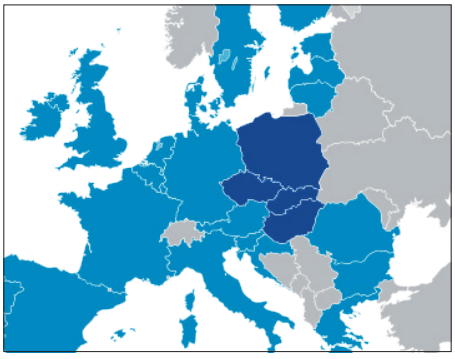
Agnieszka KLUCZNIK-TÖRŐ*

CLIMATE-CHANGE-RELATED ACTIVITIES OF THE CENTRAL EUROPEAN COUNTRIES WITH SOME EXAMPLES BASED ON ACCELERATION PROGRAMMES

Abstract: The article includes the results of numerous consultations and interviews with experts in climate-change area and in acceleration programmes, analysis of available printed and on-line materials, and on the mapping of the stakeholders.

The main focus of the article is put on the Central European countries (CEE) that is on the Czech Republic, Hungary, Poland and Slovakia. The above mentioned countries will also be called as the *V4 countries* or *V4* or *Visegrag Group countries*.



The acceleration programme (AP) will be understood as a combination of five main characteristics [1]:

— *An application process that is open to all, yet highly competitive,*

— *Provision of pre-seed investment, usually in exchange for equity,*

— *A focus on small teams not individual founders,*

— *Time-limited support comprising programmed events and intensive mentoring,*

— *Cohorts or 'classes' of start-ups rather than individual companies.*

The AP will be also referred as *a process open to young entrepreneurs and start-ups with the aim to support their growth and market entry through intensive mentoring, coaching and training system* [2].

* Associate Professor, Jesuit University Ignatianum in Krakow, Poland
International Center for Entrepreneurship, Founder & Principal
Horizon 2020, Business mentor and Expert

In the CEE, likewise in the best countries in respect to the start-up ecosystems e. g. the USA, the UK, Germany, four types of acceleration programmes (APs) were identified [1]: publicly funded, public-private partnerships, corporate accelerators, and "traditional" accelerators followed the American model, e. g. YCombinator.

In an article, the "start-ups ecosystem" is understood as *the combination of institutions, organisations and other market actors connected to each other through the aim to support entrepreneurs at every stage of business development, e. g. incubation parks, acceleration programmes, technology parks, venture capital funds, etc.* [4].

The *exits* will mean the situations when an AP sales a young but already a fast-growing firm to another investor or a big company.

The article will conclude with the presentation of the results of a SWOT analysis which is broadly applied and accepted by business organisations in the formulation of the strategies. The purpose of its application is to formulate the long-term strategy of the CEE countries in respect to the acceleration programmes development after taking under consideration the internal strengths and weaknesses as well as external opportunities and threats.

Key words: *acceleration programme, business ecosystem, climate-change, Central European Countries, entrepreneurship, leadership, start-ups, strategy.*

1. INTRODUCTION

From the beginning of the appearance of the acceleration programmes (APs) on the global markets, the most powerful ones have been established in the USA and in the UK [1]. High scores in the global assessments of those APs which have been located in these two countries base on consideration of several parameters. Among them are: record-high numbers and scales of investments they have made in the development of start-ups, money raised by the start-ups while being enrolled on a programme or soon after its the completion, numbers of successful exits, and scales of capitalisation of the start-ups [2].

For example, among the global leaders on the APs market, the number of start-ups and young entrepreneurial teams enrolled on the AP ranges from 1500 to 2500, and the number of exits from 50 to 300. What is more, the rate of acceptance of start-ups to the best global APs has not exceeded 3% (!) [1]. As a result, the participation in the programme is already highly prestigious for those who got admitted, and indicates outstanding quality of the business ideas, teams, and high chance for the business model profitable scaling-up.

When it comes to the CEE countries, they have started to offer a support to start-ups through APs not earlier than in the last 5–7 years [5]. For this reason, their maturity might be different than of the global leaders. Nevertheless, as it will be presented in the part of an article below, the conditions for their profitable development are high and they are supported by the systemic means. Taking that arguments under consideration, the thesis of the article has been formulated as follow:

Current fast growth of the acceleration programmes (APs) in the Central European (CEE) countries and favourable systemic conditions allow for a formulation of a long-term strategy in respect to the APs development.

Consequently, the aims of the article are to:

— Present and critically evaluate the best existing APs in the CEE countries that is in the Czech Republic, Hungary, Poland and Slovakia,

— Present and critically evaluate these APs from CEE countries which target the climate-change problem as one of the most burning issues of the beginning of the XXI. century,

— Formulate the long-term strategy with an application of a SWOT analysis for the APs located in the CEE countries.

Among the methods applied for achieving the chosen aims, the following means played the most important role:

1) Mapping the market of APs in the CEE and in the leading countries,

2) Conducting the interviews with managers of those APs located in the CEE countries which target the climate-change issues,

3) A SWOT analysis to evaluate internal that is the CEE-countries-related strengths and weaknesses, and external that is global — opportunities and threats.

The article is addressed following stakeholders:

— Policy makers at various levels of decision making — EU, national, regional, local,

— Leaders of international organizations dealing with economic development,

— Rectors of higher education institutions,

— University professors,

— Carrier centres,

— Researchers working on entrepreneurship and business development,

— Directors and HR managers,

— The management staff of universities and other educational institutions especially those ones responsible for the quality of education and for the formative programmes of teaching,

— Business coaches and mentors working with start-ups and young entrepreneurial teams.

2. BEST PRACTICIES ON THE ACCELERATION PROGRAMMES' MARKET IN CEE

Studies of all existing APs have prove a high-growth potential of the V4 countries. The main findings from the studies include following conclusions:

— Among the *Czech's acceleration programmes* which play the most important role in the national and international start-ups ecosystems, the following are often indicated [7]: Czech Accelerator, StartUp Yard, StarCube, Green Light and Akcelerace. Country has also a strong network of incubators and active co-working organizations especially in Prague and Brno. Their examples include JIC, Point One, xPORT VSE, Innovajet, GoUP, Node5, Cowo Brno, Locus Workspace and Impact Hub [8].

The longest-running Czech accelerator is JIC STARCUBE and it has supported 62 projects with nearly $5 M investments coming from the private sector. It was ranked among the *20 most active accelerators in Europe* by Fundacity [9].

In the Czech Republic, there are also centres and firms like Green Light, Microsoft Innovation Center or InQbay, which main interest is to support business and innovation developments of the students.

— In *Hungary,* the APs include: xlabs / OXO Labs — an accelerator scaling start-ups from the CEE region to global markets, iCatapult which focuses on taking Central European technologies to the global market, and Design Terminal which has been one of the longest-running AP and best-recognized acceleration systems in the country; it used to be fully run with a support of governmental funds but now works from private means with some governmental partnerships [2]; Some other examples of APs in Hungary include InnovationsLab launched by Central European University, Drukka [10] and corporate accelerators such as Telenor Accelerator — operating in the telecommunication sector and MOL Accelerator launched by the biggest petrol company in the country.

— Since 2017, majority of *Polish* corporations have launched or became a partner in at least one AP. Among them are Alior Bank Accelerator Programme established by Alior Bank, Technion Drive Accelerator by JSW, KGHM Cuprum accelerator, mAccelerator by mBank, Orange Fab, AcceleratorPGE, InnVento by PGNIG, MIT Enterprise Forum Poland also by PGNIG, Orlen Accelerator by PKN Orlen, PKOBP Accelerator**,** Pilot Maker by TauronPE.

Moreover, in the last 5 years, public-private acceleration initiatives have been launched to combine a potential of young creative entrepreneurs with infrastructure, experience and wealth of big companies to boost economy through entrepreneurial means. Few dozen APs were established with grants of 10–15 millions of PLN per AP (equivalent of 2–3 millions of euro) and they have supported thousands of young entrepreneurs and over hundred big- and medium-sized companies [11];

— The situation in *Slovakia* was assessed in 2017 by the European Commission and at that time, there were just three APs [12]. Among them, the following programmes were active: Launcher — founded in 2014 to support start-ups operating on the IT, mobile and digital technology markets, OpenMaker — funded as Horizon2020 project and operated till Oct. 2018 in four EU countries — Italy, Spain, the UK and Slovakia, Neulogy — one of the leaders in CEE in consulting, R&D, technology transfer and commercialisation services. Just in 2017, one more important AP appeared in Slovakia: Uplift, which is a partner of international organisations Impact Hub and InnoEnergy and which was established by CIVITTA Slovakia — one of the Central European leaders in supporting the entire innovation cycle.

3. ACCELERATION PROGRAMMES IN CEE TACKLING THE CLIMATE-CHANGE PROBLEMS

Among the APs operating in the CEE, the ones with a special mission that is to tackle a climate-change-related problems through the entrepreneurial means, are the Climate — Knowledge and Innovation Community's accelerator programmes of the CEE countries (C-KIC CEE). The C-KIC CEE's so-far APs are located in Budapest, Hungary and in Wrocław, Poland.

The acceleration programme of Climate-Knowledge and Innovation Community in Poland

AP of C-KIC Poland started its operation in 2014, in the capital of Lower Silesia Region — Wroclaw. The partner organisation responsible for the operation and execution has been DARR[1]. Thematic areas focus on climate-change related problems that is:

— Environmental protection,
— Sustainable development,
— Energy efficiency,
— Climate protection,
— Healthy food production technologies,
— Renewable sources of energy,
— Ecological architecture and related industries.

The participants of the AP organised by C-KIC Poland belong to at least one of the group that is:

— Start-ups and firms registered not earlier that 3 years before an application,

[1] Full name of DARR in Polish: Dolnośląska Agencja Rozwoju Regionalnego S. A.

— Individuals, students, graduates, university teachers and researchers who plan to launch a company,

— Research teams planning commercialisation of research results in a form of spin-off or spin-out firm.

Main forms of support for start-ups has a form of a financial grant — max. 30 k. euro per application, plus mentoring and training.

When it comes to the so-far main successes of the AP, two of them are often mention:

— Successes of the start-ups, including those presented on the Marketplace platforms of C-KIC[2] — all of them are alumni of the Polish accelerator based in Wroclaw. Special attention of the market is put on the producer of led lamps — *PlantaLux* and on the "passive" house constructor — *Solas*.

— Partnership with *Startup Estonia* in 2015, which offered an interesting lesson to the Polish participants of the AP that Estonian start-ups have an ambition to enter international markets from the very beginning of their existence; this international approach appeared as a result of understanding that a small country like Estonia couldn't offer a broad enough market for the innovative products and services offered by start-ups.

The acceleration programme of Climate-Knowledge and Innovation Community in Hungary

In 2010, C-KIC Hungary together with PANNON Pro Innovations launched an AP with the thematic areas of:

— Renewable energy,
— Organic material technology,
— Waste management,
— Sustainable agriculture,
— "Smart cities",
— "Green vehicles"
— Software applications[3].

The programme offers: 1) financial grant of 40 k. euro for the best start-ups and additional selected teams get smaller amounts of 15 k, 10 k, 5 k, 2,5 k. of non-refundable grants, 2) mentoring, 3) training.

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[2] Full web site address of the market place: www.climate-kic.org/marketplace/?trl=1–9&pdr=6–10&capital=0–6500000&country=poland--&marketsector&round&from&sort=a-z

[3] https://klimainnovacio.hu/files/attachments/programme/call_for_application_eng_1_0.pdf (Access on 12/12/2018)

4. STRATEGY OF THE DEVELOPMENT OF APS IN CEE BASED ON THE SWOT ANALYSIS

The below presented analysis was prepared on a basis of a tool that is broadly applied and accepted by business organisations in the strategy formulation — a SWOT analysis. In the article, the conducted analysis serves the purpose of identification of the internal that is related to the CEE countries — strengths and weaknesses. The second purpose of the analysis is to identify the external that is global-market-related opportunities and threats. The results of the analysis will be applied for the formulation of the strategy of the V4 in respect to the APs development.

4. 1. KEY CHARACTERISTICS OF THE CEE ECONOMIES IN RESPECT TO THE PROSPECTS OF THE DEVELOPMENT OF ACCELERATOR PROGRAMMES

Fast economic development

Development of CEE countries which reaches a GDP growth of 4–5 % per year [6] means among others that the companies launched or simply — operating in the CEE countries achieve growing profits. In case of all biggest listed companies that are the ones which have been registered on the Polish stock market within the WIG20 index, the profits are partly spent on APs and on co-operation with the start-ups.

"Dirty" industries

What is more, companies especially those operating in industries commonly perceived as "dirty" — coal mines, petrol industries, etc, look for opportunities to improve their bad image; supporting green start-ups and innovations serves this purpose[4]**.** For example in Poland, among the APs, which were launched at least partly with that aim are: JSW (coalmine, launched AP in 2018: Technion Drive Accelerator), KGHM (mining, launched accelerator: KGHM Cuprum), Lotos (petrol), PGE (energy, launched AP: AcceleratorPGE), PGNIG (energy, launched AP: InnVento and became a partner of AP: MIT Enterprise Forum Poland), PKNOrlen (petrol), TauronPE (energy).

[4] Opinion bases on the interview with director of C-KIC CEE, Mrs. Magdalena Dul-Komosińska in Aug. 2018.

Openness of the CEE economies

All V4 countries are characterised by their open economies understood as *the value of international trade to the GDP* [14]. It is especially high in Hungary and, according to the World Bank, it is one of the most open economies in the world when it comes to the international flow of goods and services in relation to the domestic product with the 6. position in the global rankings.

Economic power

The four CEE countries build approximately one tenth of the EU economy, with the average living standard per capita exceeding 70% of EU standard [15]. The statistical economic data prove the growing economic importance of CEE with their real annual GDP growth surpassing the EU average in the recent years [16]. It has already been a fact in case of e. g. Poland, which average GDP per capita exceeded in 2018 the Portuguese one [...].

Easiness of doing business

It might also be surprising but doing business in a number of the CEE countries is easier than doing business in Spain, Portugal, the Netherland or in Switzerland, according to the World Bank (WB) [17]. Out of 190 countries took under consideration by the WB in the evaluation, Poland was placed in the 27. position and scores better than e. g. Spain or Portugal. The Czech Republic exceeds France, the Netherlands and Japan, and Slovakia and Hungary are ahead of Belgium or Luxembourg (!).

Among the measured indicators taken under consideration in a ranking, the WB includes:

— number of procedures,
— time,
— cost and
— paid-in minimum capital requirement for SMEs to start and formally operate in largest business city of a given national economy.

Doing Business uses a standardized business that is 100% domestically owned, has a start-up capital equivalent to 10 times the income per capita, engages in general industrial or commercial activities and employs between 10 and 50 people one month after the commencement of operations, all of whom are domestic nationals [17].

Table 1. Ease of doing business according to Word Bank, 2018

DB 2018 Rank	Economy
7	United Kingdom
12	Estonia
20	Germany
27	**Poland**
28	Spain
29	Portugal
30	**Czech Republic**
31	France
32	the Netherlands
33	Switzerland
34	Japan
39	**Slovakia**
48	**Hungary**
52	Belgium
63	Luxembourg

Source: *Doing Business 2018; Reforming to Create Jobs,* World Bank Group, p. 4.

Talent pool

With nearly 63,5 million (9,8 + 10,5 + 38 + 5,4) people [18], the CEE's combined population is not far behind the population of the UK (67 million) or France (65 million) [19]. For this reason, the region is also recognised as the place flourishing with possibilities, where for the time being, access to the talents is relatively easy compared to other parts of the world. A more affordable talent pool means a lower burn rate and a longer runway for start-ups in the region [20].

On the other hand, the APs exist in the CEE countries relatively shortly and as a result, legal and organisational aspects are still in a transitionional stage.

The instability of legal and tax-related aspects of accelerators' stakeholders, e. g. start-ups, cannot be neglected and should be pointed out as a potential destructor.

Accelerator market in the CEE countries already offers a broad range of possibilities for innovative start-ups. It means that a competition for the most promising start-ups from various market players, e. g. APs, VC, etc, is growing [13].

There is also a growing expectation of an approaching global economic downturn. Once it approaches the CEE, the APs development may slow down or become neglected by the market forces.

Additionally, the political will of the Czech, Hungarian, Polish and Slovak governments to strengthen co-operation between CEE countries within Visegrad Group initiative, helps to develop some of its economic, social and political programmes but there has been so-far any support for the launch of the acceleration programme for the whole V4 group.

SWOT Analysis

In the below analysis, some key characteristics were identified and they will be called as "*features*" (F). They are divided into four categories:

— features related to internal strengths (FS),
— feature related to internal weaknesses (FW),
— features related to external opportunities (FO),
— features related to external threats (FT).

Among the internal factors influencing the acceleration programmes' market the following have been identified, and the key characteristics have also been presented and explain above:

Table 2. Internal strengths and weaknesses of CEE related to the APs development

Internal STRENGTHS	Internal WEAKNESSES
FS1: Openness of CEE economies, especially in Hungary.	**FW1:** The APs exist in CEE countries relatively shortly and as a result, legal and organisational aspects are still in a transitionional stage.
FS2: CEE's companies especially those operating in industries commonly perceived as "dirty", e. g. coal mines, petrol industries, etc, look for opportunities to improve their image; launching APs and supporting start-ups especially so-called "green" ones serves this purpose.	**FW2:** Instability of legal and tax-related aspects of accelerators stakeholders, e. g. start-ups.
FS3: Growing economic power of CEE.	**FW3:** Accelerator market in CEE countries offers broad range of offers to the innovative start-ups. It means that a competition for the most promising start-ups from various market players, e. g. APs, VC, etc, is growing.
FS4: Easiness of doing business in CEE, especially in Poland.	**FW4:** Despite deepening cooperation between V4, there is any support for the launch of the AP for the whole Group.
FS5: Fast economic development of CEE countries which means among others that the companies launched or simply — operating, in the CEE achieve growing profit, which is more and more willingly spent on a launch of the APs.	**FW5:** Growing expectation of an approaching economic slowdown which may disrupt current fast-growing market of APs in CEE.

Internal STRENGTHS	Internal WEAKNESSES
FS6: Existence of relatively large public funds in CEE countries for the APs connecting innovative start-ups with big and medium-sized companies.	
FS7: Growing number and financial power of Venture Capitals (VCs), seed capital funds and other funds, which invest in APs.	
FS8: Growing number of technology-transfer infrastructure, including young business incubators, business parks, etc. which easily can be also used by APs.	
FS9: Multinational, big & medium companies are willingly spending on activities where they find their interest; the problem of a lack of funds does in practice not exist currently.	
FS10: Relatively large population of combined CEE what means a more affordable talent pool and, as a result, a lower burn rate and a longer runway for start-ups in CEE.	

Source: Author's elaboration

Table 3. External opportunities and threats of CEE related to the APs development

External OPPORTUNITIES	External THREATS
FO1: Growing interest of global markets in start-ups from CEE.	**FT1:** Growing expectation of an approaching global economic downturn which may disrupt current fast-growing market of APs in the leading countries (the USA, the UK, Germany, etc.).
FO2: V4 belong to the UE community what helps to intensify a flow of resources and capital	**FT2:** The APs exist in the leading countries like the USA, the UK, or Germany, much longer than in CEE countries and as a result, legal and organisational aspects are much more solid and predictable. For this reason, start-ups may chose those countries for their headquarters.
F03: Opportunities to learn from other countries experiences	**FT3:** Stability of legal and tax-related aspects of accelerators stakeholders, e. g. start-ups.
F04: Possibilities to launch common APs with more experience "players"	**FT4:** High competition for the most promising start-ups and entrepreneurial teams, which means high chance of the outflows of the best young firms from CEE.
	FT5: Countries with lower taxes may attract start-ups and young entrepreneurial firms from CEE

Source: Author's elaboration

Evaluation of strategic position of the APs from the CEE countries

Assessment of an internal and external position of CEE's APs determines a choice of an overall strategy of the APs market in the CEE. An impact on the APs development of each feature indicated in the SWOT analysis has been done with the weighting method. The values of the weights depend on the features' envisaged importance on a CEE's APs. The weights were given in a following way:

— Weight 0,1 — low impact on a CEE's APs,
— Weight 0,2 — average impact on a CEE's APs,
— Weight 0,3 — significant impact on a CEE's APs.

Table 4. An application of the weighting method

STRENGTHS	Weight	WEAK-NESSES	Weight	OPPORTU-NITIES	Weight	THRE-ATS	Weight
FS1	0,2	FW1	0,3	FO1	0,3	FT1	0,2
FS2	0,2	FW2	0,3	FO2	0,3	FT2	0,2
FS3	0,3	FW3	0,3	FO3	0,3	FT3	0,3
FS4	0,3	FW4	0,1	FO4	0,3	FT4	0,3
FS5	0,3	FW5	0,3			FT5	0,3
FS6	0,3						
FS7	0,3						
FS8	0,2						
FS9	0,1						
FS10	0,3						
SUM:	**2,9**		**1,3**		**1,2**		**1,3**

Source: Author's estimation

An application of the weighting method leads to the conclusion that internal strengths exceed internal weaknesses while external threats exceed external opportunities. The strategy, which is recommended to applied in these kind of situations is called: "*maxi-mini*" [21, 22].

S>W + O<T → Conservative strategy: so-called "*maxi-mini*"

5. CONCLUSIONS

Current fast growth of the APs in the CEE countries and favourable systemic conditions allow for a formulation of long-term strategy in respect to the APs development and a foresight that the growing trend on that part of the economy will be continued also in the coming years.

Based on results of a SWOT analysis presented above, the long-term conservative strategy called "*maxi-mini*" is recommended to apply for the development of the APs in the CEE countries.

As a result, a conservative strategy: so-called "maxi-mini" should be applied. Its implementation deals with:

— costs reduction,
— product(s) improvement,
— search for the new markets,
— products selection,
— purchase the competition.

In the next stages of an analysis, a group of experts in the fields of acceleration programmes, entrepreneurship, economics, leadership, business, policy, could be invited to critically evaluate factors taken under consideration in the SWOT analysis and to estimate weights of each of the factors. That could lead to the more precise results of the analysis. However, for the study presented above, the conducted analysis and above presented results were sufficient to draw some meaningful conclusions.

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