
- Key points surfaced from the following discussion between JICA Reps and DSI Reps.
- Project NINJA Initiative is the first program organized by an Asian donor organization that allows for connections to the Asian Market. This is a major step forward in creating awareness for Eastern European SUs of potential expansion into Asian markets.
- Many Donor Organizations have a prescribed program format that is implemented by the local contracted partner and does not allow for significant flexibility and carries a heavy administrative burden.
- For the JICA NINJA Program, DSI (as the local contracted partner) is given full rein to design and implement a program that leverages their experience and is representative of their vision for what is needed in this ecosystem.
- Flexibility and ease of administrative burden allows for fast implementation of the program ensuring that program sessions are relevant for the current startup environment.
- Future expansion of the program may consider expansion across the Balkan Region to support efforts to increase interconnectivity. If specific verticals are shown to benefit significantly from the Project NINJA pilot, the regional efforts may also be narrowed to focus on this specific area to replicate the success factors.
- DSI expressed interest in creating an "exchange program" for ecosystem stakeholders with Japan or Singapore to develop closer interaction and connections between our countries and ecosystems.

<One-on-One meetings with NINJA Startups>
Shigeru Handa (AAIC Investment) and Benjamin Lim (Collective Platform) held in-person one-on-one meetings with each of the 7 NINJA Serbia SUs over the period from 13 Oct – 17 Oct in the offices of Digital Serbia Initiative. The purpose of the meetings was to better understand each SUs business model, strengths and challenges, business development strategy, areas of focus for the program, and expectations or what they hoped to achieve from participation.

7.5.2. Startup Fundamentals Workshop Series

The NINJA Serbia Program consists of two main elements, the Startup Fundamentals Workshop Series at a cohort level and the customized mentorship program tailored to the needs of each individual startup. The Fundamentals Workshops consist of 7 main workshops covering topics that DSI identified as areas of need for local SUs that may not be covered in other standard acceleration programs. All workshops are held over 1 to 2 days followed by a week of 1-on-1

mentorship with the workshop leader to implement action plans and discuss business specific problems.

Given that program SUs are not from a single industry vertical, and are at different stages of growth, not all topics are equally beneficial or applicable to all SUs. While all SUs are encouraged to attend all workshops, both DSI and the Survey team team agreed that attendance to all workshops should not be absolutely mandatory. Workshop Mentors were given discretion to excuse any startup who would not derive benefits from their workshop, so the startup's time can be more constructively used on growing their business.

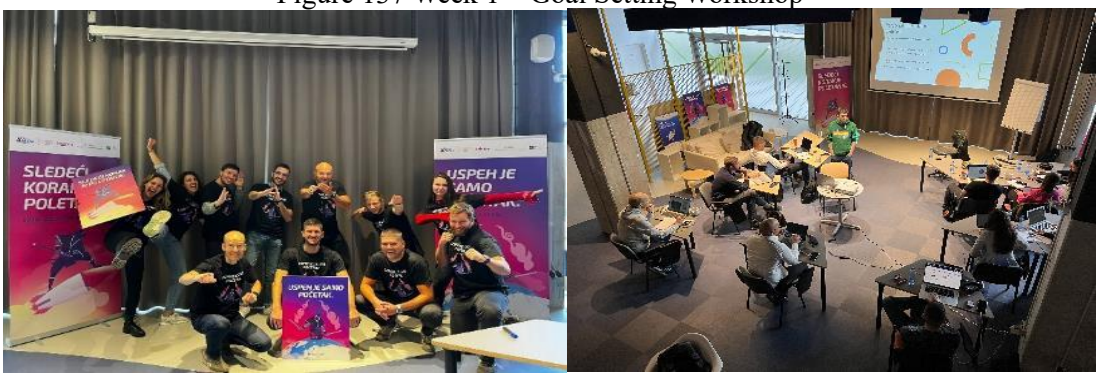
<Workshop 1: Goal Setting (Mentor: Luka Prisunjak)>
The Goal Setting workshop is a critical piece of the program structure and is a mandatory workshop for all SUs. The output from this workshop will define the goals and set the benchmark for success for the program SUs over the next 3 months, 6 months and 1 year. These goals will also form the basis for the development of their customized mentorship program in the 2nd half of the NINJA Program. As such, it was important that the Goal Setting workshop is aligned to the program's ethos, and SUs must be properly guided to produce clear, quantifiable and realistic goals.

The Goal Setting Workshop included the following elements:
- Personal Goal Setting and Achievements
- Setting and Aligning goals for Founders and their SUs
- Evaluating a Startup's Progress and Potential
- Exit Strategy and impact on Future Goals
- Effective Time Management and Task Prioritization

Following the 2-day workshop, 1-on-1 mentoring sessions with each startup to:
- Assess their goals and rationale
- Determine the steps needed for achievement of the goals
- Deficiencies in the Team preventing attainment of defined goals
- Business specific challenges currently faced

General Comments:
- Teams understood goal setting but lacked a strategic plan for implementing or attaining the goal.
- Founders are encouraged to narrowly focus on 2 or 3 main goals that keep the business progressing, rather than attempting to tackle 5 goals at the same time with less focus.
- As Founders and CEOs, participants must understand the interconnectivity of each goal, rather than considering each goal in isolation.

Figure 137 Week 1 – Goal Setting Workshop



Source: DSI

<Workshop 2: Customer Discovery & Value Proposition (Mentor: Luka Prisunjak)>
Although most SUs in this program are revenue-generating and have existing customers, this workshop seeks to help SUs clearly define and better understand who their specific customer is, what their pain points are, and the exact nature of the problem that needs to be solved. This process of customer-led discovery leads to a stronger understanding of the startup's real value proposition and how to best articulate that message in a way that resonates with that target segment. In addition, customer discovery will also lead to a clearer understanding of revenue streams and channels to optimize efforts and investment.

This workshop is especially important for founders from a technical or product background who may lack sales or management experience, as they may be focused on a product-centric approach to growth rather than a customer-centric mindset. In our 1-on-1 sessions with SUs at the opening of the program and from mentor comments during goal setting, we noted that many had issues with articulating a compelling unique value proposition and some struggled with clearly identifying a narrow or specific target customer segment.

<Workshop 3: Community as a Tool (Mentor: Dusanka Ilic)>
Community building and network platforms present immense opportunity and challenges. For SUs that overcome the "cold start" problem, where a new product has no existing users but needs network effects to achieve exponential growth in performance and effectiveness, an established community is hard to displace and creates a significant competitive advantage.

This workshop brings SUs through the process of creating strong online or user communities, the life cycle of community development, practical considerations and applications, and how to scale up activity to enhance innovation and business solutioning.

<Workshop 4: Team Development (Mentor: Nana Radenkovic)>
Team Development focuses on the importance of organizational design, structure and alignment. Many SUs begin with a small founding team but as business starts to scale and the organization begins to grow in size, proper organizational roles and responsibilities, talent acquisition and development, and decision-making structures are increasingly important. Young founders without corporate or management experience may face steep challenges in adjusting and adapting to these necessary changes, this may include conflicting ideas on forward progress between the founding team members, hiring challenges, or the difficulties of maintaining a startup culture in a growing enterprise.

<Workshop 5: Financial and Administrative Hygiene (Mentor: Nina Tasic)>
This is a practical workshop designed to help SUs bring their financial statements and process documentation up to a professional standard for presentation in their data rooms for investors. This workshop will also demonstrate best practices in administrative processes for reporting and documentation for organizational efficiency and effectiveness.

Although this topic may seem basic, too many SUs fail to recognize the importance of financial and administrative hygiene and how inefficiencies in such processes can impact their effectiveness, hamper growth efforts and result in hours lost on non-productive work.

<Workshop 6: Investment and Valuation Vocabulary (Mentor: Keo Sar)>
Every startup faces fundraising and financing decisions and this workshop brings them up to speed on the different forms of fundraising available, their advantages and disadvantages, as well as the necessary vocabulary used in fundraising negotiations. This workshop provides SUs with a clear picture of private capital market players, their motivations and intentions, and how to find the right fundraising partner at terms that will not create issues for future investors in later financing rounds.

<Workshop 7: Investment Sourcing (Mentor: Maria Carolina Romero)>
This workshop builds on the fundamentals of investment & fundraising by teaching SUs how to develop a financing strategy and thereafter map their investors and sources of funding. This doubles as an investment readiness workshop as it walks through the stages of securing investments and the necessary steps and documents needed at each stage from sourcing to negotiation to closing, and when should SUs start seeking the next round of financing.

<Additional Mini-Workshops / Sessions>
- Fundraising with a VC – 500 Emerging Europe VC from Türkiye (October 2022)
- Taking Advantage of Local Tax Incentives – Svetislav Kostic (December 2022)
- Mid-Program 1-on-1 with Program SUs – Survey team (December 2022)
- Pitching Workshop – Peter Bruner (January 2023)
- Post-Program 1-on-1 with Program SUs – Survey team (February 2023)

7.5.3. Customized Mentorship Program – Startup Specific

To supplement the Fundamentals Workshop Series, a customized mentorship program based on their goals and business needs is designed specifically for each individual startup. This comprises of 1-on-1 mentorship with a panel of additional experts and mentors selected by the startup or proposed by DSI based on the output from the Goal Setting Workshop or crucial areas of business needs identified through the course of the program.

DSI is responsible for the contracting and sourcing, where applicable, of additional mentors for this phase of the program, and their institutional backing strengthens the proposition to potential mentors and experts.

Figure 138 List of Additional Mentors / Experts for Customized Mentorship Program

Startup	Mentor	Remarks
Smart Watering	Dan Schultz	AgriTech Marketing (US-based). Working on Product Marketing Strategy.
	Marco Brini	Digital AgriTech International Expert. Refine Business Model, Go-to-Market Strategy, Internationalization Strategy. Adjust product to different customer categories.
	Dejan Dramicanin	IoT Product Development. Advising on hardware manufacturing challenges and scaling production.
	Aleksa Saponjic	Head Digital Products at NELT Group. Distribution Channels for African Market.
OmniShop	David Lockie	Web3 and WooCommerce development. Advising on pushing platform into Web3.
	Luka Anicin	Machine Learning Consultant. Working on topics for analytics and data business
	Simon Stanisz	B2B Sales. Growing and Developing Sales Channels.
	Keo Sar	Metaverse expert. Development of future capability to bring platform to the Metaverse.
EasyPass	Keo Sar	Developing new business and revenue model that can scale up growth prospects.
	Dusanka Ilic	Growing online community, developing community content and building in sales processes into community flows.
	Peter Bruner	Working on Pitch Deck and Pitch Delivery to articulate their product differentiating factors and highlight potential for growth.

Digital Spark	Maja Voje	Growth Marketing & Digital Transformation expert. Working on growth strategy and implementation
	Chris Berndt	Financial consultant. Working on Strategic and Financial Planning
	Chris Out	Extreme Revenue Growth Sales Consultant. Growth Planning and B2B Sales Strategy
Tapni	Nana Radenovic	Team Development and Founders Alignment
	Chris Out	Extreme Revenue Growth Sales Consultant. Growth Planning and B2B Sales Strategy
ZenHire	Katrin Kiviselg	Sales & Communication Expert. Working on setting up B2B Sales Processes and Strategy.
	Dusanka Ilic	Community Development. Connecting for Business Growth and Partnerships.
Data Do	Luka Prisunjak	Product is still in Development and will continue to work on final development, startup development growth challenges and customer discovery.

This portion of the program allows each startup to be met at their appropriate stage of development, where more advanced SUs (Smart Watering, Digital Spark) can find the advice and resources they need to prepare their growth strategy into specific international markets, and less advanced SUs (Data Do, EasyPass) can continue development of their product and community to strengthen their value proposition and product roll-out.

DSI placed a strong emphasis on the inclusion of a fully customized program at a startup level from their observations of existing acceleration programs in the ecosystem, which lacked such support. By allowing SUs to select their own mentors, and working with technical experts on specific business problems, we expect that tangible business results and product development can be achieved rather than through the standardized workshop-style programs which provide a more generalized approach.

7.6. Event Concept, Management and Evaluation

In the final week of NINJA Serbia, DSI and the Survey team jointly conceptualized two domestic events in Serbia designed to raise business and public interest and awareness of the potential in expanding into Japanese and Asian Markets. The first event, “How to make it in Asia from Serbia”, was held on 28 January 2023 as a lead-up event to the capstone NINJA Serbia Demo Day held on 3 February 2023.

7.6.1. How to make it in Asia from Serbia

7.6.1.1. Event Conceptualization

Through the course of the marketing and implementation of the NINJA Serbia program, it became apparent that there is a significant gap in terms of the awareness and understanding of the East Asian market opportunity and potential for international expansion there as compared to that of Europe, North America and even LATAM or the Middle East. There is a perception that Asia with its disparate market economies (and associated regulatory environments), languages and cultures, presents more complex market penetration and regional scaling challenges.

As a case in point, Uber’s East Asian market entry attempt is well-documented in the SU space. Following its market entry into Southeast Asia in 2013, it quickly found itself in fierce competition with local and regional challengers like Grab (Singapore) and Go-Jek (Indonesia), who had similar business propositions but were evolving their business models based on their cultural understanding of the landscape. Within 5 years, Uber agreed to sell its Southeast Asia business to Grab and exited the market. This mirrored Uber’s earlier corporate actions in selling its China business to local rival Didi Chuxing and its operations in Russia to Yandex.

The survey team envisioned an event that could promote awareness of the East Asian market opportunity to the Serbian business community, but also as a platform for Asian ecosystem stakeholders to become familiar with the innovativeness and vibrancy of the Serbian startup ecosystem.

From further discussion with DSI, this session would be the first of its kind in this region, and its benefits that extended beyond the program and should be made open to a wider audience. This event could be brought to the attention of the Serbian Government, which was placing a clear focus on technology and innovation.

7.6.1.2. Event Structure and Development

The survey team and DSI sourced for event speakers and panelists to specifically address the topic from a multi-perspective viewpoint, covering not only Japan, as a more developed economy, but also Southeast Asia as an emerging market economy. The event would consist of a mix of prepared presentations, an interactive discussion panel and later followed by a networking session. Speakers were sourced along four main perspectives: Investors, Corporates, SUs and Ecosystem Stakeholders.

For the Investor perspective, it was crucial for the speaker to have experience in bringing Non-Asian SUs into Asian markets as this presents a unique set of challenges and market networks and know-how. From this perspective, SUs could learn what investors consider important or relevant when looking to support a startup's entry into Asia. The survey team and JICA sought out various venture capital firms and private investors with such an experience profile, and were honored to invite Mr. Koji Osawa, Managing Principal and Co-Founder from Global Catalyst Partners, to speak at the event on a remote basis.

For the Corporate perspective, Japanese corporates with a presence in Eastern Europe would likely have the relevant experience in addressing corporate culture differences between Japan and Eastern Europe, as well as how to navigate the challenges around securing a partnership with a large multi-national corporate. In this vein, Danijela Cabarkapa from NTT Data Romania kindly accepted our invitation to join our event's discussion panel.

For the Startup perspective, having Serbian or Eastern European entrepreneurs who founded or grew businesses in Asia to share their experiences not only from a business perspective but from a cultural and personal perspective would be immensely beneficial to a Serbian Startup audience. Startup founders who make the move to Asia often find themselves dealing not only with new business / regulatory environment challenges, but also on the personal front in terms of adapting to a new culture. Zoran Vasiljev, a Serbian serial entrepreneur with over 20 years of experience building companies in Asia, and Veljko Vasić, a Serbian co-founder of HolyWally, a Fintech Startup in Singapore, kindly accepted our invitation to join the discussion panel for our event.

For the Ecosystem Stakeholder perspective, with JICA as the program sponsor, the NINJA SUs are already exposed to a Japanese perspective. To enhance and broaden the program proposition, Singapore was considered as an ideal partner as they represent a globally recognized startup, technology and innovation hub. Enterprise Singapore, a governmental agency which generally works with SUs and corporates looking to expand beyond Singapore but also with promoting Singapore and the Southeast Asian region as a potential market for in-bound expansion, was open to sending a delegation to attend the event in-person and to speak on the market opportunity in Southeast Asia.

7.6.1.3. Event Overview

The "How to make it in Asia from Serbia" even was held on 28 January 2023 at Hotel Crown Plaza in Belgrade and brought together an international panel of speakers covering different perspectives (Investors, Ecosystem, SUs and Corporates) on the topic of East Asian market potential and navigating the practical challenges of entering these markets.

The event highlighted the 140 years of international friendship between Serbia and Japan and featured opening remarks by the Chief Representative from JICA Balkans Office – Mr. Masahiro Ueki – and the Minster of Science, Technological Development and Innovation of Serbia – Ms. Jelena Begović.

The survey team was represented by Mr. Shigeru Handa (AAIC Investments) who delivered a broad overview of the Asian Market Opportunity, to set the baseline of understanding for the scope of the event, such as the definition of "Asian Market" referring to East Asia (North Asia + Southeast Asia).

Figure 139 Schedule from the Asia-focused Event in Serbia

Source: Digital Serbia Initiative

Figure 140 Speakers from JICA, Ministry of Science, Technological Development and Innovation Serbia and AAIC Investment.

Source: Digital Serbia Initiative

Mr. Koji Osawa (Global Catalyst Partners) joined via Zoom and spoke on "the Importance of a Global Approach for Successful Startups", emphasizing the importance of a diversity of viewpoints and recognizing cultural blind spots when entering an international market.

Mr. Yogeindran Thiayagarajah (Regional Director, Eastern Europe) and Ms. Sezin Ata Diler (Senior Business Development) from Enterprise Singapore were in attendance at the event and spoke on Singapore as a gateway into Asia, the infrastructure, regulatory and operational support systems present for SUs and businesses, and opportunities for international SUs.

The Panel Discussion was joined by Mr. Zoran Vasiljev (Forty5VC), Mr. Veljko Vasic (HolyWally), Ms. Danijela Cabarkapa (NTT Data Romania) and Mr. Yogeindran Thiayagarajah, and moderated by Mr. Ben Lim (Survey team – Collective Platform). Topics included: Navigating different business cultures, Common misconceptions of Asia (Business / Personal), Building a network in Asia, Where to Start from when thinking about Asia, and "Is Asia an approachable market for everyone?"

Figure 141 Enterprise Singapore, Panel Discussion + Questions from Local Startups

Source: Digital Serbia Initiative

Figure 142 Post-Program Media Interviews

Source: Digital Serbia Initiative

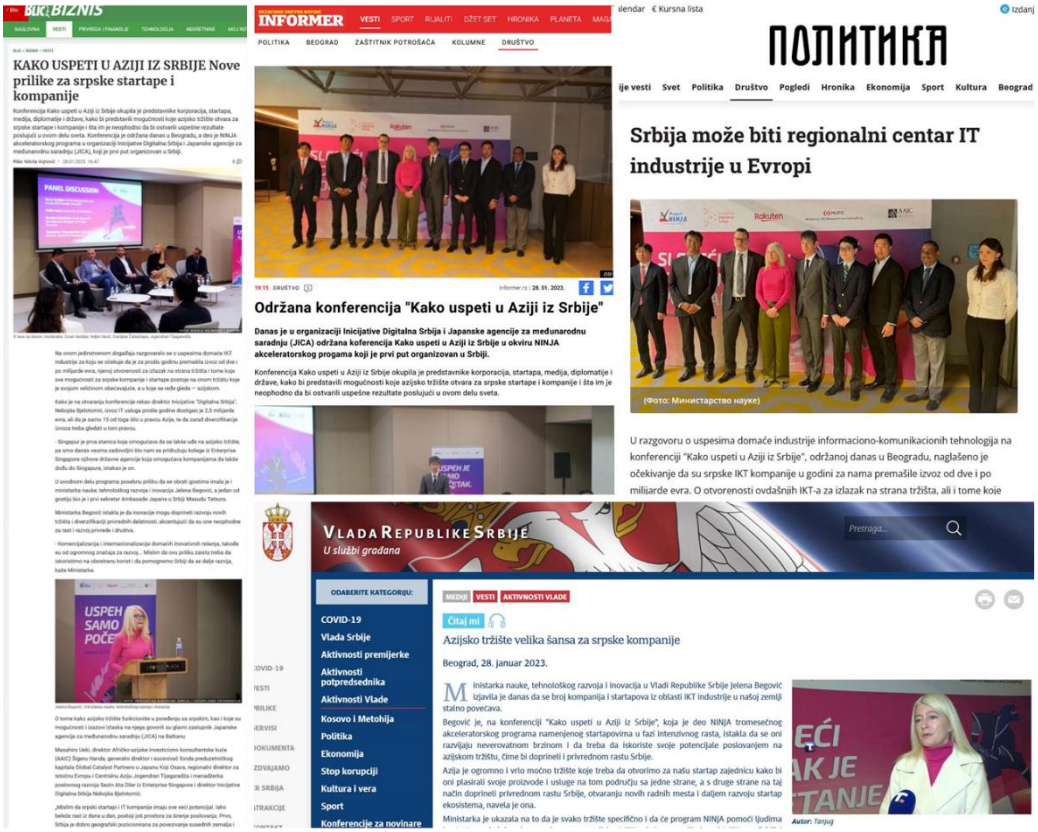
7.6.1.4. Post Event Media Coverage

Domestic media coverage of the Asia-focused event was highly favorable and reports / interviews from the event were carried on local news networks throughout the weekend (28 Jan to 30 Jan) with some channels carrying segments on the event 2-3 times a day. Anecdotal reports indicate the event was “eye-opening” and the audience came away with a different perspective on Asia.

Figure 143 Traditional Media Coverage:

Type	No. Press Clippings
Print News Media	3
TV News Media	13
Digital News Media	41

Figure 144 Sample of Digital News Media Coverage



Source: Various websites

This review of media coverage does not include any coverage or posts on social media (LinkedIn, Facebook), although it should be noted that DSI both publicized and recapped the event on their Social Media accounts, and some of which were reposted by accounts such as Enterprise Singapore – Europe’s LinkedIn account.

7.6.1.5. Evaluation and Review

The “How to make it in Asia from Serbia” event was well-received by the public and in the media, and the presence of representatives from the Serbian Government as well as Government Agencies like JICA and Enterprise Singapore further supported the narrative of a strong collaborative push for increased cooperation and collaboration between Serbia and East Asia.

The event served its objective as an informational session broadcasting JICA's intent to create a viable path of business expansion for Serbian corporates and SUs into Asia, and created more awareness in the Serbian public sphere around the potential and possibilities in the Asian market.

Keeping in mind that Asian market expansion is still a distant concept for most Serbian businesses and SUs, the attendance and receptiveness to our messaging was positive but could be improved. By organizing this event before the NINJA Acceleration Program, as a lead-up to the application phase, it would help provide information, understanding and actionable follow-up behavior (i.e. applying for the program). This segment could also be housed within a larger Startup event (e.g. SPLET Tech Conference) where SUs are already gathered to listen to a wide array of talks and many more could be open to learning more about Asia.

7.6.2. NINJA Serbia Demo Day

7.6.2.1. Event Conceptualization

Demo Day represents the culmination of the NINJA Serbia Acceleration Program and SUs make their business pitch to regional investors, corporates and ecosystem stakeholders as well as Japan-based investors / corporates joining online. This speaks directly to the key success factor for NINJA Serbia, which is for program SUs to raise their level of exposure in new markets, attract a business opportunity or to garner investment. The program will run in a hybrid mode for in-person participation and simultaneously live-streamed.

To aid understanding, simultaneous online translation from English to Japanese will be made available through Zoom's simultaneous translation features.

To facilitate follow-up efforts and indications of interest, a pop-up alert is triggered at the conclusion of each Startup pitch asking if the attendee would like to know more about the startup. All affirmative responses are collated and tracked for follow-up actions.

7.6.2.2. Event Structure and Development

2 Weeks Prior to the Demo Day, DSI organized a mock demo day for the NINJA Serbia SUs to pitch in front of the DSI Business Angel Group, consisting of over 15 angel investors. This gave the SUs a great opportunity to receive feedback to refine their investor pitch, but also to secure follow-up calls with interested angel investors. Data Rooms and Pitch Decks were all prepared ahead of time as part of the NINJA Serbia Acceleration Program curriculum. From this mock Demo Day event, 2 SUs – Digital Spark and Tapni – connected well with investors and secured follow-up calls to take talks further.

Coordination for Speakers to grace the occasion was over a month in advance to secure the online participation of the Ambassador of Serbia in Tokyo (Ms. Aleksandra Kovac), as well as the on-site attendance of the Ambassador of Japan in Serbia (Mr. Takahiko Katsumata) at the event.

Each Startup is given 5 minutes to pitch followed by a 5-minute Q&A with the audience.

Invited Investors:

- DSI Business Angel Group
- Telekom VC Fund – TS Ventures
- Omorika Ventures – ICT Hub
- Fifth Quarter Ventures
- South Central Ventures
- Fil Rouge Capital (Croatia)
- JT Ventures (Czech Republic)
- DEPO Ventures (Czech Republic)
- Vitosha Ventures (Bulgaria)
- Eleven Ventures (Bulgaria)
- Japanese Business Association of Serbia (JBAS)

Figure 145 Overview and Program of Demo Day

Item	Description
Name of the event	NINJA Serbia Demo Day
Date and time	Friday, 3rd February 2023, 20:00 ~ 23:00 (12:00～15:00 at Serbia time)
Style	Onsite: Digital Serbia Initiative + Zoom webinar
Objectives	■ To raise the interest of Japanese companies and investors in the current status and challenges of SU companies and the ecosystem in Serbia and Northern Macedonia
Possible target	■ Those looking for a new ICT business location, partner, or investment in the European region ■ Those checking relevant news from American the Western European market, but not covering West Balkan, or looking brand-new insights in the European region
Number of participants	■ Pre-registration: 102 (onsite: 24, online: 78) ■ Actual participation: 82 (onsite: 40, online: 42)

開始時刻（CET）	内容	登壇者
12:00	Opening Remarks	■ Ambassador H.E. Mr. Takahiko Katsumata, Embassy of Japan in Serbia ■ Ambassador H.E. Ms. Aleksandra Kovač, Embassy of the Republic of the Serbia in Japan ■ Mr. Yoshiaki Nagata, JICA Balkan Office
	Introduction of Serbian Ecosystem and Growth Opportunities	■ Nebojša Bjelotomić - CEO, Digital Serbia Initiative
	NINJA Program Overview & Pitch Event Kick-Off	■ Neda Trifunović - Program Manager, Digital Serbia Initiative
12:25	Pitching and Q&A session	■ Smart Watering (Lazar Jovanovic) ■ ZenHire (Vladimir Bozovic) ■ Digital Spark (Ognjen Lukic) ■ Tapni (Mihajlo Nikodijevic) ■ EasyPass (Marijana Jovanovic) ■ OmniShop (Dusan Popovic) ■ Data DO (Goran Tintor)
13:35	Closing	
13:40 -	Informal networking (On-site only)	

Attendance and Participation Report

Key Audience Metrics

- Investors in Attendance: 6 VCs + 3 Angels
- Corporates and Business Association
  - 2 Serbian Corporates
  - 8 Japanese Corporates (online) + 3 Local incorporated Japanese company
  - Japan Business Association of Serbia (JBAS)

- 4 Other corporates

■ Media Presence
- Bloomberg
- RTS (Local News)
- Webmind.io (Digital News Media)

■ Other Ecosystem / MNC / Govt in Attendance (Online + Offline)
- Director, IT and Entrepreneurship - Office of the Prime Minister of Serbia
- JETRO Vienna
- Embassy of Japan to Romania
- Embassy of Japan to Serbia
- Embassy of Serbia to Japan
- Swiss Entrepreneurship Program
- AUDA NEPAD (African Union Development Agency)

Follow-up Requests and Results

Figure 146 Matching results and status and status (May, 2023)

Company	Smart Watering	Zen Hire	Digital Spark	Tapni	Easy Pass	Omni Shop	DataDo	Status
African Public Organization	Y		Y	Y		Y	Y	No responses to follow-up
Japanese Private Company	Y	Y	Y	Y	Y	Y	Y	No responses to follow-up
Japanese Incorporated Foundati	Y				Y			No responses to follow-up
Japanese Private Company	**Y**							**Discussing Partnership**
Japanese Private Company		Y						No responses to follow-up
Japanese Private Company							Y	No responses to follow-up
European VC		**Y**	**Y**					**Discussing Investment**
European VC			**Y**				**Y**	**Discussing Investment**
Serbian Business Angels Group			**Y**	**Y**				**Discussing Investment**
Serbian company & Angel Investor		**Y**			**Y**			**Confirmed Investment + Partnership**

7.6.2.3. Evaluation and Review

From a technical perspective, the Demo Day was well-organized and professionally executed. DSI and JICA secured support from government and embassy representatives from both Serbia and Japan, as well as business associations and regional investors. Media coverage was positive, building on the interest and coverage generated by the Asia-focused event the previous week. Demo Day secured 20 digital press clippings as well as TV Spots (Interviews with JICA, SUs, DSI) and radio interviews (DSI + SUs) to discuss the NINJA Program.

Due to the time difference between Serbia and Japan, compromises were made on the timing for the Demo Day event to allow for live online participation from the Japanese audience. While this may have slightly affected in-person attendance (and online attendance), overall registration and attendance figures were slightly above expectations.

In the lead-up to Demo Day, SUs did a mock Demo Day with Serbian Business Angels and a separate session where their Investment Pitch was recorded for the post-Demo Day webinar catering to a Japanese audience. These 2 lead-up events supplied important feedback from firstly an investor perspective, and visual feedback when reviewing their own pitch recording to make more subtle refinements in body language, pitch and tone.

One area that could be improved for future events was the online registration flow for virtual attendance. Attendees were required to input their personal / business information at least twice, and this flow could be streamlined to make it easier to capture such information from the outset or at the point of entry to the webinar.

7.7. Program Outcomes, Program Review and Evaluation

7.7.1. Review of Program Objectives:

NINJA Serbia is the first JICA Project NINJA Acceleration Program in the Eastern European region and is launched as a pilot program to assess the relevance, suitability and appetite for an Asian-sponsored and implicitly Asian-focused startup acceleration program.

Concerning the Program success factors and objectives are centered around delivering a tangible business outcome for program SUs that are derived as a direct consequence of participation in NINJA Serbia. This could come in the form of a new market expansion opportunity, a fundraising connection or a new business partnership. Secondary success factors would include a refinement or development of internal business models and operations, such as refining the commercialization model, solving key roadblocks to growth, or pivoting to a new business model based on the mentorship and analysis done in the program.

Concerning the broader scope objectives as a Program Sponsor, JICA's success factors and objectives include raising the visibility and profile of JICA as a pro-active partner in strengthening the socio-economic and political ties between this region and Asia, through programs that extend beyond traditional development aid and that target the new digital economy such as the Project NINJA global initiative.

7.7.2. Evaluation of the Program Objectives

7.7.2.1. Specific Progress of Program Startups

<Smart Watering>

- Explored piloting programs in Morocco through NINJA mentorship connections and negotiated with several test farms, but based on current market and investment climate, placed this expansion on pause.
- Focused on regional expansion in Slovakia, Croatia and Bosnia.
- Coordinated by the survey team, JICA Egypt facilitated a meeting between Smart Watering and a Japanese consulting company based in Egypt for preliminary market discovery. Smart watering will explore North Africa as a potential market for expansion after securing their initial regional expansion
- Connected with a Japanese irrigation / pump distributor in Africa through NINJA and in negotiation for partnership
- NINJA Serbia influenced team structure, team development, improved founder communication and set up partnership agreements.

<ZenHire>

- Secured a place in Innovation Fund of Serbia's Katapult Program (2nd Cohort) which provides up to EUR 300,000 as a matching grant
- Conducted business survey trip to Manila, Philippines for meetings with potential investors, local partners, re-sellers and call centers. Supported by connections established from NINJA to work on a pilot project with a Japanese corporation based in Philippines.
- New Business Partnership with Serbian corporation through NINJA mentor.
- From the Pre-Demo Day and Demo Day pitching events, NINJA Mentors and Angel Investors are attracted to Zenhire's technology and business focus and have made overtures to discuss investment terms with EUR 100,000 to EUR 150,000 in soft commitments.
- ZenHire is in the final stages of closing angel investments with a NINJA mentor and an Asia-based angel investor. Terms are undisclosed.

<Digital Spark>
- Expansion into Madrid, Spain supported by connections made through NINJA Asia-event.
- Follow-up meetings secured with Serbian angel investors through mock demo day preparation event
- Attracted regional investor interest through Demo Day pitch.

<Tapni>
- NINJA Serbia supported clarification of team structure, development and founder alignment
- Follow-up meeting secured with Serbian angel investors through mock demo day

<Omnishop>
- Focused on Market expansion in the United States
- Follow-up Meeting with Japanese market research consultancy secured through domestic webinar event

<EasyPass>
- Pivoted on Business Model and Commercialization Model supported by NINJA mentorship
- Closed first funding round of EUR 50k with some investment secured through NINJA Demo Day, of this amount, 10k was secured from angel investors present at Demo Day.
- Expansion focus currently towards Serbia, Croatia and Bosnia.

<Data DO>
- Re-modeled business approach and commercialization model through support of NINJA Mentorship
- Follow-up Meetings with Japanese Market Research Consultancy and several VCs and Angel Investors.
- Expansion focused on EU and US

7.7.2.2. NINJA Serbia Program Structure, Execution and Quality of Curriculum

Digital Serbia Initiative (DSI), the local implementation partner for NINJA Serbia, proposed a program centered around a few fundamental startup workshops and supplemented with an individual mentorship program customized for each startup based on their specific needs and stage of development.

DSI formulated this program structure based on their in-depth understanding of the other acceleration programs in the ecosystem and the needs of SUs at a scale-up stage of development. Most programs are structured around a specific set of workshops prescribed by the Program Sponsor with limited flexibility for individualized components in such programs. Individual Mentorship is usually limited to 1-on-1 sessions with the workshop mentor in the week following the workshop. Under DSI's structure, the Goal-Setting workshop lays the foundations for DSI and the Startup to work closely to determine their key point of focus for the program, and to jointly identify mentors who could best provide guidance. DSI would then reach out to the shortlisted mentors to work out details on willingness to participate, availability and contracting.

In this manner, the SUs who derive the most benefit are those who are the most prepared and fully understand not only their points of need, but also parties who might be able to best support their area of development. This could be a mentor with connections to a specific industry in a specific geographic market, or with an expertise in a particular technology of field of knowledge. At the same time, for SUs at an earlier stage of growth, more targeted support can be provided to help them in refining business models, commercialization models or go-to-market strategy.

The execution and quality of the program was highly organized and professional, with feedback from SUs mirroring the impressions of the Survey team. The DSI team set in place various touchpoints through the program schedule to connect with Workshop mentors for

feedback on their sessions and the program SUs, and to connect with SUs to ensure the program is meeting them at the point of need and remaining relevant. All of this feedback is communicated back to the Survey team in the documented feedback notes, and corroborated by our 1-on-1 sessions (at the start of the program, mid-way through the program, at the close of the program, and in post-program evaluation).

DSI credits JICA and its Project NINJA initiative for taking a flexible and open view towards empowering local ecosystem partners to fully exploit their experience and expertise in formulating and executing their vision for this program. DSI highlighted a second significant but often underappreciated aspect, in the streamlined administration and minimal bureaucracy in all phases of proposal, approval and implementation. This differs from the general understanding of partnerships with large government-backed agencies or development finance institutions. The third aspect was the active participation and collaboration of JICA and its taskforce in supporting the program initiatives proposed, which supported the value proposition of an Asian-sponsored program but without making the program Asian-centric. This led to SUs deriving significant value from the program curriculum, drawing a connection and understanding to the potentials of Asian market development, and establishing early connections and networks in Asian ecosystems through JICA and its program partners.

7.7.2.3. Increasing Awareness and Visibility of JICA and Project NINJA in Serbia

As a prominent part of the Serbian startup ecosystem, with involvement in lobbying for legal and regulatory changes to support innovation and entrepreneurship, DSI succeeded in delivering more than expected in regards to raising the visibility and awareness of JICA and Project NINJA, and more broadly the continued cooperation between Japan and Serbia.

In addition to strong visual marketing material and program branding, JICA and its representatives opened the session at the SPLET Tech Conference 2022 in Belgrade, which was jointly organized by DSI and ICT Hub (through their respective USAID Programs – Venture-an-Idea and Serbia Innovates). This was a full-day technology conference highlighting the best of Serbia's Startup Ecosystem, bringing together SUs, regional investors, ecosystem stakeholders, and corporates with speakers covering a broad range of topics. JICA's Project NINJA opening garnered much interest as the only Asia-related event on the agenda, and with several SUs and regional ecosystem players expressing interest in programs supporting an Eastwards market expansion.

DSI's close governmental relationships helped to secure an audience with Mr. Nenad Paunovic, Director of IT and Entrepreneurship in the Prime Ministers' Office of Serbia, and his attendance at the capstone Demo Day event. Similarly, speaking engagements with Ms. Jelena Begovic, Minister of Science, Technological Development and Innovation of Serbia, as well as Ms. Aleksandra Kovac, Ambassador of Serbia in Japan, were secured for the "How to make it in Asia from Serbia" Conference and the NINJA Serbia Demo Day respectively. The local government presence at these events highlights the overarching cooperation and collaboration of Serbia and Japan, which saw its 140th anniversary of friendship in 2022.

With a strong relationship to local media, DSI secured interviews in key business and general news programs ahead of the NINJA Program launch, the Asian Conference and Demo Day to raise the profile and invite coverage of those events. Effective execution, messaging, and prominence with high-profile government officials in attendance, generated high-value marketing and branding awareness for JICA and the NINJA program.

As a pilot program launching in a region that is unfamiliar with Asia as a target market for business expansion, the marketing and awareness of JICA, Project NINJA, as well as Japan and Asia as markets of opportunity is crucial for the growth of future JICA Project NINJA programs in this region. This pilot program was effective in setting the stage and generating keen interest for the next program to leverage and build on.

8. Holding a briefing Seminar

8.1. Briefing seminar in Japan in June 2022 (Serbia and North Macedonia)

8.1.1. Overview of the event

While the survey and AP in Ukraine had to be suspended due to Russia's invasion of Ukraine occurred in February 2022, a briefing seminar on the results of the survey in Serbia and North Macedonia was held in online format on 7 June 2022. By publicizing the event through Digima, a platform to support overseas business expansion for Japanese companies, the UN Forum's mailing list, announcements on the MURC website, and individual communications from related parties, 68 people registered in advance and a maximum of 42 people participated on the day.

Figure 147 Overview of the Seminar

Item	Description
Name of the event	Startup Ecosystem in West Balkan: A Region of Diversity
Date and time	Tuesday, 7th June 2022, 16:00～18:30 (9:00～11:30 at Serbia and North Macedonia time)
Style	Online seminar (Zoom)
Objectives	■ To increase the interest of Japanese companies and investors in the current status and challenges of SU companies and the ecosystem in Serbia and Northern Macedonia
Possible target	■ Those looking for a new ICT business location, partner, or investment in the European region ■ Those checking relevant news from American the Western European market, but not covering West Balkan, or looking brand-new insights in the European region
Number of participants	Maximum 42 (68 advance registrations)

Figure 148 Program of the Seminar

Time (JST)	Contents	Speakers
16:00	Opening	■ Kaita Tsuchiya, Director, Europe Division, Middle East and Europe Dept., Japan International Cooperation Agency (JICA)
16:10	Current status and challenges of startups and ecosystems in Serbia and Northern Macedonia	■ Michikazu Koshiba, General Manager, Social Impact Partnership Business Dept., Research and Innovation Division, Mitsubishi UFJ Research and Consulting Co., Ltd.
16:30	Serbia Session ■ Presentations by a government organization and a startup ■ Panel Discussion	■ Nenad Paunović, Director of the Team for IT and Entrepreneurship, Office of the Prime Minister, Republic of Serbia ■ Vladimir Šijaković, CEO and Founder, KOV Technology ■ Yusuke Ogawa, Europe Division, Middle East and Europe Dept., JICA ■ Miyako Sato, Mitsubishi UFJ Research and Consulting Co., Ltd. ■ Benjamin Lim, Collective Platform
17:30	North Macedonia Session ■ Presentations by a support organization and a startup ■ Panel Discussion	■ Igor Madzov, President, Start-up Macedonia ■ Takashi Nakajima, COO, Basicmath LLC ■ Yusuke Ogawa, Europe Division, Middle East and Europe Dept., JICA ■ Atsushi Morisawa, Mitsubishi UFJ Research and Consulting Co., Ltd. ■ Benjamin Lim, Collective Platform
18:30	Closing	

In the briefing seminar, not only a report from the survey team, but a government organization/SU support organization and SUs from Serbia and North Macedonia presented their experiences and views. A panel discussion among the speakers followed the presentations.

The Office of the Prime Minister of Serbia reported that in recent years, in addition to facilities such as science parks and data centers, the country has been actively developing incentives to attract investment and promote entrepreneurship. In particular, the country is currently working to strengthen the "BIO4" domain (Biomedicine, Biotechnology, Bioinformatics, and Biodiversity). As an example of ICT business that takes advantage of geographical connectivity with the EU, KOV Technology introduced how it is actively expanding the service area of its "VOZZi", a road service using a mobile app, to neighboring European regions.

Startup Macedonia, a startup support organization, mentioned that although North Macedonia is a relatively small country with a population of 2 million, it has many engineers who are well versed in the latest digital technologies, and that North Macedonian companies have a general mindset of being aware of overseas expansion from the early stages of their business. Basicmath, a company that develops core business management systems in Japan and is involved in collaboration with SUs in North Macedonia and supporting SUs in the country to enter the Japanese market, shared the possibilities and challenges of collaboration with SUs in Europe while reviewing its own experiences.

Figure 149 Photos of the seminar

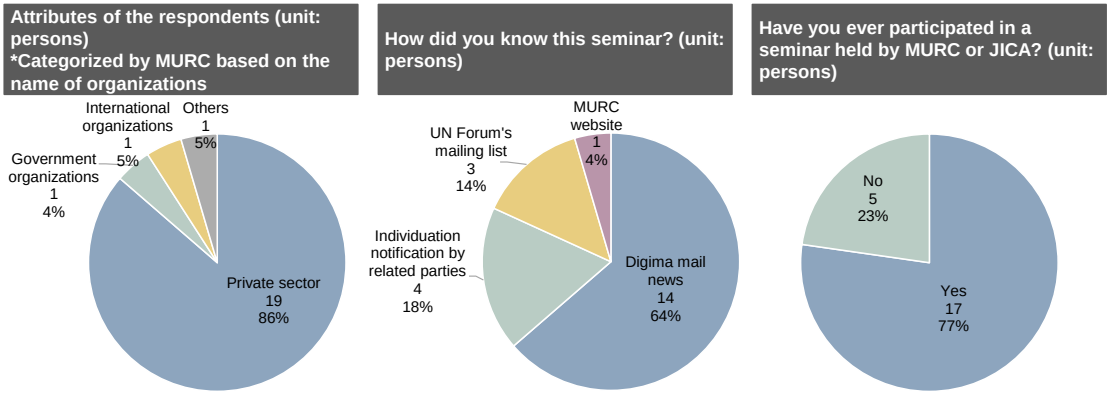
(Upper: Serbia session, Lower: North Macedonia session)

Source: The survey team

8.1.2. Feedbacks from the participants

An online questionnaire was sent to the participants as a tool to collect their feedbacks and we received from 22 respondents. The attributes of the respondents are shown in Figure 115 First, 19 of the respondents (approximately 86%), the majority of whom were from the private sector. The most common way for learning of the event was the mail news distributed by Digima, a platform to support overseas business expansion for Japanese companies (14 respondents, 64%), but there were also applications from other channels individual notifications from related parties (4 respondents, 18%) and the UN Forum mailing list (3 respondents, 14%). Many participants had attended seminars organized by JICA or MURC in the past (17 respondents, 77%).

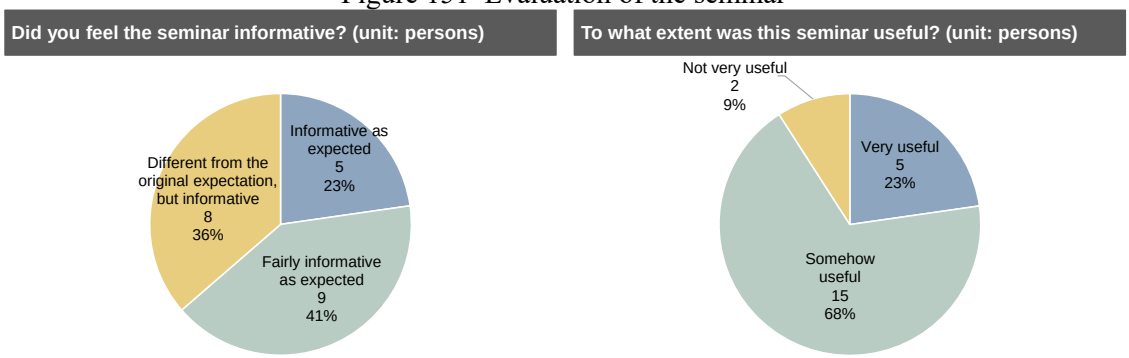
Figure 150 Attributes of the respondents



Source: Developed by the survey team based on the questionnaire to the participants

With regard to the evaluation of the event, a certain number of respondents (8 respondents, 36%) indicated that the content was different from their prior expectations. However, even including these, all respondents responded favorably to the event, saying it was "as expected" or "informative," with 91% (20 respondents) saying it was "very useful" or "fairly useful."

Figure 151 Evaluation of the seminar

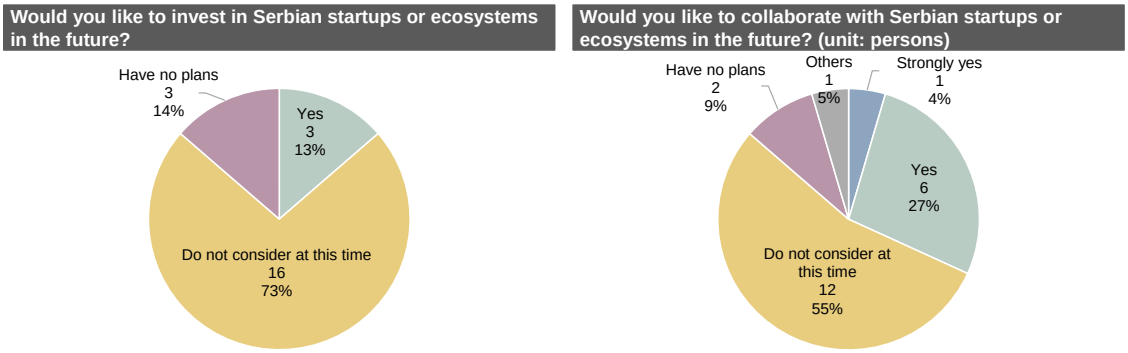


Source: Developed by the survey team based on the questionnaire to the participants

Looking at the impressions of the sessions on both Serbia and North Macedonia, there were many respondents who chose "do not consider investment or collaboration at this time" or “have no plans to invest or collaborate,” partly because Japan is not very familiar with either country as a place of business. On the other hand, 7 respondents expressed an interest to collaborate with

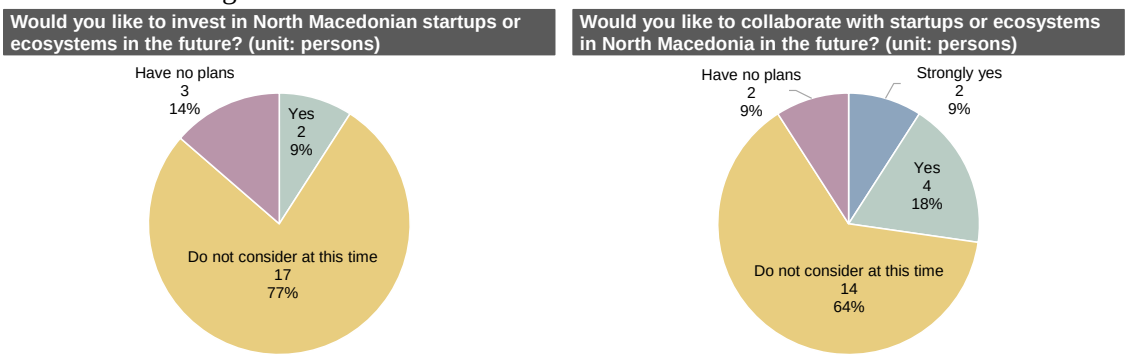
Serbia and 6 with North Macedonia[289]. Several participants commented, "The Western Balkans itself is still an unknown region, and the degree of unawareness and risk increases when it comes to SUs, so I think it is difficult to start something right away. That may be an opportunity, though" and “I think it was worth attending the seminar just to learn about the attractiveness of Serbia and North Macedonia”.

Figure 152 Investment or collaboration with Serbia



Source: Developed by the survey team based on the questionnaire to the participants

Figure 153 Investment or collaboration with North Macedonia



Source: Developed by the survey team based on the questionnaire to the participants

However, there was a comment "I wanted a precise explanation of the advantages and disadvantages of collaboration with SUs in the region. I also wanted to hear about actual examples, if any.” In order to proceed to the next stage of learning and having interest in the two countries, it is necessary to develop a program that enables to describe a more concrete business image.

8.2. Briefing seminar in Japan in February 2023 (Serbia)

8.2.1. Overview of the event

As explained in the previous chapter (8. Serbia Acceleration Program Implementation Overview), the survey team implemented the AP in Serbia starting in October 2022 with DSI as its partner.

[289] All three respondents who answered "yes" to the question "Would you like to invest in Serbian startups or ecosystems in the future?" also chose "yes" to the question "Would you like to collaborate with Serbian startups or ecosystems in the future?” Similarly, two respondents who answered "yes" to the question "Would you like to invest in North Macedonian startups or ecosystems in the future?” also chose "yes" to the question "Would you like to collaborate with startups or ecosystems in North Macedonia in the future?”

In conjunction with the program's Demo Day held in Belgrade on February 3, 2023, a briefing opportunity for Japanese audience was held again in the form of an online seminar. The purpose of this seminar was to introduce the update of the Serbian ecosystem particularly obtained through the AP since June 2022, and to search for Japanese companies wishing to collaborate with the seven SUs that participated in the AP. Similar to the previous event in June 2022, publicity activities were conducted and 70 people registered in advance, with a maximum of 49 people attending on the day of the event.

Figure 154 Overview of the Seminar

Item	Description
Name of the event	Discover Attractiveness of Serbian Startups
Date and time	Tuesday, 8th February 2023, 16:00～17:00 (9:00～10:00 at Serbia time)
Style	Online seminar (Zoom)
Objectives	■ To raise the interest of Japanese companies and investors in the current status and challenges of SU companies and the ecosystem in Serbia and Northern Macedonia, including the updates since the event held in June 2022 ■ To provide Japanese companies considering cooperation and collaboration with Serbian SUs matching opportunities with specific name of candidate SUs
Possible target	■ Those looking for a new ICT business location, partner, or investment in the European region ■ Those checking relevant news from American the Western European market, but not covering West Balkan, or looking brand-new insights in the European region
Number of participants	Maximum 49 (70 advance registrations)

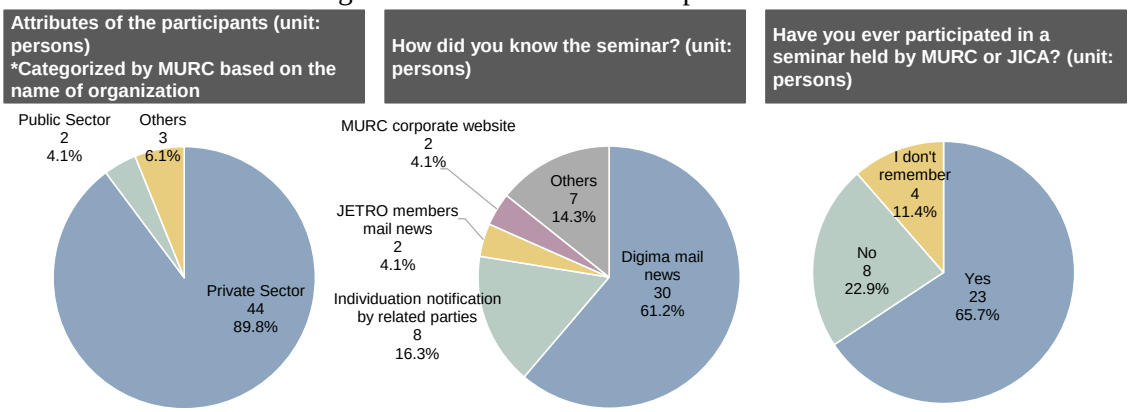
Figure 155 Program of the Seminar

Time (JST)	Contents	Speakers
16:00	Opening	Kaita Tsuchiya, Director, Europe Division, Middle East and Europe Dept., Japan International Cooperation Agency (JICA)
16:05	Attractiveness of the Eastern European market from the perspective of a Japanese company	Toshihiko Otsuka, CEO, Rakuten Europe
16:10	Current status and challenges of Serbian startups and ecosystem	Miyako Sato, Manager, Social Impact Partnership Business Dept., Research and Innovation Division, Mitsubishi UFJ Research and Consulting Co., Ltd.
16:25	Serbian Companies' expectations on Japanese companies and investors ~ Experience from NINJA Accelerator ~	Nebojša Bjelotomić, Digital Serbia Initiative CEO
16:50	Introduction of matching opportunities with Serbian SUs	—
17:00	Closing *Broadcast pitch videos by Serbian SUs after closing the seminar	—

8.2.2. Feedbacks from the participants

The participants of the seminar were asked to fill in an online questionnaire after the seminar, and 35 responses were collected. The attributes of the respondents are shown in Figure 157, and almost same trends can be seen as that held in June 2022.

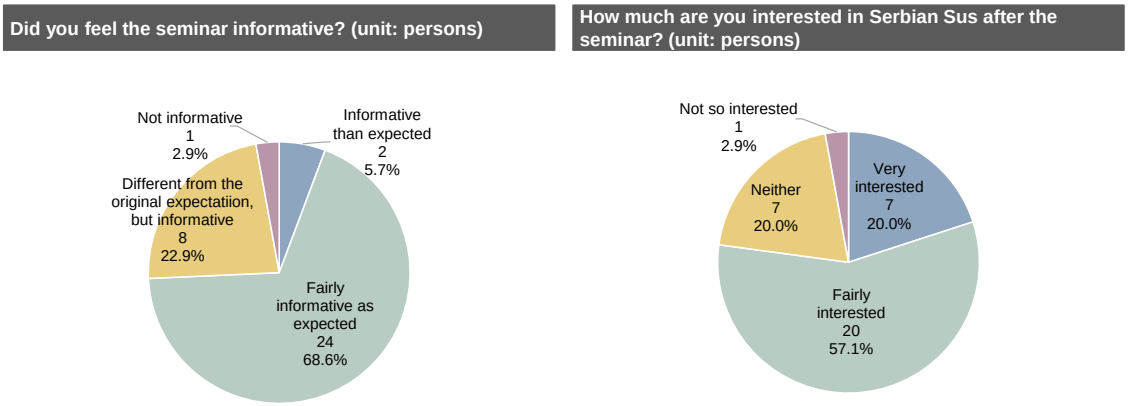
Figure 156 Attributes of the respondents[290]



Source: Developed by the survey team based on the questionnaire to the participants

As for the content of the seminar, 97.1% (34 respondents) answered that the information was "Informative than expected," "Fairly informative as expected," or "Different from the original expectation, but informative," indicating that the seminar was positively accepted. Respondents' level of interest in Serbian SUs was also relatively high, with 77.1% (27 respondents) indicating that they were "Very interested" or "Fairly interested.

Figure 157 Evaluation of the seminar

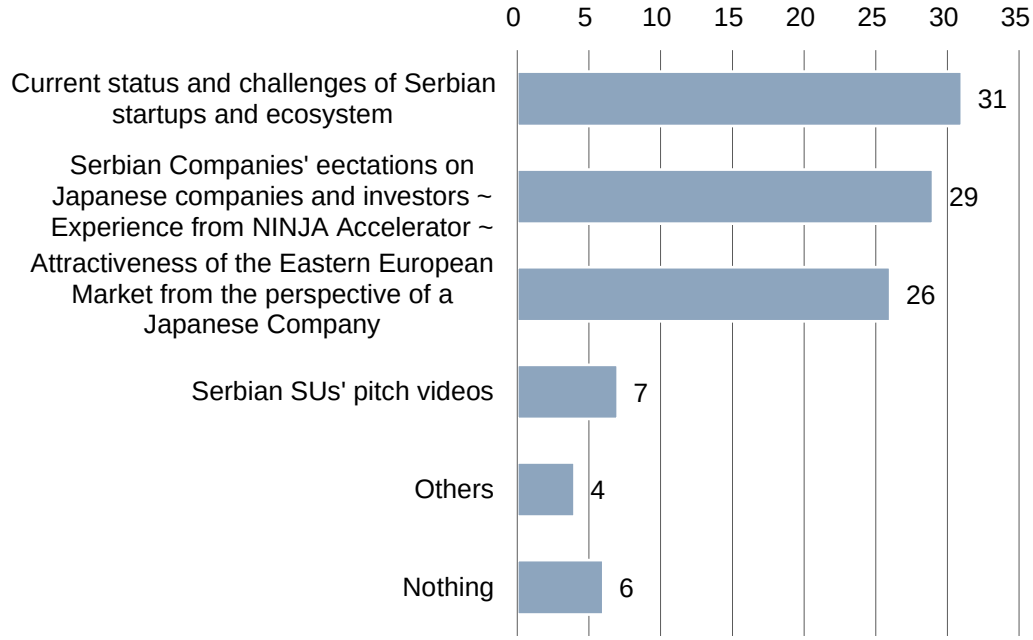


Source: Developed by the survey team based on the questionnaire to the participants

In addition, the main contents of the seminar, "Attractiveness of the Eastern European market from the perspective of a Japanese company," "Current status and challenges of Serbian SUs and ecosystem," and "Serbian Companies' expectations on Japanese companies and investors ~ Experience from NINJA Accelerator ~," were the most interesting contents for the participants.

[290] "Attributes of the participants" and "How did you know the seminar?" are aggregated from the inputs to the registration form of the seminar.

Figure 158 3 interesting contents (maximum) in the seminar (unit: persons, multiple answers)[291]



Source: Developed by the survey team based on the questionnaire to the participants

Many participants commented that they appreciated the opportunity to obtain comprehensive information on the Serbian ecosystem, which is not easily accessible through general channels, such as "I felt the momentum and energy of this Eastern European country, which I am not familiar with," "It was fresh information since I haven't done business in Eastern Europe," and "(I obtained) Information that was hard to obtain in Japan." On the other hand, some said, "I would be happier with a question-and-answer session for the entire seminar to get the most of an hour from the experts." Compared to regions such as Asia and Africa, which have been attracting increasing attention in recent years and people have a certain level of understanding, the level of understanding in the Eastern Europe and Western Balkans region tend to be diverse, making it difficult to provide explanations that meet the wishes of all potential participants.

After this briefing seminar, 6 Japanese companies[292] requested matching opportunities with SUs participating in the AP, leading to individual meetings with SUs and email communication (see 7.6.2.2.).

[291] Due to an incomplete setting of the questionnaire, this question was set to "always select 3" instead of "maximum 3" until the middle of the responding period.

[292] Including 2 companies to which the survey team members belong.

9. Considering further approach for the region

9.1. Summary of Survey Results

The survey results can be summarized as shown in Figure 159 on the next page for each of the selected countries. When the survey results are compared to the ecosystem development stages based on Startup Genome's Ecosystem Lifecycle Analysis (Figure 158)[293], Ukraine was in the late stage of activation before the Russian invasion, while Serbia and North Macedonia were in the early stage of activation.

Figure 159 Ecosystem Lifecycle Analysis

Stages of Lifecycle	Characteristics	Challenges	Objective
Activation *Budapest, Hungary;* *Manila, Philippines;* *Cairo, Egypt;* *Taipei, Taiwan*	• < 1,000 Startups • No Major Exits (> $100M) • Limited Local Experience & Support • Generalized Resource Gaps	• Addressing Immediate Resource Gaps & Constraints • Resource Leakage to later-stage ecosystems ("Talent Drain")	• Develop Local Entrepreneur Talent & Community in one or two subsectors • Increase Startup Output • Focus Early-Stage Funding
Globalization *Sao Paolo, Brazil;* *Kuala Lumpur, Malaysia;* *Melbourne, Australia;* *Copenhagen, Denmark*	• < 2,000 Startups • Several Major Exits (> $100M) • Attraction of National & Regional Resources	• Resource Leakage to top global ecosystems	• Connection to Global Ecosystems • Support Local Startups to increase global market reach
Attraction *Tokyo, Japan;* *Beijing, China;* *Singapore;* *Tel Aviv, Israel*	• < 3,000 Startups • Formation and Exits of several Unicorns (> $1B valuations) • Attraction of Global Resources • Few Success Factor Gaps remaining	• Addressing gaps in funding & global connectedness	• Expansion of Ecosystem • Enable & Exploit Global Resource Attraction (barriers to immigration, national policy / programs)
Integration *Silicon Valley, USA;* *London, UK;* *Boston, USA;* *New York City, USA*	• > 3,000 Startups • Global Connectedness • Integration of startups into global fabric of knowledge • Leading-edge Business Models	• Self-Sustaining Global Competitiveness • Optimization of Legal / Regulatory Environment	• Integration of Ecosystem in Global, National, Local Resource Flows • Spreading benefits to other economic sectors

Source: developed by survey team based on Startup Genome website

[293] Startup Genome "Ecosystem Lifecycle Analysis" https://startupgenome.com/article/ecosystem-lifecycles

Figure 160

Summary of Survey Results (Note: For Ukraine, changes after the invasion are added in red to the pre-invasion situation)

	Ukraine	Serbia	North Macedonia
Features of SUs	<Overview> ■ The official definition classifies company size based on the number of employees and sales, it is not limited to SUs. On the other hand, private ecosystem professionals such as UNIT.City generally believe that VCs and angel investors are the main providers of growth funds for SUs, and most of SUs are at the stage which is before establishing services/products and business models ■ Although there are many SUs based in Kyiv, service-running SUs are also relatively common in Lviv and Kharkiv (presumably because of the large IT cluster) ■ Many SUs originate in Ukraine but move their bases to other countries, such as the United States, the United Kingdom, Estonia and Poland. Positive and negative factors include limited domestic financing opportunities (early and growth), concerns about the development of domestic legislation for intellectual property, and requests for access to overseas markets ■ Most SUs mainly target the U.S. and Europe (Estonia, Poland, Neighbor countries of Germany, the U.K., and Scandinavia) as market and have less interest in Asian and Japanese market (exception for virtual currency business) → [After the invasion by Russia] The impact of the invasion has not been so great in terms of outward migration of SUs. The trend toward Europe and the USA as the main markets has remained unchanged, but interest in Asia is also on the rise as the overall priority of foreign markets has increased.	<Overview> ■ Although there is no legal definition of SU, the government has enacted a strategic policy for the development of the ecosystem, in which SU is considered an innovative business entity (corporate or entrepreneur) that has just been established ■ The number of SMEs per capita is 1st ranked in the Western Balkans, 75% of SUs are believed to be concentrated in Belgrade and 15% in urban areas of Novisad ■ While some SUs are well known in foreign markets, such as gaming, unicorn companies have yet to emerge, and no SUs are listed on the Serbian domestic stock market ■ Most SUs look mainly at the Western Balkans or Western markets as their destination for overseas expansion, and although they have strong political ties with China, they do not pay much attention to the Asian markets ■ Many SUs are established in Serbia, because they have comparatively good support from the government, but many relocate headquarters within the EU and to the U.S. for expanding a market or fund raising over a certain size ■ The government's focus is on food, ICT, next-generation manufacturing and creative industries	<Overview> ■ Although there are official definitions of SU, there are no statistics on number of SUs. It is estimated that there are about 300 companies ■ Most SUs are clustering in Skopje, where support institutions and technical colleges are located, followed by Bitola and Ohrid in the Southwest ■ Compared to a few years ago, the growth stage of SUs are moving toward. Some SUs have moved to the middle stage for developing products that better meet market needs ■ Although there are many cases in which entrepreneurs establish business with their own funds, there is an environment in which public support from FITD can be obtained between the seed period and the early period. However, it has been pointed out that there are obstacles to raising private funds in order to move to the late period when profitability is expected to be achieved ■ Since the domestic market in North Macedonia is small, it is essential to expand overseas markets. However, development of overseas markets is insufficient because of the lack of EU membership and the lack of international competitiveness of products and services

	Ukraine	Serbia	North Macedonia
Features of SUs	<Sector> ■ The ICT sector has established itself as a global outsourcing partner. Many SUs are also produced from the sector. However, Because of the large number of SUs and upgrading to high-value-added outsourcing, there are challenges to retain engineers ■ A number of ecosystem actors (support organization) mentioned that Cybersecurity, Fintech SU are emerging. On the other hand, logistics field is limited ■ Major national industries are agriculture (food processing), space engineering, and national defense. The impact of COVID-19 is expected to spur biotech and medical activity for the moment →[After the invasion by Russia] Military, construction, logistics, and agriculture are priority areas in response to the war and postwar reconstruction.	<Sector> ■ The ICT sector is active, engaged in business with an eye to the overseas market from the seed stage, In particular, many SUs are successful in gaming and block chains ■ SUs in the field of biotech using AI are also attracting attention	<Sector> ■ ICT-related sectors, including software development, AI, and machine learning, are growing rapidly and account for the largest share of FITD's portfolio ■ Human resources in the ICT industry possess excellent technical ability and high English proficiency, and have the advantage of low labor costs compared with other countries. Therefore, brain drain is occured for better opportunitiy ■ Other than ICT sector, healthcare-associated SUs are growing rapidly, possibly the impact of COVID-19 virus
Features of investors	■ There is a strong tendency that the USF and other grants provide startup funds, domestic investors to invest in SUs until series A, and foreign investors invest in SUs from Series B ■ UNIT.City (IT Park and Accelerator) is an attempt to undertake its own investment functions with the support of EIB and USAID (for early SUs) ■ Network of domestic angel investors is at initial stage (UAngel, Business Angel School) →[After the invasion by Russia] While domestic investors are finding it difficult to make new investments, new investors from Europe, USA and globally are showing interest in Ukraine.	■ Currently, there is no domestic angel network ■ There was investment in overseas VCs and the establishment of the first domestic CVC (TS Ventures Fund of Telekom Srbija) in 2021. Invest in SUs might be more active in the future	■ FITD, a government-affiliated fund, is reviewing and investing in promising SUs that are primarily at seed or early stage ■ There are no VC funds originating locally. Overseas VC investment has only recently begun, and private investment from abroad is limited. ■ Although there are angel investors such as CEED Macedonia, they are not yet mainstream.

	Ukraine	Serbia	North Macedonia
Assistance by the local government	<For SU> ■ The USF will provide launch phase grants. However, the VC's perspective may their selection criteria are not strigent ■ The Entrepreneurship and Export Promotion Office provides non-financial support, including training to support SMEs in general ■ Support for information and networks at each stage of business development, including business SUs and overseas expansion, through the Diia Business (portal). Opened Diia Business Center in various cities → [After the invasion by Russia] Grant (eRobota) and business loans for SMEs; Diia Business also operates both online and offline <For investors> ■ It has been pointed out that the protection of investor rights is not sufficiently developed	<For SU> ■ In the context of DX and science and technology innovation policies, there are measures (Science Fund) to support the commercialization of academia and technology seeds. ■ Income tax and social security premium exemption for entrepreneurs ■ Regulatory sandbox system (Fintech, Medtech) <For investors> ■ There is some tax exemption scheme for individual investors investing in SUs and VCs	<For SU> ■ Measures are being taken such as expansion of entrepreneur education, promotion of industry-university collaboration, consideration of expansion of investment targets through FITD, and establishment of science parks and incubation facilities ■ Development strategies for women entrepreneurs, and measures to improve the business environment and support systems are in place. ■ The necessary financial support for starting a business is provided by an environment in which investment from the FITD can be received if the screening process is passed.
Assistance by donors	■ USAID has been supporting private sector development for many years since independence. Notable recipients are WNISEF, Horizon Capital, U. Ventures, and Eo Incubator, and support in a variety of other schemes. The EU (EBRD, EIB) is also actively supporting ■ European donors such as Germany, Switzerland and Sweden have relatively high names as donors → [After the invasion by Russia] USAID's Competitiveness Economy Program signed Memorandum of Cooperation with USF. Various support from the USA and EU, including new stakeholders.	■ European donors, USAID, UN agencies, etc. provide financial access support (or loans to the government) for small enterprises and hands-on support to acquire business know-how for preparing and after-business activities ■ There are many joint research projects with the EU	■ The EBRD and the EIB provide financial support to SMEs, and the GIZ provides technical support and assistance to SUs located in rural areas ■ USAID provides technical assistance in combination to improve access to finance and to support entrepreneur education.
Others	■ Of the selected countries, the domestic market is the largest (with a population of 40 million)	■ Politics are the most stable among the selected countries ■ Be looking to join the EU	■ Be in the process of negotiating accession to the EU

Ukraine	Serbia	North Macedonia
■ President Zelensky signed an application for EU membership on 28 February 2022.	■ Besides being a hub for Western Balkans, geographic access to the EU is also good ■ There are a certain number of informal sector workers, which is important to create formal employment	■ With the change of country name in February 2019, the improvement of foreign relations with neighboring countries in particular has led to political and economic stability and revitalization.

9.2. Ukraine

In Ukraine prior to the invasion by Russia, SU's technological capabilities and potential had already been recognized globally to some extent, with four Ukraine-originated unicorns. The creation of a startup ecosystem and network through regional APs was proceeding. SUs that have achieved a certain level of growth domestically have formed a trend of relocating their headquarters out of the country in order to raise funds from foreign investors and expand their businesses, or to avoid issues arising from the business environment such as corruption that remains in the country. Access to capital for idea-stage entrepreneurs and pre-seed SUs, of which there are many in the country, has been on a growth trajectory, with startup investment growing from $42 million in 2014 to $779.6 million in 2021[294], although this is far from sufficient for their size. On the other hand, there were challenges in raising funds at the growth stage (Series A and beyond) for SUs to grow further from seed. For many SUs, the challenge was to develop the management skills necessary to grow and expand their businesses and to have stable access to the market for growth capital and business expansion. The ecosystem as a whole was in need of returning the knowledge of Ukraine-born SUs that had already expanded overseas to the domestic market (e.g., successful entrepreneurs support future SUs as angel investors). In addition, in expanding overseas business from Ukraine, Ukrainian SUs generally did not consider Asia as a potential market, and most of them were aiming for the European and US markets.

The situation has changed significantly since February 2022, and it is not necessarily appropriate today to consider assistances as an extension of the challenges that SUs and the ecosystem faced in earlier environments. For example, "Various infrastructures have been destroyed in various parts of the country, and business models do not function as they did in peacetime, especially in Ukraine," "Many SUs have shown resilience to continue their activities even in wartime, but the ecosystem itself has become decentralized as more SUs operate outside of the country such as Europe, US and other countries," and "While it is difficult to expect funding from domestic investors, stakeholders outside of Ukraine, who had no contact in the past, are looking for partners to support, including philanthropic meanings," and "The focus of public support, including the USF, has changed." Of course, the challenges that were recognized before the war have not disappeared, but the priorities of the challenges to be overcome can be more diverse, depending on the situation of each SU and the resources they have. Specifically, it is important to consider assistance plans from the three perspectives listed in the table below.

Figure 161 Three perspectives to consider assistances to Ukrainian ecosystem

Perspective	Details
1. Maintenance and continuity of corporate activities	Maintaining and continuing business activities for the survival of the SU is a priority in the circumstances with significant constraints such as the relatively high probability of intermittent military attacks, continuing martial law, significant damage to basic business infrastructure, and difficulties for foreign companies and investors to enter the country.
2. Restructuring of business strategies	With a certain level of security and stability in the business environment, restructuring business strategies in light of international relations and the political and economic situation in the country. It is important to establish a stable partnership with Asia as a realistic destination for Ukrainian SUs to expand and collaborate.

[294] UVCA (2022) Ukraine Deal Review 2021: Tech Venture Capital and Private Equity deals of Ukraine. https://www.slideshare.net/UVCA/ukraine-deal-review-2021-tech-venture-capital-and-private-equity-deals-of-ukraine

Perspective	Details
3. Long-term ecosystem growth	The goal is to achieve long-term ecosystem growth, including addressing issues that had been recognized prior to the war, such as "raising the level of SUs' business development, organizational development, and business skills," and "knowledge transfer between SUs that have moved out of the country and SUs in Ukrain that have just started their business."

The first perspective is the relatively short-term, emergency response perspective of maintaining and continuing business activities. Here, the focus is on rapid assistance in terms of goods and money, such as restoration of offices and facilities damaged by the war and assistance in the form of immediate funds for business continuity.

The second perspective is to restructure the business strategies. Here, the goal is to develop medium- to long-term business models and business strategies, assuming that the situation has settled down to some extent and that external factors and given conditions have been established. Therefore, dispatching advisors and their accompanying support for the formulation and implementation of business strategies would be useful. Since the reconstruction of Ukraine is expected to be in full swing at this phase, one idea is to explore collaboration between Japanese companies and Ukrainian SUs in the reconstruction process, starting with the public-private partnership between JICA and Japanese companies to support the reconstruction of Ukraine.

The last is long-term ecosystem growth. This perspective includes addressing the challenges facing the Ukrainian ecosystem that were recognized even before the war. For example, it was pointed out that although the quality of the top business schools is high, the country as a whole faces challenges in its ability and opportunity to develop business talent (business managers, product managers, and executives). Another struggle was to commercialize the seeds generated from university research. It is difficult to imagine that these issues have changed as a result of the war. The process of reconstruction and improvement of the damaged ecosystem will be required to provide an opportunity for SUs who left the country to return to Ukraine, and will also aim to rebuild the Ukrainian ecosystem that has become decentralized due to the war.

These perspectives would generally and ideally proceed in the following order from top to bottom: "maintenance and continuity of corporate activities," "restructuring of business strategies," and "long-term ecosystem growth." However, given the current situation in Ukraine, where the prospects for an end to the war and a ceasefire agreement are still uncertain more than a year after the invasion began, the assumption that the steps will be taken in that order is itself questionable. In addition, as of May 2023, it is difficult to apply the same criteria to the eastern and southern parts of the country, where fighting is still ongoing, and to the rest of the country, especially the western part like Lviv. In other words, it is necessary to evaluate the situation surrounding each SU by flexibly switching and combining the three perspectives according to the war situation and the region.

Based on the above perspectives, the direction of JICA's assistance could be summarized in the table below.

Figure 162 Direction of assistance to Ukrainian ecosystem

Development of an ecosystem infrastructure for SUs to be able to operate [Perspective 1]
■ Emergency grant aid for restoration of business establishments and infrastructure facilities damaged by the war (e.g., provision of base location through development of co-working spaces such as UNIT.City, restoration of electricity and telecommunication infrastructure)

Assistance for SU's business continuity and growth, and fundraising [Perspective 1, 2]
■ Providing funds through various schemes (e.g., grant aid, private-sector investment finance, low-interest loans (two-step loans)
■ Formation and participation in reconstruction funds in cooperation with Western donors or jointly with Japanese companies
■ Technical cooperation by dispatching business advisors, mentors, etc.
■ Support to encourage private sector collaboration with Japanese companies (e.g., implementation of the 2nd NINJA program, dispatch of Ukrainian SUs to Japan (participation in exhibitions, business events), open innovation between Ukrainian SUs and Japanese companies)
Assistance for medium- and long-term ecosystem enhancement [Perspective 3]
■ Policy support for the development of business environment
■ Joint research on advanced technology by Japanese and Ukrainian universities and fostering university-launched ventures
■ Support for information and network building to promote understanding and foster interest in Japan (establishment of regular contact points in the region)

The first is to develop the ecosystem infrastructure for SUs to be able to operate in Ukraine. It is expected that emergency grant aid could be utilized so that the minimum infrastructure can be quickly restored in accordance with the prospect of the end of fighting in various regions.

The second direction is assistances for SUs' business continuity and growth through funding, technical cooperation, and private-sector partnerships, as well as assistance for fundraising. In particular, measures such as sending SUs to exhibitions and business events in Japan to help them develop new sales channels were a point of high expectation from the interview with UVCA.

Finally, assistances for strengthening the ecosystem over the medium to long term would be expected, such as policy support for the development of Ukraine's business environment, long-term collaboration between Japanese and Ukrainian universities in joint research on cutting-edge technologies and the fostering of university-launched ventures. It is also critical to promote understanding and cultivate interest in Asia and Japan on a regular basis, so that the region can become a realistic business option for Ukrainian SUs. Establishing a regular contact point in Ukraine, providing information and building a network would help sow the seeds for future collaboration.

This article summarized the possible assistances based on the current needs and the changes in the Ukrainian environment from before the invasion by Russia to about one year after. Unfortunately, it is difficult to link the above-mentioned directions to detailed target identification and consideration of specific assistance schemes, due to limited and intermittent information collection especially after the invasion. Compared to the early phase of the invasion, many parts of Ukraine, including Kyiv, are regaining calm. A vibrant ecosystem is being maintained to the maximum extent possible, thanks to the resilience and efforts of the government, business communities, and SUs. The fact that 6 SUs have completed the NINJA program, despite two interruptions, is also a result of this. However, it should always be noted that Ukraine continues to be a party to the war and the situation could change drastically at any moment.

9.3. Serbia and North Macedonia

The current issues in both countries are summarized below for consideration of future JICA assistance ideas. In particular, access to funds is a major challenge, therefore, improving the lack of SU pipelines and limited exit opportunities will be important in improving access to funding.

Figure 163 Ecosystem challenges in both countries

Issue	Description
Business environment	1. Business environment of SU (number of days registered as entrepreneur, costs, tax deductions, etc., improved, but problems such as corruption exist)
Shortage of SU pipelines	2. Reforms are being implemented at the educational level, but development of entrepreneurship needs to be enhanced (those taking challenges and risks).
	3. Starting SU by transforming idea-to-business development (business development such as market fit and deepening of business model is required)
	4. Limited opportunities for scale-up to other countries and lack of growing SU pipelines
	5. Insufficient Incubator/Accelerator (Quantity) and Insufficient of Customized Program (Quality) (Innovation Fund offers main programs, but there is a shortage of programs and mentors customized for issues faced by each SU such as supporting business development)
Lack of access to finance Insufficient number of exits	6. Insufficient access to finance at various stages (e.g., pre-seeds for angel, seeds for commercialization, early stages to accelerate growth, etc.). Angel investors and VCs are limited
	7. Limited exit opportunities
Networking	8. Strengthen the network within the domestic ecosystem (the angel network is at the development stage)
	9. Limited network with the Balkan region and global ecosystem

Source: Developed by the survey team

The following cycle of support needs to be strengthened as a direction of support. First, the pipeline of SUs should be strengthened through the development of entrepreneurs. By supporting the commercialization of SUs through accelerators and other means (including seed money), there will be an increase in the number of SUs that reach the growth stage. Increasing the number of growth stage SUs will facilitate investment opportunities, including from overseas investors (which will increase funding opportunities for SUs). Through these means, SUs that are scaling up at an accelerated pace will have more opportunities to exit through IPOs and acquisitions. In this sense, various support proposals can be considered, however, it is necessary to discuss how to link each cycle and build an overall cycle, as well as which stage of support is lacking in order to determine the necessary supports. In addition, it is also necessary to consider the specific challenges of each country, as described below.

In Serbia, human resource education in the fast-growing ICT field has been incorporated into mandatory education in order to strengthen the ecosystem. However, there is still room for improvement in entrepreneurship education and several interviewees expressed their desire for Japan to support entrepreneurship education. Therefore, there is a possibility of technical cooperation and dispatch of experts for universities. In addition, it seems that the number of angel investors in the market is not sufficient for the number of SUs existing today, therefore, entrepreneurship education that leads to the development of angel investors would also be beneficial. It is also necessary for Japan to differentiate NINJA AP in relation to existing APs In addition, since there is currently no online platform covering SU information, it would be effective to establish a NINJA platform as part of this project In addition, as mentioned in the common challenges for both countries, it is clear that SUs face challenges in fundraising, especially investment from foreign investors. Therefore, it would be beneficial to implement

measures to attract investment targeting Japanese companies and investors. In addition, as mentioned in the common challenges for both countries, it is clear that SUs face challenges in fundraising, especially investment from foreign investors, therefore, it would be beneficial to implement measures to attract investment targeting Japanese companies and investors.

In North Macedonia, SUs with high technological capabilities are emergent. However, financial support during the growth phase and pipeline support to facilitate market access are insufficient. As a result, there are issues regarding the expansion phase of the SUs. Until the seed stage, public financial support for SUs has been enhanced, mainly through the FITD. After that, it is necessary to take measures to attract private investment, including angel investment and VC. In this regard, the provision of matching opportunities between local SUs and Japanese investors and business people through Project NINJA is an effective support measure. There are also cases where SUs are invited to regional or urban areas in Japan to promote investment while minimizing risk by getting Japanese people to understand the technical capabilities and attractiveness of the SUs. Consequently, it is possible that local governments and Japanese companies may also invite local SUs to Japan. As for the ecosystem, there are many incubators and accelerators compared to the number of SUs, and they are supported by other donors. Therefore, rather than providing JICA financial support to such support organizations, it may be beneficial to provide educational support such as entrepreneurship training and mentorship.

Based on these common and country-specific issues, the following is a list of support proposals for each scheme, although they do not address all issues. JICA has a wide range of support schemes necessary for the cycle, such as grant aid/technical cooperation, loan aid, overseas investment and loans, and private-sector partnerships, which enable effective implementation of support tailored to the needs of the country. They also provide entrepreneurship development, technical assistance to universities, and JICA NINJA, which is AP for seed/early stage. Therefore, they have numerous SU alumni global network that can be gained by fostering and strengthening the pipeline of growth-stage SUs and providing SU support such as NINJA in various regions of the world. Besides, JICA can also provide direct investment in SUs with social impact, support SUs through LP investment by Funds of Funds, and provide loans to SUs and SMEs through two-step loan. .In addition, they can provide support for scale-up and growth through partnerships with the private sector, which can provide opportunities for Exit.

Figure 164 Support Scheme-Specific Proposal

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Private sector partnership

Issue	Eligible for support	Support measures by implementation period			Anticipated Program Benefits
		Short term	Medium term	Long term	
Lack of opportunities for scale-up and exit(SRB) **Limited private investment in SU (MKD)**	**Early/Middle Stage SU(SRB)** **Growth/Rater Stage SU (MKD)**	■ Support for demonstration of business collaboration and matching with Japanese companies interested in both countries	■ Support for scale-up from demonstration of business collaboration in in both countries	■ Extend demonstration of business collaboration and matching with Japanese companies to the Balkan region	✓ Increased number of fast-growing SUs ✓ Creation of exit opportunities
Limited network with Western Balkan/Global **Limited number of Angel investors**	**All stages of SU**	■ Establishment of a startup Alumni network supported by JICA NINJA(SRB) ■ Organization of matching events with foreign investors in Japan and other countries (MKD)	■ By leveraging the Alumni Network, promoting networking with Western Balkans and Global, providing mentoring supports and enhancing angel investors network/capacities	■ Strengthening SU support through NINJA's global network (including Alumni, investors, and mentors)	✓ Increased related networks ✓ Increased number of SUs leading to scale-up and financing
Low recognition of the Japanese/Asian market	**All stages of SU**	■ Continuously disseminating examples of NINJA programs and its Almuni's success cases ■ Periodic dissemination of relevant information on both countries and the Western Balkan countries (ICT start-up and ICT human resources) to increase the recognition of the region in Japan. ■ Attracting SUs to Japan (local regions) (promoting investment by disseminating the attractiveness of SUs through collaboration with Japanese companies and local governments) (MKD)			✓ Growth through collaboration with Japanese companies, leading to CVC and VC investment ✓ If NINJA is continued, increased number of SU applications ✓ Promoting investment with minimal risk

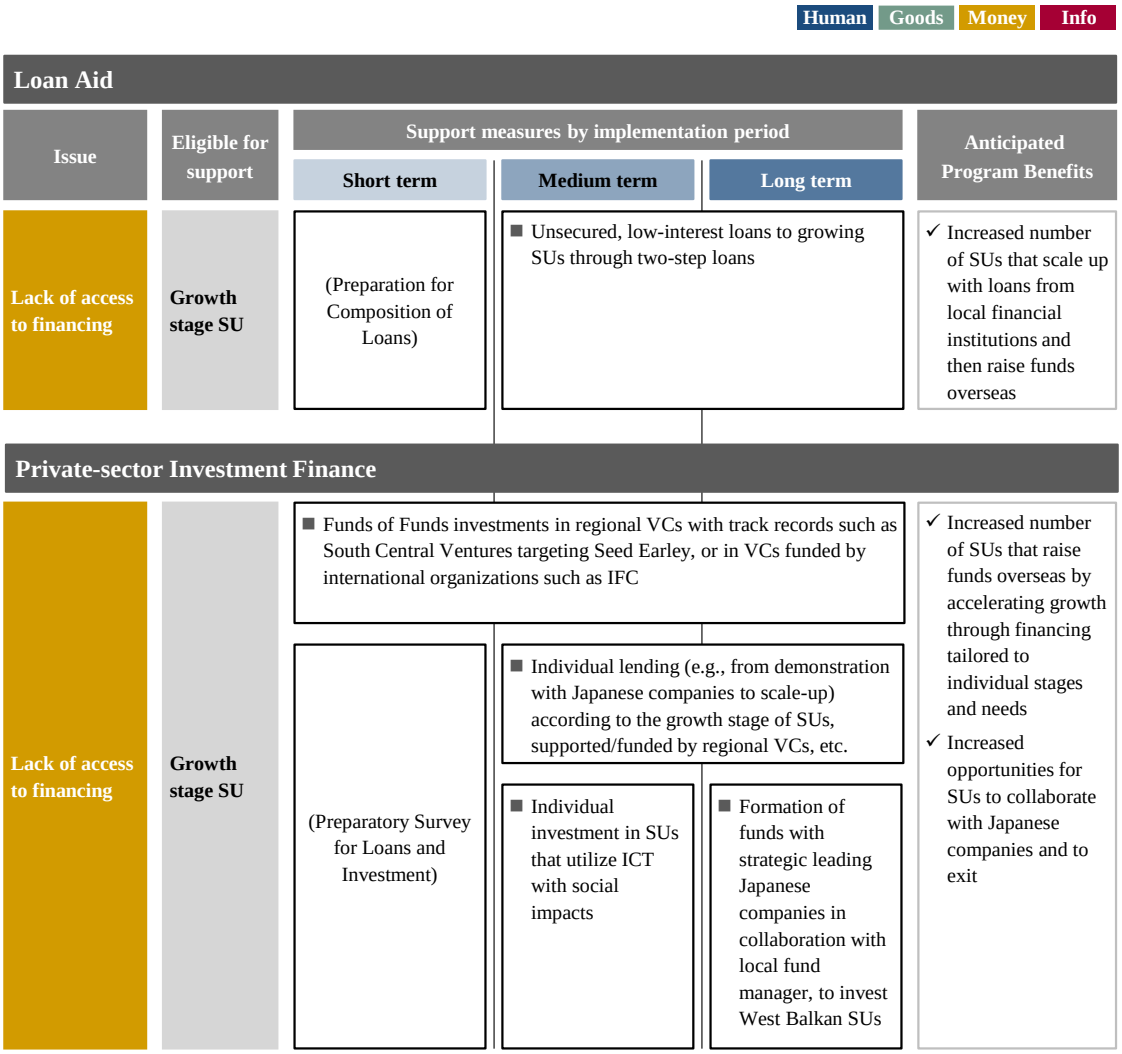
(Note 1): Serbia=SRB, North Macedonia=MKD (Note 2): This is a survey team proposal based on research and is not JICA's official opinion.

Human Goods Money Info

Technical cooperation

Issue	Eligible for support	Support measures by implementation period			Anticipated Program Benefits
		Short term	Medium term	Long term	
Limited availability of APs and room for improvement in program (SRB) **Numerous APs exist compared to the number of SUs (however, the maturity of the program varies) (MKD)**	**Growth stage SU**	■ Hosting of NINJA Program (MKD) ■ Growth support through regular follow-up of NINJA-selected SUs ■ Continuation of NINJA (strengthening of incentive designs such as sponsorship of Japanese companies) ■ Expansion of NINJA to neighboring countries	■ Continuing NINJA while having support from Japanese companies. ■ Development of the AP implementation system in the Western Balkan countries (budgets, etc.)	(To create funds listed on the next page)	✓ Improved and Strengthened of Future Support Methods through NINJA pilot project ✓ Increased number of SUs that advance to the growth stage and can raise funds due to the continuation of NINJA and improvement of the quality of business support organizations ✓ Strengthened regional ecosystem networks
	Pre/Seed Seed SU		■ Consideration and implementation of AP targeting the pre-seed stage (introduction of POCsupport)		
	Support organiza-tion	■ Support for capacity building for accelerators/incubators to strengthen their program and execution capacity			
Insufficient development of entrepreneurs hip	**Pre/Seed SU**	(Survey of Related Science Promotion Measures, Networking with Related Parties)	■ Technical cooperation for academia and universities to strengthen the Deep Tech (SU) from universities, and dispatch of experts to support the fostering of entrepreneurship in education		✓ Increased number of pre-seed stage entrepreneurs ✓ Expansion of pipeline by increasing number of entrepreneurs ✓ Increased foreign investment through stimulated domestic investment
Limited skills for overseas expansion (SRB)/Sensitiz ation and education of domestic investors (MKD)	**All stages of SU**	(Confirmation of Technical Cooperation Needs)	■ Technical cooperation through the dispatch of experts		

(Note): Serbia=SRB, North Macedonia=MKD



(Note 1): This is a survey team proposal based on research and is not JICA's official opinion.

Source: Developed by the survey team

In the case of NINJA implementation, it is also important to design the program so that the timing and targets of application and implementation do not overlap with those of other APs. In this survey, applications were limited by the survey timeline, and in Serbia, the application period overlapped with that of other APs, which in some aspects resulted in a sluggish growth in the number of applications. The SU support should be customized as in the case of NINJA, which is in line with the needs of the SU ecosystem in the Western Balkans. While there is some debate regarding the need for grants within the program, it would be more effective to provide support that leads to commercialization and scale-up, such as study tours to Asian markets (e.g., visits to markets where each SU has potential for expansion, meetings with local companies, etc.), rather than simply providing grants, in order to focus on commercialization. The project is also a good example of the type of support that could be provided to the Western Balkans. In addition, while the Western Balkan ecosystem is in a growth stage, Serbia, for example, is a small country with a market size of approximately 7 million people and a GDP of $63 billion. Similarly, North Macedonia and other Western Balkan countries have small markets. In addition, Eastern European countries other than the Western Balkans, with the exception of Ukraine and Poland, have a population of around 10 million people, making it possible to consider a NINJA program

from Serbia to the Western Balkans or Eastern Europe. JICA NINJA has been implemented in Africa, and inter-regional collaboration could be considered.

In addition, cooperation that does not fit into the current JICA scheme, but for which there is a high need, could include the following

1. Local support for improving access to funding and scaling up: Direct investment by SUs by JICA offices (customized accompaniment and support locally through the investment, which can lead to SU growth. In addition, by sharing the challenges faced by SUs, it will be possible to improve the business environment and identify areas for strengthening business support through mentors, etc., enabling the establishment of a close SU support and improvement cycle).
2. Strengthening the pre-seed SU pipeline and improving access to funding: To strengthen the pre-seed stage pipeline, it is important to cultivate and increase the number of angel investors. Establish and operate an angel investor training academy in conjunction with local VC/accelerators; examples include GIZ's support for establishing and operating an academy in Egypt.
3. Improved access to financing for growth: JICA teamed up with a local fund manager to form a fund with Japanese companies and manage the fund as a GP. The Nordic Fund, a JBIC fund for the Nordic and Baltic countries, is a good example.
4. Strengthen partnerships with Asia to create scale-up and exit opportunities: As in the Asia Market Entry event held on January 28, 2023 in this study, strengthen partnerships with Asian trade support organizations, such as the Enterprise Singapore Group (ESG). Strengthening partnerships between Asia and the Balkans and Eastern Europe, in cooperation with Asian trade support organizations such as ESG (Enterprise Singapore), will lead to the creation of investment and exit opportunities from Asia.(This policy is also in line with the needs of the Serbian government, as the current Prime Minister of Serbia, Brnabic, aims to strengthen ties with Japan, as well as with Singapore and other ASEAN countries.)

In addition, for fund establishment, it is necessary to select a fund manager with a proven track record in the Balkan region to serve as a fund management and cooperate with the establishment of the fund. It is important to increase the number of Japanese companies interested in the Western Balkans in order to increase opportunities for scale-up and Exit. It is also important to continue efforts to disseminate information through regular seminars. When implementing the AP, it is necessary to encourage more Japanese companies to participate with Japanese embassies, JETRO, Japanese chambers of commerce and industry (JBAS/Serbia). At the AP design stage, it is crucial to conduct external relations activities such as sponsorship with chambers of commerce and industry in the region. In addition, for cooperation with Asia, it is suggested that ESG and other organizations in ASEAN that are in charge of companies and SUs entering overseas and investing in Japan exchange information and propose holding joint APs.