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## CULTURAL POLITICAL ECONOMY OF EUROPE 2020: JEAN MONNET CHAIR CPE 2020 AND ITS IMPACT

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**Abstract:** *The main goal of the grand strategy Europe 2020 is to achieve smart, sustainable and inclusive growth. Implementation of such grand strategy is an arduous process, which has so far more often than not resulted in implementation deficit. The article follows the Cultural Political Economy approach and is based on a premise that to successfully implement a grand strategy of Europe 2020 and its successor strategies, we need to construe the strategy as a hegemonic discourse that needs to pass the evolutionary mechanisms of variation, selection and retention. Possible mechanism of retention of Europe 2020 is the innovative educational that was developed and tested in Jean Monnet Chair project Cultural Political Economy of Europe 2020. The approach can contribute to awareness of EU grand strategies and their implementation through other programmatic documents and advance interdisciplinary EU studies dealing with the phenomenon of EU implementation deficit.*

**Key-words:** *Jean Monnet Chair, Cultural Political Economy, Europe 2020, methodology, policy impact*

### 1. Introduction

The European Union implementation deficit has since long been the subject of intense interest by both researchers and policy-makers. This is also the case for its ambitious grand strategies. The Lisbon strategy has generally been perceived as having failed to reach its objectives (Makarovič et al. 2014). Implementation deficit has been attributed to a variety of factors such as the lack of focus in setting the goals, inefficient governance structures and many more (Haverland and Romeijn 2007; Borghetto and Franchino 2010; Tomšič and Vehovar 2012). A research based on the Cultural Political Economy approach, based on evolutionary mechanisms of variation, selection and retention of dominant discourses (Jessop 2004; Jessop 2010; Jessop and Oosterlynck 2008), as well as on mechanisms of selectivities (Ngai-Ling and Jessop 2014) has concluded that it the EU is to successfully meet its

developmental challenges, it is vital to develop more efficient mechanisms of retention of selected discourses (Makarovič 2014, 624).

The relevance of the mechanisms of variation, selection and retention of dominant discourse of *Europe 2020* is implied by all contributions to this special issue. In their separate contributions, Cepoi, Gangaliuc and Pandiloska Jurak deal with the “smart” growth, tackling the issues of research (Pandiloska Jurak and Gangaliuc) and digital transformation (Cepoi). In her case study on social entrepreneurship Klindienst deals with the “inclusive” growth by showing that the use of those three mechanisms can result in the integration of the developed solutions into institutional rules. Fric presents the case for “sustainable” growth in her contribution on circular economy.

Hence the development of Jean Monnet Chair titled *Cultural Political Economy of Europe 2020 (CPE2020)*. The Chair, held by the author of this paper, is dedicated to *testing innovative educational approach* and related materials as a mechanism for improving implementation of the EU grand strategy, *Europe 2020*. By doing that it also advances interdisciplinary EU studies dealing with the phenomenon of EU implementation deficit, with a view to offer *educational tools* that could be *utilised in other environments throughout Europe*, to contribute to awareness of EU grand strategies and their implementation through other programmatic documents.

To achieve this, *CPE2020* is based on i.) *student-centred learning*, shifting the focus from teacher to the learner, aiming to develop autonomy, independence and critical thinking of the learner, ii.) *the key elements of Open Innovation 2.0*, a new paradigm where not only academia and policy-makers, but also industry and civil participants work together to co-create the future and drive structural changes far beyond the scope of what any one organization or person could do alone, and iii.) takes into account the *Cultural Political Economy*, analytical approach that not only explains the mechanisms behind successful implementation of grand EU strategies, but can also be instrumental in providing the relevant tools.

*CPE2020* thus incorporates principles of integrated collaboration, co-created shared value and rapid adoption of dominant discourse, in this case the *Europe 2020*. This includes teaching activities, interactive events and research. These activities include not only future professionals and practitioners undertaking degree-awarding studies in all levels of study, but all relevant stakeholders. It is following the well-established principle that in research on the implementation of EU (grand) strategies by national states we also need to take into the account their complexity, coordination, networks and actors (see Pandiloska Jurak 2010, Pandiloska Jurak and Pinterič 2009).

## 2. The Ambition of CPE 2020

*CPE2020* tackles an important policy issue and at the same time provides academic value added. The European Union has been continuously rethinking its global position amidst emerging economic and geopolitical challenges and attempting to formulate strategies to increase its competitiveness (Makarovič et al. 2014). *Europe 2020* provides a number of good guidelines on how to meet the challenges, especially *its focus on successful, smart and inclusive growth*. For example, one of the solutions for achieving these ambitious guidelines is a paradigmatic shift towards a circular economy, where the waste – materials, waste water or energy – from one organization becomes input for another (Fric and Roncevic 2018). This paradigm is a response to the pressures of growing consumption of the limited resources and environmental capacity and it is one of the most developed waste handling concepts of modern time (Ellen MacArthur Foundation 2017 in Fric and Roncevic 2018). However, long-standing policy implementation deficit of the European Union is also recognised for its grand strategies, including the initially ambitious Lisbon Strategy. Hence the relevant question: is *Europe 2020* set to fail as well (Makarovic et al. 2014)? Implementation deficit of the *Lisbon Strategy* was not due to the changed economic circumstances after 2008 which could hardly have been foreseen when the initial document was adopted. CPE analysis reveals that although this document was produced and selected as a dominant type of discourse, it failed to establish itself as a new successful economic imaginary and did not become part of EU citizens' habitus, of organisational routines and did not become sufficiently influential in shaping local, regional and national policy paradigms, strategies and policies. This is also the main obstacle to success of *Europe 2020* and the key solution is to develop mechanisms for its retention and subsequent reinforcement. Only in this case will it have the power to become influential in shaping policy paradigms, strategies, and policies in and across many different fields of social practice. Additionally, when building policies and strategies it is important to acknowledge the relevance of cultural foundations. As some authors show (Kleindienst 2017; Kleindienst and Tomšič 2017; Kleindienst and Tomšič 2018), the relationship between institutional system and cultural platform of society is mutually reinforcing.

*CPE2020* was planned to achieve maximum impact with available resources by utilising the existing host institution's infrastructure and activities. This is not only economically efficient, but also allows avoiding unnecessary new content loading in addition to already existing one. Therefore, relevant fields of EU studies were integrated where appropriate in the existing curricula and events, thereby i.) providing increased visibility of

highly relevant EU topics at a host institution where teaching on EU topics is at a nascent phase of development and which has so far not received Jean Monnet funding; ii.) improving the relevance of courses which have not been specifically designed to deliver EU studies; and iii.) responding to an identified institutional need to develop this field of study.

Furthermore, *CPE2020* was designed to achieve the maximum benefit per available resources. This also includes maximisation of the relevance of proposal for the specific objectives of Jean Monnet Chairs. We blended activities of the Chair with already existing events at host institution to the greatest possible extent and by providing a 'clever' combination of educational activities, events and research activities.

As a result, we achieve 'more with less' and were able to note synergistic effects.

Firstly, Jean Monnet Chair *CPE2020* deepened teaching in EU studies embodied in an official curriculum of host institution's study programmes. Important proportion of planned teaching takes place as a part of three courses which are conducted on the level of undergraduate, MA and Ph.D studies. At BA level we delivered course *Theories of Information Society*, at MA level we will delivered relevant topics in the framework of a course *Qualitative Research Methods* and at Ph.D level we will delivered course *Contemporary Theories in Economic Sociology*. These courses are not specifically dedicated to the EU studies and we were not planning to completely reformulate them for the purpose of Jean Monnet Chair. However, we will actively integrated relevant EU topics in these courses either as specific cases or materials to achieve requested learning aims, thereby offering them not only to students who are specifically interested in EU studies, but also to students who are keen to pursue other fields.

Secondly, *CPE2020* provided in-depth teaching on European Union matters for future professionals in fields that are in increasing demand on the labour market. Here we should emphasise that students in the field of Social Science Informatics attended courses in the framework of *CPE2020*, who are in high demand on the labour market. However, one should not assume that this only due to their IT expertize. They are studying to become interdisciplinary experts combining competencies in IT, in management and social sciences and research methods. Anecdotal as well as more systematic evidence proves that ascent of IT and social networking, which has entered everyday as well as the working life, does not only require engineers, but also a wide array of other profiles, which are essential for smooth functioning of a variety of organisations. Host institution prides itself for not being a 'typical' computer science HEI, but one that educates future professionals with applied



knowledge who have found employment in a variety of organisations in all spheres of life, both in Slovenia and internationally. Through our summer schools we provide in-depth teaching on EU matters, which includes expertise on managing innovation in delivering smart inclusive growth as well as the knowledge of relevant administrative environments – increasingly complex environment.

Finally, *CPE2020* fed the results of education activities into series of thematic events, where the participants have the opportunity to communicate with representatives of other target groups. These events were the three winter camps with participation of students, young professionals and academics, three multi-day joint international field trips with participation of all target groups, three special thematic sessions at a conference will enable scientific scrutiny of the CPE results and nine round tables enable more applied scrutiny of *CPE2020* process by industry representatives and policy-makers. *CPE2020* also engages all target groups in research activity, intended to assess the effectiveness of retention and reinforcement of *Europe 2020*, i.e. of the *CPE2020* methods and tools. In this entire process, to achieve objectives and engage target groups *CPE2020* systematically incorporated principles of integrated collaboration, co-created shared value and rapid adoption.

### 3. Methodology

The methodology has been developed *to meet the overall envisaged objectives* of Jean Monnet Chair *CPE2020*, i.e. *to develop and test innovative educational approach* and related materials to advance *the acceptance of the EU grand strategies*, in this case the *Europe 2020*, and with a view to foster development and mainstreaming of interdisciplinary EU studies at the intersection of economic studies with comparative regionalism. At the same time, we are attentive to the need to offer *educational tools* that could be *utilised in other environments* with the goal to contribute to awareness of EU grand strategies and their implementation throughout Europe.

The working methodology is combining four interdisciplinary elements:

- i. The developed educational approach is based on *student-centred learning*, shifting the focus from professor to the student, aiming to develop autonomy and independence of the learner, which will substantially increase the quality of the teaching and assure better results.
- ii. We incorporated *the key elements of Open Innovation 2.0*, a new paradigm where academia, policy-makers, industry and civil society

work together to co-create structural changes far beyond the scope of individual actor. These elements guide the debating activities during the events organised by the Chair.

- iii. The methodology takes into account the *Cultural Political Economy*, analytical approach that not only explains the mechanisms behind successful implementation of grand EU strategies, but can also be instrumental in providing the relevant tools and provide inclusion of civil society members in the process.
- iv. This approach provides the basis for research activities, which will be qualitative regional audits intended to detect the effectiveness of the educational methods and assess the progress of the project activities against milestones and measurable indicators.

*CPE2020* thus incorporated principles of integrated collaboration, co-created shared value and rapid adoption. Consequently, teaching activities include not only (future) professionals undertaking degree-awarding studies, but also industry representatives, policy-makers and civil society and .

#### **4. Conclusion: The Evidence of Impact**

Achieving sustained development is an overwhelming task. It needs to take into account a number of complex socio-cultural factors (see Adam et al. 2005; Rončević 2008; Rončević et al. 2010). Also, it is a process involving at least a partial restructuring of society (Rončević and Makarović 2010; Rončević and Makarović 2011) and on the policy-makers, public administration, industry representatives and civil society, i.e. the relevant stakeholders (Cepoi 2016).

*CPE2020* reached them by utilization of well-developed regional networks, where FIS often acts as a moderator in various initiatives. As a part of *CPE2020*, we systematically observed impact of the activities of *CPE2020* on relevant groups either through surveys (students) or through participant observations (all events). The results of this were not extremely surprising, albeit quite informative. Aside from a very select group of participants, who were familiar with Europe 2020 through professional activities, no other actors were aware of the relevance of this grand strategy through national and regional strategies. This observations includes not only the students, but even advanced professionals in their respective fields. However, after having actively participated in *CPE2020* in line with *Open Innovation 2.0* paradigm, we observed the impact of the knowledge transfer. Teaching and events materials influenced their level of internalisation of semiotic elements of Europe 2020 in internal habitus. More research would be needed whether these activities were transferred to their organizations' routines and if not,

what would be needed to achieve this. The active participation of policy-makers, businesses and civil society strengthened intra-regional cooperation and contributed to increase in mutual trust, which has the potential to spark further joint innovative efforts. How did we achieve this?

The academic community at the Host institution was approached directly and actively participated at most *CPE2020* events and not only contributed, but also benefit from them. This benefit was both academic, i.e. discovering scientifically relevant EU topics, as well as pedagogic-didactical, i.e. contributing to development and testing new teaching method bringing greater teacher-student communication and achieving better learning outcomes. Students benefited from close communication with their professors, developing their autonomy and independent thinking, which will substantially increase the quality of the teaching and assure better results. The spill-over effects of the discussions bring about innovative approaches to understanding and spreading other relevant topics as well. The activities provided by *CPE2020* also strengthen the academia – policy-makers communication, thereby providing them with new opportunities for future cooperation.

Although we are not able to reliably measure or observe this particular impact on broader academic community and knowledge on European integration, teaching materials and publications of the *CPE2020* are available on-line. Availability of the material will in the years to come i.) enhance the knowledge about innovative approaches in teaching on EU studies. The events provided an open forum for cross-disciplinary debates on the topic and enable cooperation with academic staff from other academic institutions and the anecdotal evidence suggests newly emerging relevant initiatives (i.e. Jean Monnet Chairs and Centres of Excellence proposals at other institutions). Scientific knowledge will benefit from intensive debates with the stakeholders in the years to come, providing unique insight and access to data on factors, bottlenecks and mechanisms of implementation deficits of the EU grand strategies.

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## ECONOMIC AND SOCIAL SECURITY IN EU: REFORMING SLOVENIAN LAW ON SOCIAL ENTREPRENEURSHIP

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**Abstract:** *Europe 2020 strategy of smart, sustainable and inclusive growth also implies policies for boosting social innovations. In this context, it is relevant to encourage solutions such as social entrepreneurship as it is addressing social and environmental issues while employing entrepreneurship. Social entrepreneurship depends on the context of its emergence and implementation. In this regard, the context-specific factors play an important role. Following the Cultural Political Economy approach, the article examines on different factors that have influenced on the adoption of amendments of the Slovenian Social Entrepreneurship Act in 2018. Selection of the case study of Slovenia bases on the findings implying that Slovenia has still not overcome the initial phase of the development of the social entrepreneurship. The article reveals that there are still issues relevant for running social enterprises that are not sufficiently regulated by the law. One of them is a training of the vulnerable groups in terms of their technological skills in order to ensure their efficiency and productiveness in Work Integration Social Enterprises.*

**Key-words:** *social entrepreneurship, social innovations, technology, legislation, Europe 2020*

### 1. Introduction

Social entrepreneurship is following social mission that focuses on creating systemic and sustainable change while addressing the needs of others (Beugré 2017); it applies the needs of the principles of social responsibility. It is a key element of the European social model and is closely linked to the Europe 2020 strategy (Tomažević and Cantele 2019). As such, social entrepreneurship contributes to the smart, sustainable and inclusive growth. Development of social entrepreneurship is very context specific, shaped by wider social, economic, cultural, historical, institutional and other development patterns (OECD/European Commission 2013). As social enterprises depend on the contexts in which they operate, the barriers that they face are specific to those contexts (Bradač Hojnik 2017). These contexts

can be complex, employing a variety of dimensions (see Adam et al. 2005). The development of appropriate legal, regulatory and fiscal frameworks of social entrepreneurship must therefore emerge from the environments in which social enterprises operate. At the same time, such frameworks must be adapted to the proper organisational form that social enterprises may take (OECD/European Commission 2013). Due to the heterogeneity of social entrepreneurship, the causes and consequences of social entrepreneurship are often multi-factorial. This can result in policies that do not translate into impact (Phan 2014). The article discusses the policies and legal landscape of social entrepreneurship in Slovenia. Establishing proper policies is relevant as policy makers can help social enterprises overcome self-restraining behaviours and select the most suitable strategies (OECD/European Commission 2013). Thus, it is important to explore factors, circumstances and also specific mechanisms that have led to the new policies and reforms on the law of social entrepreneurship. This is highly important since societal steering requires not only politically accepted grand strategies, but also ex-ante theoretical, conceptual and analytical considerations (Rončević and Makarovič 2010, Rončević and Makarovič 2011, Rončević 2008; Rončević et al. 2010).

The purpose of the article is to provide the general overview of the Slovenian legal framework on social entrepreneurship as well as recognize political, social, economic and other conditions that have led to the reform of Slovenian legislation on social entrepreneurship in 2018. In order to achieve the main purpose of the article, the second chapter of the article tackles the main factors that have fostered the development of social entrepreneurship across Europe, with a special focus on Slovenia. In the third chapter, the main problems regarding the growth of social entrepreneurship in Slovenia, in relation to Slovenian legislative barriers on social entrepreneurship are represented. On the base of that, the main reasons and factors for adoption of amendments of the Slovenian Social Entrepreneurship Act in 2018 are represented.

Following from all that, the article goes in line with principles of cultural political economy (CPE) as an emerging post-disciplinary approach that highlights the contribution of the cultural turn (a concern with semiosis or meaning-making) to the analysis of the articulation between the economic and the political and their embedding in broader sets of social relations (Jessop 2010). CPE explores three generic evolutionary mechanisms: variation, selection, and retention (Campbell 1969; Jessop 2004; Jessop 2010):

1) *Variation* in discourses and practices, due to their incomplete mastery, their skilful adaptation in specific circumstances, new challenges or crises, or other semiotic or material causes (Jessop 2010). In our case study, a variation could be seen in the public discourses about the current needs of social entrepreneurship as well as its possible adaptations considering the new circumstances and challenges of social entrepreneurship in Slovenia. In our case study, public discourse involved the actors such as scientific and professional institutions, NGOs, individual experts, civil society etc.

2) *Selection* of particular discourses (the privileging of just some available, including emergent, discourses) for interpreting events, legitimizing actions, and (perhaps self-reflexively) representing social phenomena (Jessop 2010). In terms of our case study, the mechanism of selection was employed when facing a shift of political discourses about social entrepreneurship as some political discourses prevailed in 2018. Semiotic factors acted here by influencing the resonance of discourses in personal, organizational and institutional, and broader meta-narrative terms and by limiting possible combinations of semiosis and semiotic practices in a given semiotic order (Jessop 2010).

3) In our case study, the *retention* of some resonant discourses could be seen in integration of the solutions (as a result of prevailing discourses about social entrepreneurship) into institutional rules, i.e. Slovenian Social Entrepreneurship Act (2018), national strategies etc.

However, the article reveals that there exist noticeable challenges in the field of Slovenian social entrepreneurship that are still not sufficiently addressed by the legislation, for example, the issue of labour force' skills in WISEs (Work Integration Social Enterprises), mainly in relation to the requirements posed by technological progress and economic innovation. According to European Commission (2015), WISEs are a special type of social enterprise that display the following minimum characteristics: a) private and autonomous enterprises operating on the market; b) disadvantaged workers have employee rights under national labour law; c) core mission is the integration through work of disadvantaged people; d) compliance with a minimum threshold of disadvantaged workers over total workforce. In general, European country reports on social entrepreneurship typically emphasize the relevance of business, management and marketing skills of social entrepreneurs for the successful emergence and running of their enterprises. However, those reports often do not raise the importance of technologically skilled labour force in order to ensure the efficiency and productiveness of social enterprises. This is particularly true for WISEs that are working for the integration of vulnerable groups and often suffer from



technological gaps. Thereby, the last chapter of the article offers the analysis of Slovenian legal documents in order to recognize shortages within legal framework and thereby detect potential encouragements of labour force's technological skills in WISEs.

## **2. The Revival of the Social Enterprise Sector**

Generally speaking, the negative effects of neoliberal policies have since long contributed the focus on social quality aspects of development (Fairweather et al. 2001) and related approaches, including social entrepreneurship, which is spreading at a rapid pace in the entire Europe. Taking mediocre implementation record of the EU grand strategies into account (Makarovič et al. 2014), it can play important role in implementation of the recent Europe 2020. The social economy offers new possibilities for the innovative employment of vulnerable target groups aiming to enable companies of this kind to independently generate revenue and survive (Trampuš, Cankar and Setnikar Cankar 2013). EU documents refer to social entrepreneurship when striving for the growth of social economy and social innovations, creating a favourable climate for social enterprises; for example: *European Platform against Poverty and Social Exclusion, The Innovation Union, Europe 2020 Strategy, Single Market Act - Twelve levers to boost growth and strengthen confidence*. EU Operational Definition of Social Enterprise implies three dimensions of social enterprises (European Commission 2015):

1. Entrepreneurial dimension - social enterprises show the typical characteristics that are shared by all enterprises;
2. Social dimension - social enterprises pursue an explicit social aim; primacy of social aim over commercial objectives;
3. Governance dimension - social enterprises have specific governance structures to safeguard their social missions.

However, EU legislation does not include a uniform definition of social enterprise. Thus, the definition of the latter in EU member states varies according to different factors and circumstances of particular country.

EU has funded several research projects on the social entrepreneurship (see European Commission 2015), for example: Social Enterprise as a Force for more Inclusive and Innovative Societies (SEFORIS); Enabling the Flourishing and Evolution of Social Entrepreneurship for Innovative and Inclusive Societies (EFESEIIS); Social Entrepreneurs as Lead Users for Social Innovation (SELUSI); The Theoretical, Empirical and Policy Foundations for Social Innovation in Europe (TEPSIE). Those projects are mainly focussed on understanding of social enterprises in Europe; fostering social

entrepreneurship and social innovation; identifying the features of an enabling eco-system for social entrepreneurship; identifying constraints as well as contribution of social entrepreneurs to social innovation.

The revival of the social enterprise sector in recent few years can be explained by the impact of the economic crisis leading to rising interest in alternative economic development models (European Commission 2014). Therefore, there exist a big potential for further development of social entrepreneurship in Slovenia, which could help to diminish a problem of structural unemployment (Adam et al. 2015). A new type of social economy in Slovenia is evolving after the dissolution of the socio-economic self-governance system and the associated labour law of the former federal country Yugoslavia, of which Slovenia was one of the federal republics. Before 1990, Slovene citizens experienced both high levels of employment and social welfare services under self-managed socialistic communities and societies (Doherty et al. 2009). After the change of the economic system in Slovenia in the late 80ies and the loss of Yugoslav markets, unemployment in Slovenia increased substantially (Institute for Economic Research, Slovenia 2010). Hence, Slovenian citizens are still quite confused about the term social economy and social entrepreneurship. This is partly also due to the fact that entrepreneurship during the transition became associated with entrepreneurs who had no social conscience (Doherty et al. 2009). However, Slovenia is facing poor knowledge and lack of understanding of the concept of social entrepreneurship, its principles, goals and benefits; the concept of social economy is not widely known and accepted in Slovenian public (Macura and Konda 2016). Despite adoption of legal framework for establishment of social enterprises which is in accordance with EU regulation, Slovenia has not yet overcome the initial phase of the development of the social entrepreneurship, which lags Slovenia behind other EU members. This fact was confirmed, for example, by OECD project (Spear et al. 2010) and CIRIEC (2012).

For successful running of the social enterprises, a proper entrepreneurial knowledge is needed. Unfortunately, social entrepreneurship sector is facing the lack of business knowledge, management and marketing skills as well as experience of social entrepreneurs. Therefore, there is a need to build supportive environment for social entrepreneurship. Podmenik, Adam and Milosevic (2017) have identified three key levels of supportive environment for social entrepreneurship in Slovenia:

- national level (effective implementation of legislation; systemic regulation and integration of social entrepreneurship in all key documents; interdepartmental coordination in the planning and implementation of

policies and relevant operational program measures in different incentives for social entrepreneurship; guaranteeing proper fiscal incentives and tax exemptions; enhanced cooperation of state institutions with social enterprises and other organizations in the planning and implementation of measures to support the development of social entrepreneurship; raising awareness and knowledge on social entrepreneurship);

- municipal level (integration of projects related to the social entrepreneurship into local development programs and establishing concrete incentives and resources for support of social entrepreneurship; ensuring the functioning of regional networks to support social entrepreneurship; activation of untapped local resources (land, buildings, equipment) held by the local community to support the social entrepreneurship; financial support to employment programs of social enterprises.

- organisational level (mostly NGO sector) which responds to the local needs.

### **3. Factor Influencing the Adoption of Amendments of Slovenian Law on Social Entrepreneurship**

In Slovenia, the concept of social entrepreneurship is relatively new. It was hardly used until 2009 when an EU-funded pilot programme to support the development of social enterprise was launched (European Commission 2014). Legal basis for social entrepreneurship was established in 2011 when Social Entrepreneurship Act (2011)<sup>1</sup> was adopted. Social Entrepreneurship Act was followed by the Rules on Monitoring Operations of Social Enterprises (2013)<sup>2</sup>. The Strategy for Social Entrepreneurship for the period 2013-2016 and related Programme of Measures 2014-2015 for conducting the Strategy for Social Entrepreneurship were lately adopted (2013). For the purpose of accountancy in the field of social entrepreneurship, Slovenian Accounting standards (2016) encompass "Accounting solutions in social enterprises". Several studies in the field of social entrepreneurship were conducted in Slovenia and their number especially increased from the adoption of Social Entrepreneurship Act on. Lužar Šajt et al. (2005), for example, offers an

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<sup>1</sup> This act includes content on general provisions, definition of social enterprise, operating conditions of social enterprises, an environment conducive to social entrepreneurship development, special incentives to social entrepreneurship, register of social enterprises, supervision, penal provisions, transitional and final provisions.

<sup>2</sup> This act determines the means of monitoring the activities of social enterprises and defines the bodies that are authorized for monitoring.

overview of existing conditions, activities and potential opportunities in relation to the development of social entrepreneurship. Spaer et al. (2010), European Commission (2014) and Adam et al. (2015) imply main challenges and problems in the development of social entrepreneurship as well. Further, Hrast et al. (2014) indicates the social impact of social enterprises in Slovenia. In February 2018, an applicative analysis of the situation in the field of social economy in Slovenia was prepared. It contains the guidelines for the preparation of the long-term strategy for the development of the social economy in Slovenia 2019-2029 and the program of short-term measures with the action plan 2019-2020 (Ministry of Economic Development and Technology, N.d.). However, Slovenia amended the Social Entrepreneurship Act in 2018.

European Commission (2014) reported that the register of social enterprises in Slovenia had not covered the entire spectrum of social enterprises in Slovenia. This was partly due to the strict criteria to maintain the status of social enterprises and no public financial advantage offered apart from existing Ministry of Labour, Family, Social Affairs and Equal Opportunities measures.<sup>3</sup> The study estimated there were around 900 organisations which have potentially felt within EU operational definition at that time (ibid.). Social entrepreneurs have shared the opinion that legal framework in Slovenia offers demanding and strict conditions for operating the social enterprises, intertwined with insufficient flexibility of measures of active employment policy. Hence, Slovenian legal framework was perceived as a rigid one; the one that does not foster the growth of social entrepreneurship. Podmenik, Adam and Milosevic (2017) have identified different types of organisations in Slovenia that can be generally classified as social enterprises despite the fact that they are belonging to different socio-economic sectors: social enterprises registered under Social Entrepreneurship Act (associations, private institutes, cooperatives, and private organizations with limited liability); disability companies and employment centres; cooperatives; non-governmental organizations; companies with positive social externalities or social responsible enterprises.

Currently, there exist a few supporting services in Slovenia (e.g. SPIRIT, CNVOS, Social Incubator, Successful Entrepreneur Institute, Fund 05 - Foundation for Social and Impact Investment etc.) which can equip social entrepreneurs with a proper business knowledge; help social entrepreneurs

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<sup>3</sup> From January 1, 2015, the Ministry of Economic Development and Technology is responsible for the field of social entrepreneurship.

to develop business idea and design business plan; and consult them about other relevant issues regarding running a social enterprise. Having a need for business consultations, the social enterprises come across the financial issue, namely limited budget of social entrepreneurs and the lack of (private and governmental) investments in social entrepreneurship, which is one of the biggest problems of social entrepreneurship sector in Slovenia. In fact, the social enterprises have been more likely to survive if there is the funding at the national or EU level available.<sup>4</sup> In this regard, social entrepreneurs have largely relied on subsidies for employment of vulnerable groups. In 2014, European Commission reported that measures and funding for fostering social entrepreneurship in Slovenia had been primarily focused to the social enterprises of type B.<sup>5</sup> According to Macura and Konda (2016), Slovenia lacks mechanisms for financial investments in social enterprises. Social enterprises face difficulties to access to financial resources, which includes more favourable loans for employment, as well as providing guarantees and subsidies from the budget.

In Slovenia, there is certainly a problem from a systemic perspective as well. In 2011, the Council for Social Entrepreneurship has been established. In 2018, it was renamed to the Council for Social Economy. Its main role is designing the social entrepreneurship policy, in cooperation with ministries, governmental organizations, municipalities, social partners and organizations of civil society. However, the cooperation between the institutions responsible for the development of social entrepreneurship is still insufficient (Macura and Konda 2016), which makes social entrepreneurship difficult to grow at national as well as local level. Furthermore, there is no proper statistical monitoring of the social entrepreneurship sector as a separate entity, therefore the size and structure of the social entrepreneurship sector can be given only on qualitative assessment (Podmenik, Adam and Milosevic 2017). There are also only a very limited numbers of public measures implemented in Slovenia which are specifically designed for social enterprises (European Commission 2014). Additionally, Slovenia consists of a large number of diverse organizations, fragmented across different sectors and lacks visibility as a homogeneous group (Podmenik, Adam and Milosevic 2017).

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<sup>4</sup> An overview of national vs. EU funds as planned by Slovenian Programme of Measures for the period 2014 – 2015, for example, indicates 44% of the total funding covered by national funds and 56% by the EU (European Commission 2014).

<sup>5</sup> For the explanation of the social enterprises of the type B, see the next chapter.

To summarize, the scope of previous legislation of the Republic of Slovenia on social entrepreneurship, which was generally in line with the EU legislation, was very narrow and rigid. Social Entrepreneurship Act and other relevant legal documents, referred to a large range of administrative barriers which made social enterprises difficult to develop and grow. There was (and is still) present a big concern in terms of insufficient understanding of social entrepreneurship among the general public as well as financial issue and search for building supportive environment for development of social enterprises. Thus, the Social Entrepreneurship Act was amended in 2018.

According to the Government of the Republic of Slovenia (2018), the key objectives of adopting the Social Entrepreneurship Act amendments were:

- strengthening the functioning of social enterprises on the principle of market orientation,
- increasing the number of registered social enterprises,
- increasing the number of jobs provided by social enterprises,
- increasing the positive social effects social enterprises provide through the implementation of their business activities,
- increasing the GDP generated by social enterprises,
- removing administrative barriers to social enterprise registration procedures,
- enabling the status of social enterprise for disability companies and employment centre.

#### **4. Current Slovenian Legislation on Social Entrepreneurship**

According to the Slovenian Social Entrepreneurship Act (2018, Article 3), social entrepreneurship shall represent the permanent performance of entrepreneurial activities in the manufacture and sales of products or the provision of services on the market, for which the generation of profit is not a main objective; rather, the main goal is to achieve social impacts. Slovenian legislation determines the main objectives of the social entrepreneurship: strengthening social solidarity and cohesion; promoting the participation of people; improving society's capacity for innovation in addressing social, economic, environmental and other issues; stimulates social innovations; ensuring the additional supply of products and services in the public interest; developing new employment possibilities; providing additional jobs and enabling social integration and vocational (re)integration of the disadvantaged groups in the labour market (ibid., Article 3). Additionally, the Social Entrepreneurship Act (2018) redefines the term of the most vulnerable groups in the labour market: these include disadvantaged workers, seriously

disadvantaged workers and disabled people. By (re)definitions in Social Entrepreneurship Act (2018; Article 2), additional vulnerable target groups in the labour market are encompassed by the Social Entrepreneurship Act (2018), for example, young people who want to enter the labour market, or people being retrained.

The last amendments of the Slovenian Social Entrepreneurship Act (2018) imply the significance of social innovations as one of the main contributions or goals of social entrepreneurship. From 2018 on, Social Entrepreneurship Act also provides a definition of social innovation: a social innovation is a solution to social needs and problems for which the market and the public sector have no proper responses (ibid., Article 2). According to the Social Entrepreneurship Act (2018), the main aim of a social innovation is to achieve social impact. A trend of noticeable emphasizing social innovations and social impacts of social enterprises can be perceived in Slovenian legislation. This can be interpreted as a positive step since some case studies (for example, Tomažević and Aristovnik 2018) encourages policy makers and the businessmen to start raising awareness about business structures with a corporate aim of having a positive social impact and addressing social objectives rather than only maximising profit.

The social enterprise is supposed to pursue the following principles, which indicate its nature of social contribution (Social Entrepreneurship Act, Article 3):

- it is established by the voluntary decision of its founders (autonomous initiative);
- its purpose is not solely to generate profit, assets and surplus revenue over expenditure are used for the activities of social enterprise, surplus revenue over expenditure distribution is not allowed (non-profitability);
- it is established with the main purpose of continuously engaging activities with a view to employing the most disadvantaged groups in the labour market, which is also a public interest (performance of activities in the public interest);
- its members work voluntarily (voluntariness);
- it is managed independently (independence);
- the manufacture and sale of its products or the provision of its services in the market are organised according to market principles (market orientation);
- it can involve voluntary work (voluntary work participation);
- individual founders or owners do not exercise dominant influence over decision-making; decisions are adopted by all members according to the

principle one member-one vote, and irrespective of their equity share (equality of members);

- the stakeholders are involved in decision making (stakeholder participation in management);

- it provides for the transparency of its financial operation and for internal control over its inventory management and financial operations (operations transparency);

- it permanently performs its activities for the benefit of its members, users and the wider community (operating for the social benefit).

There is a trend of broadening a scope of activities of social enterprises, covered by the Slovenian Social Entrepreneurship Act. From 2018 on, the areas in which social entrepreneurship activities can be conducted are no longer defined by law. Thereby, the activities of social entrepreneurship can be implemented in all economic and non-economic areas (Social Entrepreneurship Act, Article 5).

Social Entrepreneurship Act (2011, Article 8) indicated a clear distinction between two types of social enterprises: more business oriented social enterprises (Type A) and social enterprises established with a view to employing people from vulnerable groups (Type B; Work-integration social enterprises - WISEs).<sup>6</sup> The legal basis for the establishment of a mixed type (A-B) of social enterprises was not provided by the law. The Social Entrepreneurship Act (2018) does no longer differentiate between Type A and Type B. Thereby, all social enterprises are expected to implement economic activity in order to ensure permanent business that follows market orientation principles.

Under previous legislation, the disability companies and employment centres could not be registered as a social enterprise (European Commission 2014). According to MLFSA, the reason for not allowing double registration was to prevent double funding as there was public funding for disability companies and employment centres available, provided by the *Vocational Rehabilitation and Employment of Disabled Persons Act* (2004; European Commission 2014). However, the amendments of Social Entrepreneurship

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<sup>6</sup> According to the Social Entrepreneurship Act (2011), there were conditions for both types of social enterprises: social enterprises of a type A were supposed to perform social entrepreneurship activities specified by the law and employ at least one worker in the first year of its operation and at least two workers in subsequent years. Social enterprises of a type B were supposed to establish with a view to employing people from vulnerable groups and being engaged in a particular activity by permanently employing at least one third of these workers out of the total staff.



Act (2018) have eliminated restrictions for registration of disability companies and employment centres as social enterprises, aiming to achieve a larger proportion of existing social entrepreneurs to register their social enterprises.

## **5. Shortages of Current Slovenian Legislation on Social Entrepreneurship**

There are still numerous concerns regarding the functioning of social enterprises that are not tackled in the current legislation. One of them is definitely training of people from vulnerable groups in terms of their technological skills in order to ensure their efficiency and productiveness in WISEs. It is interesting that countries' reports on social entrepreneurship usually largely emphasize the relevance of business, management and marketing skills of social entrepreneurs, meanwhile those reports do not expose the meaning of the skilled labour force in social enterprises. In this regard, SMEs in Central Europe, particularly WISEs, currently face shortages, mainly in relation to the requirements posed by technological progress and economic innovation. This is particularly true for WISEs which are working for the integration of vulnerable groups. They do often suffer from technological gaps due to the low investment levels and lack of necessary skills.

ICT is becoming increasingly important for establishment and effectiveness of social entrepreneurship. It is important to understand that ICT represents an added value for building and sustaining of social enterprise's competitiveness as well as an important tool for business strategy (Torres Coronas and Vidal Blasco 2013). Freeman and Freeman (2013) stress that with the evolution of ICT and the recognition of the humanity of individuals with disabilities, we are coming to a time of inclusion of all within our society. Through the utilization of ICT the individuals with disabilities gain a sense of self-worth and self-determination; and society gains through a more satisfied population and a more diverse and inclusive business sector (ibid.). Therefore, there is a need to research the ICT skills that are needed to develop in order to ensure engagement of the disabled into social enterprises and raise their productivity and effectiveness. This requires additional trainings of the disabled and their capacity buildings activities. According to Freeman and Freeman (ibid.), the need for technological training of ICT skills of the disabled people is clear, but only little research explores how this can be done in practical setting. This chapter offers an analysis of

Slovenian legislation in order to indicate insufficient legal conditions for training of the ICT skills of disabled for conducting their work in WISEs.

There are some measures/incentives in place to support employment of the disabled and other vulnerable groups in Slovenia (European Commission 2014). But for successful running of social enterprises, there are financial resources and subsidies needed for social enterprises that train people from vulnerable groups and enhancing their knowledge and skills. In Slovenia, encouragement of employment of the disabled in social enterprises was one of the strategic goals (Strategic Goal No. 3) in accordance with *Strategy of Social entrepreneurship for the period 2013-2016* and *Program of Measures 2014-2015*. For this purpose, some of the foreseen measures included training and workshops for social enterprises of type B.<sup>7</sup> More specifically, the activities encompassed development of the model of workshops as well as the implementation of created model in the social enterprises. The purpose of these activities was to train unemployed disabled persons through workshops in order to improve their employment opportunities; increasing their competitiveness in the labour market; gaining and strengthening their skills. Workshops have been carried out in social enterprises of type B and non-profit legal organizations which operated as social enterprises of type B. The workshops have been addressed to vulnerable groups (target groups) that do not have employment opportunities due to their insufficient skills and work experience (see Program of Measures 2014-2015).

In order to develop the model of workshops, analysis of employment of vulnerable groups was conducted by Šent (2014), on the behalf of Ministry of Labour, Family, Social Affairs and Equal Opportunities of the Republic Slovenia. The research identified the digital literacy and computer knowledge as relatively important competences for carrying out the work in social enterprises, disability companies and employment centres. This research implies that ICT skills of disabled are not sufficiently developed and trained. Similar results were brought up by the study in 2013 (Šent 2013), financed by European Regional Development Fund, focused on a supportive environment for the development of social entrepreneurship in Slovenia.

*National guidelines to improve built environment, information and communications accessibility for people with disabilities* (2005) aim to integrate the disabled to employment environment as well as society. Furthermore, *Guidelines for the Implementation of Active Employment Policy Measures for the Period 2016-2020* (2015) encourage the training and

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<sup>7</sup> The Social Entrepreneurship Act (2018) does no longer differentiate between Type A and Type B.

education of vulnerable groups but this document does not explicitly mention the disabled (but only unemployed people, young people and elderly). In accordance with the *Vocational Rehabilitation and Employment of Persons with Disabilities Act* (2007), a disabled person has the right to vocational rehabilitation. The latter include services that aim to qualify a disabled person for suitable work, to help the disabled to retain employment and to progress in terms of his/her professional career (Article 4). Finally, *Resolution on the Master Plan for Adult Education in the Republic of Slovenia for 2013–2020* (2013) specifies the disabled as a target group and aims to raise the digital literacy of the disabled and their integration in information society.

The range of Slovenian legal documents on the discussed topic is extensive. This article mentions only those documents that are the most relevant to achieve the purpose of the article. All the legal documents mentioned above primarily strive to increase employability of the disabled, prevent the discrimination of the disabled at labour market and integrate the disabled into employment environment. For this purpose, some of the legal documents provide the rights of the disabled to their vocational rehabilitation, training and education. However, competences and skills that should be provided to the disabled during their trainings, are not specified. Hence, the only relevant research in this regard is Šent (2014) which exposes the list of the relevant competences and skills that should be fostered in WISEs. Moreover, there are no legal documents as well as research in Slovenia that focus specifically on building ICT skills of the disabled person in the field of social entrepreneurship. In this perspective, the contribution of project INNO-WISEs covered by the Interreg Central Europe Programme (N.d.) which was launched in 2017 might be relevant to the further development of social entrepreneurship. The aim of the project is to create a knowledge management framework, a flexible digital communication platform and training programmes. By connecting actors from work integration social enterprises, research, technological experts and relevant public authorities, the project strives to change the entrepreneurial mind-set, skills and attitude of the sector thus building and promoting a stronger culture of entrepreneurship and greater social cohesion.

## **6. Conclusion**

If the legislation provides more incentives for developing technological skills of labour force in WISEs, it could accelerate the business development of social enterprises, and in particular contribute to effective solutions to social issues and thus provide greater social impact. For this purpose, clear legal

definitions of the social enterprises are needed. Additionally, the amendments to the Slovenian Social Entrepreneurship Act meant a step forward as removing bureaucratic barriers that have discouraged entrepreneurs from registration of a social enterprise. Disability companies or employment centres are now allowed to obtain a status of social enterprise. According to the amendments of the Slovenian legal framework of social entrepreneurship, we can recognize a trend of broadening a scope of activities of social enterprises. From 2018 on, the areas in which social entrepreneurship activities can be conducted are no longer defined by law. Thereby, now the activities of social entrepreneurship can be implemented in all economic and non-economic areas.

Following the Europe 2020 strategy, it is important to invest in science and research and ensure the transfer of the research findings into economy and social issues. In line with that, there is a constant need to adapt policies and legal framework of social entrepreneurship to the prevailing needs of the society. There are still many possibilities for progress in this regard. This article showed an example of possible adaptations, i.e. the establishment and implementation of policies bringing incentives for encouraging ICT skills of the vulnerable groups in WISEs.

However, the success of national, regional and international policies of social entrepreneurship largely depend on the value-context as well. We consider values as part of social order. Values are perceived as social constructs that are constituted when most members of a particular community recognize them as a common ground of the community. Values can be defined as principles that people are supposed to follow through the course of their lives and actions. We can say that values indicate standards of social behaviours that guide interactions between people and human behaviour. They provide social stability and represent goals or motives on the basis of which an individual act in a particular situation. According to Conger (2012), personal values affect social entrepreneurs to create non-economic value. Additionally, social entrepreneur must account for the value priorities of other stakeholders associated with their venture. Social entrepreneurship is often based on ethical motives and moral responsibility and altruism; however, the motives for social entrepreneurship can also include less altruistic reasons such as personal fulfilment (Meir and Marti Lanuza 2006). A value-context of social entrepreneurship is still relatively under-examined and offers many opportunities for future research.

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## THE MEASUREMENT OF INNOVATION FOR MANAGEMENT, RESEARCH AND POLICY

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**Abstract:** *This paper is a literature review regarding the known practices of measuring innovation, for policy, research or management purposes. Article is deliberating on the importance of known and most notable methodologies, such as innovation survey, interviews, case studies and mixed research. The following methodologies are presented with regard to their strong and weak points, to perform an objective evaluation and exemplification. Alongside methodologies, paper concentrates on the practices of innovation measurement, such as approaches taken by the OECD and EU assessments, presenting the possible angles that can be conceptualized during conceptualization and innovation measurement. The article ends with the presentation of the concept of Management of Innovation, that is a growing paradigm that emphasizes the ability of an actor to innovate rather than its development outcomes. Following the line of presented methodologies, approaches and considerations, conclusions outline that innovation is becoming more and more a social phenomenon, rather than a purely technical one. That presents an opportunity to build practices of including innovation into the semiotic and economic dialogue of national and supranational bodies, and not limit the policy of innovation to regional or national strategies.*

**Key-words:** *innovation, innovation measurement, management of innovation, Cultural Political Economy, Europe 2020, strategy and policy*

### 1. Introduction

Economic realities (as a sum of total economic factors) are too complex and unstructured to be the subjects of analysis and measurement. In the process of reduction of complex nature of empirical phenomena, societies resorted to the usage of economic imaginary. As semiotic constructs of specific styles, genres, discourses, etc. economic imaginaries represent only particular elements of economic reality that are presented in a fixed individual, organizational and institutional manner (Jessop and Oosterlynck 2008). In

the modern economic, sociologic and technological fields, one of the most prominent imaginaries is the concept of innovation. From the early XXth century, since Schumpeter elaborated his statement regarding the essence of competition, delivering a model of innovation's occurrence/functioning mechanism was a continuous interest for the scientific community and policy-makers. In the academic environment, the concept had been notably discussed since works of Porter (1990), Granovetter (1985) and other scholars that conceptualized spatial and network reliance of the innovation phenomenon.

Establishing the link between the competitive advantage and innovativeness raised the necessity for practical understanding of the principles and components of innovation. Academia focused its efforts to comprehend the phenomena and begun to research the mechanisms of "wielding this force". Through the continuous process of variation, selection and retention of public dialogue (Jessop and Oosterlynck 2008), the topic gained the attention of entrepreneurs, public, private and co-operative research teams, as it promises the opportunity for development. However, the task was proven to be difficult, with various setbacks, including a lack of consent on the definition of innovation, path-dependent nature of the innovative phenomenon and multivariate character of the concepts involved. The debates are engulfing various characteristics, including the distinction of innovation decisions (e.g. what to consider a routine upgrade, incremental improvement or radical change, etc.), and, surely, the methods to assess these innovative variations (Kleinknecht and Bain 1993; Oslo Manual 2005).

Implementing new or improving existing products and/or production steps shows more potential for economic growth, than mere increasing capital investment and quantity of inputs (Rosenberg 2004). Thus, policy-makers submit to promoting and establishing innovation-friendly economic environments. Supranational institutions, such as Organization of Economic Cooperation and Development (OECD) and European Union (EU), are engaged in practices of capitalizing innovation potentials, investing not only in the processes that ensure innovation but also in its consistent research and monitoring (Oslo Manual 2005). European Union has stated a focal interest in the concept of development and improvement, addressed through the "Europe 2020 A strategy for smart, sustainable and inclusive growth" and had done multiple empirical steps to fulfil it. As a result, EU shows commitment to the idea of innovation by financing and promoting the innovative discourse through Horizon 2020, Erasmus plus or Interreg Programmes.

Economic performers of micro and macro levels can notably increase their developmental capacities thorough accepting the innovative paradigm.

Economic reality, in truth, requires companies and regions to be innovative, in their quest for better performance and higher profit. However, the practice of Japan, Korea and other regions (e.g. Porter 1990; Sohn and Kenney 2007) shows that the models and principles of innovation can, and should be, improved not only naturally (through economic competition) but also through public and private efforts. As an example, the discourse promoted by EU in the area of Knowledge-Based Economy (Europe 2020, 2010; Jessop 2008) places innovation as a key factor for development. This is why, description, understanding and explanation of an economic imaginary (that can be (re)developed through the ways of measuring it) has an important role in establishing and anchoring semiotic concepts into the attitudinal and behavioural patterns on individual, organizational, institutional, including regional, national and supranational levels.

Elaborating a successful economic imaginary is the best way to achieve a successful action and reaction for the intended purposes (Jessop 2008; Jessop and Oosterlynck 2008). For these imaginaries to grow and routinize they shall be promoted on different levels and become a basic dialogue not only for institutional visions but also to be retained as self-evident necessity on social levels (Makarovič et al. 2014). That implies that understanding and measuring innovation can influence an enterprise's innovative performance (Edison et al. 2013; Saunila 2016). Considered a no-cost or low-cost effort, measuring and monitoring offers the potential for establishing a model of innovative process (Erkens et al. 2013). Performed alongside other fundamental business measurements, it is a notably good experience for enterprises (Saunila 2017). Having a system to quantify innovation helps supervise the activity leading to value creation, and further establish a company's strategy or routine/culture of innovation. Moreover, it assists management with decision-making and support activities, helping identify the developmental attributes (Edison et al. 2013; Saunila 2016, 2017).

In the context of regional and national levels, analysing the innovative characteristics is of utmost interest for the administrative bodies, political actors and other policy-influencing stakeholders. Moreover, National (and Regional) Innovation Systems (Jessop 2008) are common economic imaginary among OECD and EU members. Eurostat and OECD bodies measure innovative performance annually, establishing continuous comparative monitoring (Oslo Manual 2005). Regional Innovation Scoreboard would resemble a notable effort of having a friendly and open display of innovation across the EU. Regardless of the complications to have different national economic priorities, contextual differences and strategic visions, that would jeopardize the validity of any singular tools for innovation assessment

(Makarovič et al. 2014), Regional Innovation Scoreboard is considered relatively adequate for monitoring innovative performance for comparative purposes. These practices are performed to promote and correspondingly adjust the innovative policies, and serves as continuous revision and variation of innovation dialogue, leading to its practical (re)selection and continuous (re)integration in the strategic visions. For the theories emphasizing that innovations are achieved through actor-interactions, networking and supportive inputs from environment (e.g. Porter 1990; Cook 1992), macro-economic indicators of innovativeness are opening new perspectives for the applicability and analysis of data.

As theories on innovation, in the fields of economy, sociology, regional development and technological engineering indicate, innovation occurs on various levels and most often requires diverse conditions. The multitude of theories and perspectives had presented various definitions and expectations for innovation. Multidisciplinary research, meant to settle the confusion, unveiled only parts of the whole picture, and in many cases, opened new questions. The difference in approaches limits the understanding of field-level processes and factors of innovation. Thus, measuring innovation and establishing a universal practice or method, to include all types of actors, industries, innovations, processes, etc. is extremely complicated (Kleinknecht and Bain 1993; Oslo Manual 2005). Regardless of the effort done, innovation still presents uncertainties. Attempts to capture innovation as a universal and very broad concept fail, often because of unsettled theoretical disputes, differences among theoretical and policy paradigms (Jessop 2008) or general limitation of the used methods. These missteps and obstacles are influencing gravely not only the academic success, in comprehending innovation, but also the practical implementation of public policies and most importantly the ability to formulate clear strategies and goals for national or supranational bodies.

Being a core economic imaginary for OECD and EU, the research on increasing innovative competences (through adequate assessment) in companies and regions will probably continue. That places special attention on the ways that innovation is measured, and what these practices can disclose about a better, more accurate conceptualization. Acknowledging the importance of innovation and the necessity to properly assess it, the paper aims to describe some of the best-known practices of innovation measurement and to deliberate on them, presenting several alternatives and their limitations. Such an exercise can help improve the actual understanding of the concept and visualize the evolution of variation, selection and retention mechanisms that innovation had been subjected to. And finally, it will present

an interesting material for the engaged stakeholders in the public and private areas since the performed methodological review covers potential for research, policy and management practices. Thus, the paper is structured into five chapters, beginning with the introduction. The second part presents the knowing methodologies and the associated concepts, within a timely presentation of the practices of innovation measurement and brief deliberations about the specifications of these techniques. The third chapter is a presentation of measurement approaches, necessary for the adequate estimation of innovation, with some examples of measurements. Finally, paper covers the topic of management of innovation, followed by conclusions and discussions on the evolution of the measurements and potential for public policy.

## **2. Proposed Methods to Measure Innovation**

Innovation is a complex concept and one that is hard to define. For example, it can be seen as either an idea (Bell 2005), a process (e.g. Guan and Chen 2010; Bloch 2007, McAdam and Keogh 2004) or defined as plain novelty (e.g. Oslo Manual 2005; Edison et al. 2013; Kleinknecht and Bain 1993). Moreover, it is considered a non-linear and sometimes random process that occurs at a path-dependent alignment of factors (Sanila 2017; Eddison et al. 2013; Erkens et al. 2013; Bloch 2007). The combination of these realities affects the quality of data, in the matter that it cannot be perfectly accessible, valid, reliable and transparent at the same time (Roncevic et al. 2017), which impede an accurate and unbiased assessment of innovation. But it does not imply that attempts lack a relative success.

The first endeavour to measure innovation was the tracking of patents and other related intellectual property (IP), such as trademarks, labels, trade journals etc. (Nelson et al. 2014; Kleinknecht and Bain 1993; Oslo Manual 2005). Patent-tracking is one of the most classical measurements of innovation because it can be seen as it's legal formalization. However, such an attempt holds several limitations. The risks are associated with the inability to cover all the occurred innovations since not all of the newly implemented changes are registered via a patent, trademark, or other IPs. The decision of patenting can be influenced by several factors like innovation's actual commercial usage, strategic value and firm's logistical need to patent, the status of innovation, industry-specific characteristics, etc. (Nelson et al. 2014; Kleinknecht and Bain 1993; Edison et al. 2013). These factors are responsible for the occurring errors in the measurement and can show a distorted picture in comparative perspectives. Nonetheless, patent tracking is still considered

a valid method to quantify innovative performance, if used properly. There are several international organization that collect data about patents and other intellectual property rights issues, such as the World Intellectual Property Organization (WIPO)<sup>1</sup>. They have an open database allowing searches for registered patents trademarks, industrial designs, etc. based on their main field of application and country of origin. Another example can be “Derwent Innovation (Patent) Index”<sup>2</sup>, that is a database consisting of descriptions of inventions and patents since 1963. It resembles a conglomerate of patents from more than 50 patent-issuing authorities in the world and includes a brief description of the patent as well as indications of its patent family.

In the 1970s and 1980s, the effort to capture innovation engulfed more techniques. Aside from patent-searching, methods included tracking innovation in the historical relevant literature, expert consulting, postal-survey etc. (Kleinknecht and Bain 1993). The last one showed significant results and grew momentum in various researches. From the 1990s, it is the main method of innovation measurement used by OECD.

Innovation Survey had become a common practice for quantifying novelty and originality in enterprises. Annually, organisations like Eurostat and OECD make available innovation-survey data. One of the most well-known, “Community Innovation Survey”<sup>3</sup> (CIS), captures nationally aggregated data from different countries and measures different types of innovation and innovative activities. The questionnaire used by CIS is influenced by the OECD indications, written in the Oslo Manual (Kleinknecht and Bain 1993, Oslo Manual 2005). Manual covers the best-known practices of measuring innovation, meanwhile deliberating on factors jeopardizing the accuracy of results. Although surveys resemble a reliable methodology to capture innovation in companies and regional or national levels, they are limited to survey-related types of errors (Kleinknecht and Bain 1993). Such issues feature the low response rate, non-respondents’ profiles, enterprise population, questionnaire length, etc. (Oslo Manual 2005). Even if it is considered one of the most consistent measurements, CIS and Oslo Manual had been widely criticised, because of the insufficient attention to non-

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<sup>1</sup> World Intellectual Property Organization

<https://www.wipo.int/portal/en/index.html>. Accessed April 4, 2019.

<sup>2</sup> Derwent World Innovation Index

<https://clarivate.libguides.com/webofscienceplatform/dii>. Accessed April 4, 2019.

<sup>3</sup> Eurostat. CIS survey <https://ec.europa.eu/eurostat/web/microdata/community-innovation-survey>. Accessed April 4, 2019.



product or process innovations, innovations in services, management of innovation processes etc. (Bloch 2007; Damanpour 2014; Kleinknecht and Bain 1993). Nonetheless, surveys, especially CIS and OECD-related data, are suitable for the international comparison or even change-tracking. Its importance for innovation research should not be underestimated.

An important and valuable input for innovation understanding is perpetuated by the qualitative methods, usually case studies (e.g. Cooke 1992; Sohn and Kenney 2007). The most important aspect of case studies is the ability to formulate detailed conceptualization and observe the issues hidden from the survey perspectives. Many theories on innovation and examples that were suggesting these theories had been captured via observations and interviews. Nonetheless, being able to highlight the most important elements of macro and micro-level innovations for specific actors, case studies cannot formulate generalizations (Oslo Manual 2005). As opposed to survey's capabilities, to standardize the approach, qualitative methods are case-specific and were unable to satisfy all the public-policy decision-makers' needs. However, the inputs of case studies (firm and macro-level) are usually influencing the survey questionnaires and approaches, indicating that those can be used complementarily.

Acknowledging that nor qualitative nor quantitative methods are enough to properly answer all questions on innovation, researchers incorporate both methodological paradigms in their analysis. Such practices are usually done separately, with part of the data presented as survey databases or collected secondary data and another part being composed of contextual information and explanations for an accurate understanding of the trends. Combination of qualitative and quantitative information lead to opportunities of methodological focus in the field of mixed researches (e.g. Roncevic and Modic 2011; Roncevic et al. 2018; Cepoi 2018). One example of such methods consists of performing focus-groups and semi-structured interviews within regions, including respondents from academic, administrative and entrepreneurial sectors (Cepoi 2018). During the focus-group interviews, respondents are asked to agree upon a score (that describes a certain innovative characteristic or associated variable in their region), and deliberate it, so that the answer resembles a joint opinion of regional stakeholders. This approach allows for the collection of both qualitative data and quantitative estimates of innovativeness in regions or other macro-level units. This practice is especially useful for the assessment of socio-cultural factors, that usually are interconnected and multidimensional (Adam et al. 2005; Roncevic et al. 2017). Obtained scores can be used to perform a Qualitative Comparative Analysis (QCA), and QCA Fuzzy-set, or even a

statistical “number crunching”, if there are enough cases. The strength of such an approach lies in the ability to concentrate the expertise of various stakeholders, permitting a wider view on the innovation, and establishing a unique score that will resemble a more precise reckoning. However, it is not the best alternative to consider innovation on lower (micro-) levels, since surveys and direct interviews with firm representatives can achieve more accurate results. In its turn, the mixt methodology is also exposed to jeopardizing factors, such as respondents’ inaccurate attitude or assumption errors. To mediate these factors, it might be useful to increase the numbers of focus groups in the same region, however, researchers admit that in practice, involving more stakeholders can resemble complications (Cepoi 2018). On the other hand, the field of mixed research is an adequate tool for confirmatory purposes (Roncevic et al. 2018) and has very limited explanatory potential, as it is mostly a tool for theory-testing rather than inductive analysis.

Innovation measurement methodologies usually come with certain types of errors (Oslo Manual 2005). In other words, surveys and interviews come with the risk of misinterpretation of concepts and are affected by the respondent’s subjective judgement (Oslo Manual 2005; Kleinknecht and Bain 1993). On the other hand, patent-tracking is known to have limited results and sometimes to produce false-positives or false-negatives (Nelson et al. 2014). Thus, speciality literature suggests a mixed approach to cover for different factors (Rocha 2004; Guan and Chen 2010). The usefulness of any methodologies is primordially related to the research question so that it is up to the objective of the measurement to determine the most appropriate technique.

### **3. Innovation Measurement Approaches**

When performing an investigation of any concept, there are usually several logical considerations and ways to address the issue. For example, the quality of any public policy will be assessed through the efficiency it dealt with the issue at hand and the time-cost-benefit ratio. A similar context is for innovation. Analysing scientific literature on the performed measurements, one might encounter the three main ways that innovation can be addressed. These are not mutually exclusive and can be integrated into the same methodological design. Approaches vary on the borders of conceptualization, quantification and interpretation of the unit of analysis, the interest in different stages of the innovative process, and the necessity to consider the

types of innovations. These are not separate self-sufficient methodologies to analyse innovation but are components parts of such a methodology.

### **3.1. The Subject-Object Approach**

The distinction between subject and object approaches (Oslo Manual 2005) refers to the attitude of treating enterprises (or other actors) and innovations as distinct units of analysis. In the Oslo Manual, those are presented from the enterprises' point of view. Thus, the subject approach refers to the innovative behaviour and practices of the company, as an analysed unit. The main goal is to explore the phenomenon of innovation from the perspective of the innovative actor, its strategies, activities, incentives, obstacles, aims and finally the effects and outcomes of innovation. Object approach is the collection of evidence about a specific innovation, involving all available qualitative and quantitative data, that usually includes information about the mother-enterprise. That description implies two conclusions. If the unit is the company, then measurement reflects its characteristics regarding innovative performance. That makes enterprises the subject of the research and innovation its object. If the unit is a certain innovation, then the company is treated as an object and researched as a tool for value creation. Although both approaches can collect similar information, the reasons differ, so would the conclusions of the analysis.

Regardless of the chosen unit, researchers can consider methods that engage or exclude it from the data collection. It refers to the need to involve and ask, for example, companies, about their innovative performance, or performing data collection without speaking to them. The first approach considers that actors have an educated understanding and assessment of the process and phenomenon of innovation. Such an approach is common for interviews and surveys (e.g. Oslo Manual 2005 and CIS; Kleinknecht and Bain 1993; Cepoi 2018). On the other hand, for patent-tracking or desktop research to assess companies' economic outcomes, the involvement of enterprises is not required, (e.g. some of the measurements of Yordanova and Blagoev 2016) since those data can be collected or are available through other various sources. Both practices are good countermeasures for certain types of measurement errors, however, they are not flawless themselves and shall be addressed as research questions demand it.

### **3.2. Types of Innovations**

Oslo Manual (2005) covers another approach, regarding innovation measurement, and it is focused on differentiating between various type of possible innovations. The Oslo Manual defines four main classifications:

Product, Process<sup>4</sup>, Organizational and Marketing Innovations. Delimiting those types of innovation had raised several questions (e.g. Manoochery 2010; Arundel and Huber 2013; Saulina 2016, 2017; Kleinknecht and Bain 1993; Dombrowski et al. 2013; Damanpour 2014). Most importantly, categorisation added new necessity for definitions, since it multiplied one undefined concept into four. The interpretation of these innovation types focuses on the element of novelty in product, production, management and marketing spheres. According to Oslo Manual (2005), the innovation, for each type, was seen as the integration of new procedures, practices, characteristics, etc. to the company's already existing experience. In other words, it counted as innovation any change that was performed for the first time by a company. In such a context, the definitions of innovative and non-innovative performances have a high risk to overlap. This is why Oslo Manual addresses the issue with caution and includes a set of distinctive characteristics, offering examples of non-innovations, for each innovation types. According to the Oslo Manual (2005):

**“Product Innovations exclude the following:**

- *Minor changes and improvements;*
- *Routine upgrades;*
- *Regular seasonal changes (e.g. clothing lines);*
- *Customisation for a single client that does not include significant different attributes compared to products made for other clients;*
- *The simple resale of new goods and services purchased from other enterprises.” (pp. 149-150).*

**“Process Innovations exclude the following:**

- *Minor changes or improvements.*
- *An increase in production or service capabilities through the addition of manufacturing or logistical systems which are very similar to those already in use.” (pp.151)*

**“Organisational Innovation excludes the following:**

- *Changes in business practices, workplace organisation or external relations that are based on organisational methods already in use in the firm*

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<sup>4</sup> Refers to production processes, not innovation process.

- *Changes in management strategy, unless accompanied by the introduction of a new organisational method*
- *Mergers with, and the acquisition of other firms” (pp. 153)*

**“Marketing innovations exclude the following:**

- *Mergers with, and the acquisition of other firms promotion or pricing that is based on marketing methods that have previously been used by the enterprise.*
- *Seasonal, regular and other routine changes in marketing instruments*
- *The use of already applied marketing methods to target a new geographical market or a new market segment (e.g. socio-demographic group of clients).” (pp. 152)*

The classification of innovation meant to deal with the banality of measurement and conceptualisation. However, it did not solve the problem entirely, since organisational and marketing innovations still suffer from a missing measurement system, and are mainly treated as dichotomous variables (Oslo Manual 2005; Saulina 2016, 2017; Kleinknecht and Bain 1993; Dombrowski et al. 2013; Damanpour 2014; Adams et al. 2006). Oslo Manual and CIS assess those via three questions: implementation of new incremental or radical changes to current business practices; application of new methods of work-organization and responsibilities; and establishment of new methods for managing new external relationships (Damanpour 2014). Even if some types of innovations are lacking consequent and quantitative measurements, dividing the concept into for types was an important first step, so that the focalisation of research and practices can be more concrete and accurate.

### **3.3. Evaluation of Innovative Steps**

Regardless the unit of analysis and type of innovation, the conceptualisation of processes and quantification of data usually comes down to input, output, process or outcome measurements (Saunila 2017; Erkens et al. 2013). These are the integrative parts of innovation phenomenon, and a standard logical-chain of any process. As factors of innovation measurements, this approach encompasses the pre-innovation framework, the “black box” of the innovation process and ends in the resulting outcomes.

Inputs are usually understood as resources and tools, available and invested, in the innovation procedure (Saunila 2017; Erkens et al. 2013). Those can be material or immaterial and are dependent on the nature of innovation. Usually, input measurement includes human resources, financial

investment, available capital, available equipment, and ideas (Saunila 2017). In practice one of the most prominent ways to measure inputs is to consider R&D investment (Kleinknecht and Bain 1993; Oslo Manual 2005). However, not all the industries practice R&D, and even in those that do, small and medium-sized companies (SME's) lack resources and capabilities for continuous research activities (Saunila 2016; Edison et al. 2013). Also, even in large industries, the innovation process is not limited to R&D, because there are multiple other ways to gain required improvements (Kleinknecht and Bain 1993; Oslo Manual 2005). Such practices include quantification and analysis of: the number of new ideas presented by employees and ideas developed by R&D department (but not yet implemented); the number of employees in R&D, including their expertise and innovative capabilities; technical acquisitions; knowledge and IP rights acquisitions (e.g. licences, patents); expenditure for trainings, or other innovation expenditure identified by respondents (Kleinknecht and Bain 1993; Oslo Manual 2005; Saunila 2017; Yordanova and Balgoev 2016; 2014 CIS survey<sup>5</sup>). Innovation input is an important topic to cover, however, innovation is a non-linear phenomenon (Saunila 2017), and invested resources are not guaranteed to achieve a developmental break-through (Edison et al. 2013)

Moving from input measurements, the next stage is the innovative process. Speciality literature indicates that innovation process consists of all the parts that transform inputs into outputs of the innovation (Saunila 2017, Erkens et al. 2013). Simplest method to quantify this procedure is to assess: time/speed of innovation; costs and quality analysis; the processes of internal communication, dispersion of ideas, contacts, etc. (Saunila 2017; Adams et al. 2006); as well as the error ratio and budget variance (Erkens et al. 2013). A more demanding approach is to measure: effort related to the concept development; the use of available tools and opportunities provided by the organisation; assessment of needs and missing tools (BearingPoint 2011), etc. 2014 CIS survey and third edition of Oslo Manual (2005) cover other innovative processes like co-creation and external communication activities. Their emphasis is on the R&D co-operations and co-creation activities with external organisations (Kleinknecht and Bain 1993), and the attention to the external links and communications, following open innovation practices (Vanhaverbeke and Brunswiker 2014). As McAdams and Keogh (2004) mentioned, innovation is a process without fixed stages. Thus, the

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<sup>5</sup> Eurostat. CIS survey

<https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>.

Accessed April 4, 2019.

conceptualisation of innovation process relies on both quantitative and qualitative measurements, to gain detailed insights on what caused innovation and how each factor had influenced the process. Due to the unpredictable nature of minor actions, sometimes, the persistence of a certain step or support factor can be crucial for innovation.

Third ones and the most frequently used, output and outcome, are preferable for most researchers or managers because of their ability to adequately capture the end-results (Saunila 2017; Erkens et al. 2013). The output resembles innovation as a general concept since it deals with the result of the innovative process. The outcome is a longer-term benefit that tracks market-oriented performance (Erkens et al. 2013), and can include frequently monitored indicators used by companies. Literature stipulates that output measurement can include the number of new ideas, patents, registration of trademarks, publications and other IP implementation and development (Erkens et al. 2013; 2014 CIS survey). In terms of product and process measurement it can be assessed by counting new or significantly upgraded products; acquisition and selling of patented/registered technological and strategic knowledge; implementation of new processes, organizational characteristics or marketing strategies; the revenue from innovations selling; share of profit provided by the implementation of innovation; market success; customer satisfaction; etc. (2014 CIS survey; Oslo Manual 2005; Saunila 2017; BearingPoint 2011; Yordanova and Blagoev 2016).

The outcome measurements are different than input, process and output, by the fact that usually incorporate a comparison of two or more variables. It resembles the case of cost-benefit analysis and contrast variables against each other. The idea is to perform a critic relationship between inputs and outputs. Examples of outcome measurements can be the rate of sales, profit and number of customers related to the innovated goods/service against the success of the old ones; costs/efforts of implementation against the used resources in the process of concept development; rate of investment return from innovation-spent capital; market-share growth rate; feedback from customers; etc. (BearingPoint 2011). One may consider that outcome can resemble the comparison between the real efforts and the expectations, or the speed against schedule and/or the total duration of the project (Adams et al. 2006). Outcome measurement counts both qualitative and quantitative metric systems, including assessment of market benefits and those associated with other areas. It is reasonable to assume that innovation might be positively influencing company or region's reputation, network relationships, etc. so that outcome measurement can be expanded to a larger area, not only market profit.

The indicators listed above are not the only possible alternatives to quantify innovative performance. Moreover, many of them can be used to measure different steps of innovation activity. For example, acquisition of foreign intellectual property can indicate an input for innovation, a step in the process of innovation as well as an innovation output. Such an example illustrates that measurement shall be contextualized and calibrated according to the needs of the research/management/policy (BearingPoint 2011; McAdam and Keogh 2004; Saunila 2016). McAdam and Keogh (2004) suggest that any innovation measurement, performed by a firm, shall be in line with the company's strategy and even be influenced by it. The purpose of each measurement shall be made explicit and be supported by comprehensive data-collection methods. Also, they stipulate that the definition and metrics shall be selected by all involved stakeholders and perform a degree of flexibility with organizational and environmental dynamics. In many ways, these suggestions are applicable also to macro-level innovators and can present opportunities for policy improvement.

#### **4. Management of Innovation**

Among the virtues that methods of innovation measurement have, there are also limitations for each quantification or evaluation procedure. R&D activities are criticised to limit the respondent base, by being available for the companies that can pass a certain financial and organizational barrier to support a separate department's work. Revenue and financial metrics are seen as more related to company success rather than innovativeness, lacking knowledge about the transparency of innovative processes. Patents are hard to track and are subjects to definition errors. Surveys measurement are widely counting inputs and outputs factors that are related to innovation only indirectly, and many other factors that resemble limitations for the accurate innovation measurement (Edison et al. 2013; Saunila 2017; Oslo Manual 2005). All these limitations were a basic factor to grow new interest in alternative conceptualisation or quantification tools.

The continuous mechanism of variation, selection and retention of innovative imaginary had shifted again, but never deviated from the importance of innovation as a key semiotic for development. In that context, speciality literature had grown interested in the concept of management of innovation. This new semiotic interpretation is probably the first step of acknowledging a new innovative paradigm which considers that quantification of innovative factors and processes are not utterly capable to deliver enough and sufficiently accurate data about the exact innovative



performance. Thus, some academic views focused on the ability of a company to achieve innovations continuously. That was addressed as innovation capability (Edison et al. 2013; Saunila 2016), innovation leadership (Yordanova and Blagoev 2016), or an internal organization of innovation (Vanhaverbeke and Brunswiker 2014).

Since inputs do not grant same innovation outputs in all the observed cases (Edison et al. 2013), researchers were interested in the factors that can predict the innovativeness and successful problem solving (Edison et al. 2013; Saunila 2016). The concept of innovation capability had been described as the combination/assessment of innovation inputs, positive influencing factors, availability and process synchronization (Edison et al. 2013). In other words, it is the analysis of determinants affecting enterprises' ability to perform innovations permanently (Saunila 2016). One can see that management innovation literature is preoccupied not by the outcomes of innovation but factors leading to it, and foster the idea of measurement and conservation of these elements. It mainly describes the process that can affect the probability of an enterprise to perform assimilation and integration of original new ideas into the old processes of production and organisation.

Company level innovation management is not related and affected only by the innovative inputs and outputs, but it combines them with routinisation and employee culture of delivering new innovative solutions. Bloch (2007) listed potential activities that can foster the developmental capacity of innovative actors, both atomized enterprises and Innovative Systems. Those are supposed to induce a pattern of behaviour and thinking, that can ensure a complex innovative atmosphere, or also mentioned as innovative routine (Saunila 2017) or innovative culture of enterprises (Edison et al. 2013). Firm-level actions referred to R&D efforts, network building and feedback gathering, development of new markets and competence building in the labour force. From the perspective of innovative systems, Bloch (2007) mentioned the necessity for support organisations, institutional management (regulations, laws), financial and administrative institution's integrity, growth of international competition and openness.

Regular outcome and output measurements can also help develop an innovative culture, by polishing the enterprise's innovation management and strategy (Edison et al. 2013). Periodic assessment of innovation performance helps establish links between actions and results, thus highlighting the inner-firm requirements for innovation. In this case, it is advised to consider a bottom-up strategy, that is resembling a day-to-day employee behaviour analysis (Edison et al. 2013). To be successful, such an approach shall focus on the most rewarding accomplishments and factors that made them possible

(Saunila 2017). The problem to measure these success-determinants is their complexity and contextual character. That leads to the limited ability of conceptualisation, and usually, such concepts are captured via dichotomous variables, that are restraining analytical processes and offer substantial but very case-specific conclusions (Damanpour 2014).

Brunswick and Vanhaverbeke (2014) proposed a model to measure innovation strategy processes, based on a list of seven binary variables. Those are: the ability of innovative actions to follow innovation strategy of the firm; ability to select clear targets for these strategies; strategies' capacity to affect each innovative project with individual manner; the degree of impact of strategic plans on the management visions; and the ability of innovation strategy to provide the basis for business growth and further innovativeness. Dombrowski et al. (2013) would add that whatever the indicators, they shall be able to transpose to different levels of hierarchical management and remain unchanged while capturing performance with the same accuracy. Also, the measurements have to ensure continuity and allow visualisation, so that the system of measurements can have its desired effect of enhancing innovative routine.

Many scholars indicated about the positive outcomes, by capturing attributes related to problem-solving and delivering of original ideas (Edison et al. 2013; Saunila 2016, 2017). Implementing such a system allows companies to comprehend the necessities and activities of their innovative performance. The same conclusion applies to academic and scientific efforts. Continuous and consistent measurement would only benefit the researchers to deal with the issue of uncertainty and inaccuracy. In this context, it is appropriate to say that one is not capable to master innovation if incapacitated to measure it (Erkens et al. 2013).

## **5. Conclusions and Discussions**

Assessing innovative performance is a complicated task that struggles with the obstacles of an ambiguous definition of innovation, missing adequate performance measurement tools, and interpretation guidelines (Edison et al. 2013). Despite the crucial importance that innovation measurement has for the managerial and policy frames, it still resembles issues and lacks a concrete procedure. Academic society still does not have any universal methodological tool to capture innovation in a concrete and utterly unbiased way, engulfing all the possible and contextual matters. Presented examples of innovation measurement, either of product, process, management, marketing, input, output or outcome have limitations. Some may not be equivalently linked to

the innovativeness as are related to the measurement of firm success, others are insufficient and firm-specific measurements that highly covariate with innovative actors' behaviour and beliefs. All the efforts made to quantify and express innovativeness had shown that it is not a simple variable to master. The process of deliberation on innovation data-collection and analysis, also the uncertainties related to innovation, had pushed the adoption of a different approach. It reflected in a new economic imaginary, stipulating actor's aptitude to innovate continuously, rather than performing the assessment of their ad-hoc success. Innovative capability, the concept attributed to that, still lacks a clear measurement strategy. However, it encourages innovative actors to perform periodic analyses of the processes and factors of innovation (Saunila 2016, 2017; Edison et al. 2013). This methodological model is still at its developmental stage and is an exercise to determine the most influential variables for the innovation process in enterprises, considering them as unique, atomized units (Yordanova and Blagoev 2016; Dombrowski et al. 2013).

Nonetheless, the effort so far had not been in vain. Many successful attempts, in both qualitative and quantitative research, had shown that certain aspects of the innovation can be generalized and enhanced. IPR tracking is still a very good way to consider the technical and legal aspects of innovations. Surveys are widely used for comparison and policy-adjustment. Also, research on innovation (e.g. case studies or mix methods) had unveiled multiple side-variables, linked to innovation (directly or indirectly) that are used today for performance monitoring, like Regional Innovation Scoreboard. Such practices show that despite the obstacles and issues, interest in innovation is still vivid and that finding an adequate assessment method is still actual. This also reinforces continuously the dialogue of innovation, performing a continuous revision and variance of the innovation economic imaginary.

In a timely perspective, innovation assessment had shown an interesting bipolarity, becoming more disintegrated from purely technological and economic aspects to more socio-cultural priorities, elaborated to comprehend it. Such changes are being correlated with the theoretical conceptualizations of innovation paradigms. In the early '90s, the idea of innovation had spread from the individual performer to the group/community-driven models (e.g. Porter 1990; Cooke 1992; Cepoi 2018, etc.). These theories had embraced the idea that innovation can be achieved through socialization and collaboration, emphasizing the importance of knowledge exchange, spill-overs and similar practices of transfer of skill and information. That lead to the idea of innovation in groups - presented as regional/national innovations systems

(Cooke 1992, Jessop 2008) or Social Fields Theory (Cepoi 2018; Rončević and Modic 2011; Modic and Roncevic 2018). These practices had greatly influenced policy agendas, since EU and OECD eagerly embraced the concepts, and through them readjusted their methodologies of innovation assessment (e.g. Oslo Manual 2005). Nowadays Europe 2020 strategy (2010) has embraced these visions and placed innovation at its core strategic vision of Knowledge-Based Economy. Example of Innovation Community Survey shows that the respondents are asked about their developmental performance, and alongside it, the ways they collaborate or achieve these innovations. The change in paradigm had caused a change in approach. Thus, the innovation is not seen as technical performance, as in patent tracking, but enterprises had been presented as experts of their innovation progress. Understanding innovation as contextual phenomena relates it to the attitude of the actors of innovation (Oslo Manual 2005). It includes a comparative judgement between old and new ways and engulfs changes that are completely or significantly new to a firm. In other words, innovation resembles everything that is used for the first time by a certain performer. Circumstantial definition leads to its subjective conceptualisation. It implies that the opinion of performers of innovation is the judgement-barrier, to attribute the status of the innovative or no-innovative result. Such an approach shares a resemblance with the assessment of cultural and social values. Although it might not be as volatile, innovation still can be seen as a cultural phenomenon (e.g. Cepoi 2018; Saunila 2016, 2017; Edison et al. 2013, Yordanova and Blagoev 2016). Such an example shows how the variation, selection and retention mechanism (Jessop and Oosterlynck 2008) had worked in the case of innovation. Although the concept (economic imaginary) stayed the same, its understanding, reflected through the methods and paradigms of its assessment, changed significantly. And, alongside them, there were different policies, actions and reactions intended to measure and manage innovation.

One important conclusion to draw from this, is that innovation seems to fit the description of what Jessop (2008) was addressing as “transdiscursive term” (quoted from Miettinen (2002)). Jessop (2008) attributes the term to the imaginary of National System of Innovation, however, the innovative discourse also seems to fit the description. In this regard, innovation as semiotic construct is capable to exist among and interconnect multiple social dialogues, including technical, economic, social and even cultural frames, and be successfully attached to real elements of this fields. This gives innovation the capacity to mobilize and support dialogues presented by various social strata under a common goal. And finally, innovation is constantly at the basis

of creating new socio-cultural dialogues, including the Knowledge Society vision of Europe 2020. By considering these elements, it is not hard to realize why innovation is a such a strong semiotic imaginary with capacity to be the century's economic "flag-imaginary". Reinforced by the changes in the way innovation is being envisioned, the constant shifts towards idea that it is a socio-cultural phenomenon, adequate measurement of innovation remains a crucial necessity.

However, despite its value for cultural political economy, it is hard to say that innovation, as an economic imaginary, was promoted perfectly at EU level (Makarovic et al. 2014). General strategy of Europe 2020, elaborated at Lisbon is now considered a failure, because of its incompetence in the fields of retaining and reinforcing relevant dialogues and their routinization at multiple social and institutional levels (Makarovic et al. 2014). EU is promoting innovation, co-creation and collaboration through financed projects, but it can also do more in terms of micro-, meso- and macro-political dialogue. Presenting innovation as an issue of soft power, in terms of "we can learn from each other, to become better together" can give EU a perspective for capitalizing on innovation as a cultural value and distinctive portrayal of the Union. On the other hand, there is also a possibility to integrate the political discourse from the paradigm of Management of Innovation. Mastering the mechanism of variation, selection, retention, reinforcement and selective recruitment (Jessop and Oosterlynck 2008: 1159), EU could transpose the Management of Innovation as economic imaginary for regional and enterprise-level strategies. That can achieve a prominent impact on economic performance, if players in economic game would be self-aware of their requirement to innovate. By already being at the core of EU economic strategies, promoting innovation through soft-power discourses can resemble a good practice and help develop common visions. As time is moving towards 2020, and Union will face the need to consider its long-term strategies very soon, the dialogue on a common interest, like innovation, can help reduce the uncertainty and the accumulated anxiety from EU's identity crisis.

Despite multiple attempts to capture innovation and understand it (e.g. Oslo Manual 2005), an accurate answer is still missing. The fact that regions, nations and even bodies like OECD and EU are basing strategies and policies on the fragments of knowledge that they have about innovation is pressuring the issue. It is no longer, and probably never truly were, only an academic interest. More research is required and new attempts shall be made to settle the disputes and establish the importance of environmental factors that induce to innovative performance.

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## RESHAPING THE DANUBE REGION IMAGINARY: A FOCUS ON DIGITAL TRANSFORMATION AND HPC

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**Abstract:** *In 2010, the European Commission launched Europe 2020 Strategy in response to the economic crisis and boost the EU's economy. Later the same year, the EC proposes the European Union Strategy for Danube Region. The Danube Region being so diverse, it is important to understand it not only from the legal or administrative boundaries, but also to grasp the historical and cultural diversity. Consequently, in order not to neglect these primordial factors, this article addresses the Danube Region as a political and economic imaginary through the lenses of Cultural Political Economy, that focuses on the complexity of the reality. Following this line of argument, the aim is to understand the economic reshape of the Danube Region and the consequences of the European Union Strategy for Danube Region.*

**Key-words:** *Cultural Political Economy, Europe 2020, Danube Region, digital transformation, high-performance computing*

### 1. Introduction

Being part of a complex and changing environment, determines any region to have adaptive capabilities and rely on dynamism investment in order to survive. Additionally, it is important to mention that regions are not alike, thus there is a difference in “quality” or “efficiency” of the regional systems. Even more, these differences lead to different outcomes of development, though the inputs sometimes are identical in quantitative and qualitative terms.

In the end of 2010, the European Commission elaborates the *European Union Strategy for Danube Region* (European Commission 2010a). The strategy comes as a response to address the challenges of the economic crisis by reinforcing the efforts to overcome it in a sustainable approach. Thus, the Strategy has the main aim to provide continuous framework policy integration and coherent development of the Danube Region, from the core of economic developed (Germany – Baden - Württemberg and Bavaria) to the

peripheral region (Moldova and Ukraine). As Besednjak Valić highlights (2019), the Danube Region is a very sensitive group of countries, since it comprises both EU and non-EU member states. Additionally, the group is not heterogenous, because there are most developed regions from Germany and underdeveloped regions from Moldova and Ukraine. Nonetheless, to having different development trajectories, it is adding up to these differences their dissimilarities in culture and economy, which affects the innovation system. This aspect is important, because as Rončević and Makarović (2011a) show, the socio-cultural field represents an essential element of the environment, because it limits the options of strategic actors. Following this line of argument, the re-industrialization of the Danube Region is important, because it has an impact on the economic development of the countries of the Danube (Besednjak Valić 2019, 44). As the author points, the digital transformation alongside the usage and applicability of high-performance computing is the path toward re-industrializing the region and helping to shorten the gap between innovation leaders and modest innovators. This argument is especially valid for the parts where the effects of the economic are still noticeable. Thus, by improving certain framework initiatives of the developmental performance of the Danube countries, the industrial base gives a solid starting point and offers possible success.

It is known that the most advanced HPC infrastructure and knowledge are located in well-off western parts of the Danube region. Meanwhile, enterprises from eastern part of the Danube Region have limited access and competencies. Even more, transnational cooperation in the region is limited, which is further hindering innovation and technology transfer (Coscodaru, Modic and Rončević 2019, 8). Thus, this aspect highlights one more time, the need of reshaping the economic reality, in order to redress the existing discrepancies between core and periphery regions. In the context of promotion of new economic initiatives, crises are comprehended as good opportunities to develop or reshape economic imaginaries, because any economic crisis affects the economic identity and performance. Additionally, it creates a cognitive and strategic disorientation and trigger proliferation in interpretations and proposed solutions (Jessop 2010). In the context of the new discourses at the EU level during the switch toward a knowledge-based economy, as Jessop (2004) points, this new type of economy can be regarded as a distinctive semiotic order. As a result, discourses and styles are (re-) articulated around, in this case, a new economic strategy. Nevertheless, it does need necessarily has to be a strategy, but it can also be perceived as a state project which affects diverse institutional orders and the lifeworld. Thus, knowledge-based economy is linked to notions or visions, like the

information economy, learning economy, creative economy and information society (Sum and Jessop 2015, 270). Nevertheless, as Sum and Jessop point, the official economic strategies (towns, cities and regions through national states and supranational bodies like the European Union) have advanced knowledge-based economy on the global level. Also, it made the knowledge-based economy central to future growth and increase the critical role in long-term competitive advantage and sustained prosperity for new and old industries and services. Even if economies in general can be seen as being knowledge economies, but not all are described and governed, let alone find themselves so labelled in different discourses. As Sum and Jessop (2013) highlight, the economic imaginary identifies, privileges and seeks to stabilize some economic activities from the totality of economic relations. As a result, these economic relations are transformed into objects of observation, calculation and governance (Sum and Jessop 2013, 16).

The Danube Region being so diverse, it is important to understand it not only from the legal or administrative boundaries, but also to grasp the historical and cultural diversity. The social, economic, and political differences in the period of transition can be explained by historical and cultural background (Adam, Makarovič, Rončević and Tomšič 2005, 16). Consequently, in order not to neglect these primordial factors, this article addresses the Danube Region as an economic and political imaginary through the lenses of Cultural Political Economy, that focuses on the complexity of the reality. Following this line of argument, the aim is to understand the economic reshape of the Danube Region, and the consequences of the European Union Strategy for Danube Region.

## **2. Cultural Political Economy**

The new complex realities concentrate on social, economic and political relations and identities (Paasi 2002). This statement is reinforced with the economic realities after the 2008 crisis, including in the EU. Thus, there was a need to reshape existing economic imaginaries. As Jessop and Oosterlynck point (2008), both history and institutional bodies matter in the perspective of the regional economic institutionalization. Economy through the lenses of Cultural Political Economy has both semiotic (discursive) and extra-semiotic (aspects). These two coexist and influence each other (Sum and Jessop 2013, 265). As a result, the Cultural Political Economy's role is to contribute in understanding of new regionalism (Makarovič, Šušterič and Rončević 2013). Thus, as Hughes, Sasse and Gordon (2003) point that the EU regional policy promotes institutional building, learning and policy-making

innovation at regional and local levels. Following this line of argument, incorporating Cultural Political Economy, it has three main distinctive features:

1. For CPE both history and institutions matter;
2. Culture has to be considered, because of its ability to shape the complex relations between meaning and practices. The economic and political conduct is a consequence of the intersubjective meaning;
3. CPE focuses on the co-evolution of semiotic and extra-semiotic processes and their impact on the constitution and dynamic of capitalist formations (Jessop and Oosterlynck 2008, 3).

Jessop (2010, 344) emphasizes that “imaginary” is a term for semiotic systems. These imaginaries frame individual experiences of the complex world. Thus, these shapes lived experience in a complex world. Additionally, these experiences consist of specific configuration of genres, discourses and styles. Even more, imagined economies are informally constituted and reproduced on many sites and scales, in different spatio-temporal contexts, and over various spatio-temporal horizons (Jessop 2010, 345). These extend through stable economic organizations, networks, and clusters to ‘macro-economic’ regimes. The new economic imaginaries, are not static, but rather develop as economic, political and intellectual forces. These forces can be political parties, think tanks, bodies such as the OECD or World Bank, business associations and trade union, and social movements.

Imaginaries are on their own, thus create a world where the space of possibility of imaginations and thought is present experience a different reality. As a result, this reality can differ from the real reality (Beckert 2011, 5). Nevertheless, in the complexity of the real world of the economic context, these imaginaries motivate actions in the real world, because at a certain stage something imaginary will turn in something existing at a later point in time (Beckert 2011, 11). Also, imaginaries have the property to adapt, but be vulnerable to contradictory experiences in the real world (Wilkinson 1970, 312). It is a dynamic process, where the order is created rather than inherited. At the same time, there must be a clear difference between the role of imaginaries and institutions. On one hand, imaginaries are semiotic systems, which have the role providing the foundation for the lived experience of the complex world. On the other hand, institutions embed the lived experience in broader social relations, and interpreting across various social spheres (Jessop and Oosterlynck 2008, 6). As stated earlier, crises are good opportunities to reshape an imaginary. As any other process, it needs certain

mechanisms through which it triggers the proliferation in interpretations and proposed solutions. CPE emphasizes the integration of three evolutionary mechanisms of variation, selection, and retention into semiotic analysis (Jessop 2010, 341):

- Variation – variation in discourses and practices, where these adapt to specific circumstances, new challenges or crises;
- Selection – of particular discourses as against other available ones, for interpreting events, legitimizing actions and representing social phenomena;
- Retention - of some resonant discourses and inclusion in an actor's habitus, integration into institutional rules, articulation into widely accepted accumulation strategies, state projects etc.

Additionally, Jessop also mentions about a fourth mechanism: reinforcement. It has the aim to also filter out contrary discourses and practices. Relying on discursive and material tools, appropriated genres, styles and strategies are strengthened. Furthermore, it allows to selectively eliminate inappropriate alternatives and to promote complementary discourses across society. As a result, these mechanisms influence the way a new imaginary is created and shaped through the frame of different discourses that actors chose. Thus, as Rončević and Makarovič (2011b) highlighted the role of the semiotic and extra-semiotic factors in strategy formation process through evolutionary mechanisms. The authors showed that the processes of societal steering are inherently social processes and attempted to develop analytical solution that would allow to fully acknowledge nature of these processes. Even more, the process is influenced by a variety of proximate and background social institution, which are also socially constructed and depend on respective social setting. At the same time, strategic steering is not only a simple technocratic process, but rather multi-layered and complex social processes (Makarovič and Rončević 2010). As a result, as the authors point, this implies the involvement of both - possibility of strategic steering of development and dealing with some of the key sociological questions. In this context, actors' actions are not only realisation of social trends, but also actors are autonomous in relation to operations of structure to certain extent.

### 3. Danube Region Strategy

Jessop mentions that in the case of successful economic imaginaries there are present constitutive forces in the social, political, institutional and material world, as for example the “knowledge society” (cited in Makarovič, Šušterič and Rončević 2013, 618). It has become such a powerful political and economic imaginary that it exerts influence in shaping policy paradigms, strategies, and policies in and across many different fields of social practice. At the same time, it is elemental to highlight that it does not exist at a national, let alone quasi- continental (e.g. European) level. It is represented at a local or regional level and in certain forms of cross- regional economic spaces (Sum and Jessop 2015, 261).

By “knowledge society” or knowledge-economy, we can understand it as both a strategy and a discourse (Cummings, Regeer, Haan, Zweekhorst and Bunders 2017). As the authors highlight, the discourses that are part of the knowledge society includes and topics relating to ICTs, intellectual property, science, economic development and discourses related to the network society. It can be stated the embracement of a new imaginary regarding the European knowledge economy started with the appearance of a new hegemonic strategy – New Lisbon (Robertson 2007). This strategy can be seen a continuation of the final Communication by the EC tabled in 2003 The Role of the Universities in the Europe of Knowledge (TRUEK). Even more, the concepts such as ‘innovation’, ‘knowledge’ and ‘education’ shifted their meanings from the Lisbon 2000<sup>1</sup> and the TRUEK discourse. As Robertson emphasizes (2007, 7) the focus on innovation (particular areas as digital technologies, biotechnology and the environment) can be regarded as a mean to become a knowledge society. Additionally, it shifted from economies as socially embedded to focusing on human capital. For “knowledge”, the new discourse highlights its role as research and development to produce value in the marketplace. Additionally, in 2010 the European Commission (2010b) has launched Europe 2020 Strategy in response to the economic crisis and boost

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<sup>1</sup> Robertson emphasizes (2005, 5) that: *“the main strategic orientations of Lisbon 2000 were to combine supply side economics with macro-economic and social concerns; to develop information technologies, R&D policy for institutions, enterprise policy, economic reforms that targeted job creation, macro-economic policies that focused on employment and structural change along with education and training, a renewed social model, new priorities for school-based education, active employment policies focused on lifelong learning, new social protection politics, national plans to reduce social exclusion, and improved social dialogue between European civil society, the economy and structures of government.”*

the EU's economy. Thus, the strategy proposed three key drivers for growth, to be implemented through concrete actions at EU and national levels: smart growth (fostering knowledge, innovation, education and digital society), sustainable growth (making our production more resource efficient while boosting our competitiveness) and inclusive growth (raising participation in the labour market, the acquisition of skills and the fight against poverty). The Commission proposed an agenda consisting of a series of flagship initiatives. Implementing these initiatives at EU-level organisations, Member States, local and regional authorities' level, focused on the several priorities among which are:

- Innovation union - re-focusing R&D and innovation policy on major challenges, while closing the gap between science and market to turn inventions into products. As an example, the Community Patent could save companies 289€ million each year.
- A digital agenda for Europe - delivering sustainable economic and social benefits from a Digital Single Market based on ultra-fast internet. All Europeans should have access to high speed internet by 2013.
- An industrial policy for green growth – helping the EU's industrial base to be competitive in the post-crisis world, promoting entrepreneurship and developing new skills. This would create millions of new jobs;
- An agenda for new skills and jobs – creating the conditions for modernizing labor markets, with a view to raising employment levels and ensuring the sustainability of our social models, while baby-boomers retire;
- European platform against poverty - ensuring economic, social and territorial cohesion by helping the poor and socially excluded and enabling them to play an active part in society (ibid.).

These discourses created a favorable milieu for the adaption toward new trends, thus creating new economic imaginaries within the EU. Following this line of new discourses, in order to address the challenges risen from the appearance of a new knowledge society, the EU Strategy for the Danube Region (EUSDR) encompasses four major pillars in order to address the challenges (EUSDR 2019);

- Connecting the Danube Region (transport, energy, culture and tourism)
- Protecting the Environment in the Danube Region (water, biodiversity and soils)



- Building Prosperity in the Danube Region (education and skills, research and innovation, enterprises, employment market and marginalized communities)
- Strengthening the Danube Region (institutional capacity and cooperation)

Thus, these four pillars compress 12 priority areas, among which is focused on the Knowledge Society (research, education and ICT). After the revision of the proposed targets (Danube Knowledge Society 2016), the priority area focuses on:

- increasement of the effectiveness of investment in R&I through establishment of a funding coordination network aiming to initiate a minimum of 2 dedicated EUSDR activities each year (e.g. joint calls; joint strategic project proposals (within a multilateral framework).
- increasement of the number of EPO and PCT patent applications filed from the Danube Region by 20% by 2020.
- **enhancement** regional research and education co-operation to reach 20% of academic mobility within the region by 2020.
- increasement of the annual output of co-publications in the region by 15 % by 2020.
- development of RIS3 in all Danube countries (or their regions) by 2020.

We can consider the proposed targets as one of the *variations* of the main discourse (the Danube Strategy). Thus, each of this priority area is part of the *selection* process. Among the big number of priority areas certain have to be *retained*, consequently integrated into institutional rules and articulated into widely accepted accumulation strategies

It was proven that positive development of success economies is achieved through redefining what will change and how it will be changed. As a result, the systemic discourse is perceived as an effective strategic process in most newly developed economies (Rončević and Fric 2017). As the authors point, in the case of success economies the systemic discourse is developed from the centre of government towards the periphery. As example, it can be highlighted as an example the amount applications that were submitted during the first call of the project. Thus, as the registration opened, EUSDR received 576 submissions from which 547 have been considered for assessment (Interreg Danube Region Programme 2019a). The considered application embraced 5223 institutions from all the Danube region. During

the second call, there were submitted **119 proposals from which 22 were approved** (Interreg Danube Region Programme 2019b).

Figure 1. First call for Danube Transnational Programme



Source: Interreg Danube Region Programme

### 3.1. Assessment of the Digital Transformation in the Danube Region

It is important to highlight the role of the Digital Transformation and the Internet, because these are seen as part of the democratic processes, especially the role in the civil and political processes (Tiscornia and Fernandez-Barrera 2012). Thus, through the framework of the digitization and increasing the access to the internet, societies are able to have a more active role, because the costs of participation are reduced. As Fuchs (2007) points that with the changes in the technological development and in the sphere of information, communication considerably reduces the obstacles to the realization of participatory democracies. Even more, the new digital trends, formulate the basis of participatory democracy relying on electronic democracy, where the area for communication between citizens and the common will formed is seen as a virtual space. Lastly, it is important to highlight that the rise of the information society raises a number of new fields for social scientists to focus (Cepoi 2017). Even more, the development of the knowledge-based economy produces new sub-disciplines and trans-disciplines, because the new knowledge is created the reflexive appliance of the knowledge (Jessop 2008). The dynamic that is created, thus creates new problems and/ or solutions. For example, to consider the shift toward

Industry 4.0 or Digital Transformation, as part of reshaping the economic imaginary with the help of various discourses that embrace the new complex realities concentrated on social, economic and political relations and identities.

Lasi and Fetke (2014) understand the term “Industry 4.0” as primarily IT driven changes in the manufacturing systems. Additionally, the changes encompass organization implications with the expectations of a change from product- to service-orientation. Thus, as the author highlights, new emerging enterprises will adopt specific roles in the manufacturing process. When it comes to Digital Transformation, the focus is on the changes that digital technologies bring to the industry (Hess, Matt, Benlian and Wiesböck, 2016). As a consequence, this focus results in changing the products or organizational structures. The digital transformation, helps to gain benefits of digital technologies, such as productivity improvements, cost reductions and innovation, thus contributing to business success. As the authors point that no sector or organization is immune to the effects of digital transformation, even if it is a challenge in exploiting new digital technologies. Because of that, it can be stated that digital transformation has become a high priority on leadership agendas.

In the new digital marketplace, businesses are undertaking the digital transformations and rethink what customers value most and create operating models that take advantage of what’s newly possible for competitive differentiation (Berman 2012). As the author highlights, the digital transformation takes effect via four levels: digital data, automation, connectivity and digital customer access. With the help of digital data analysis, the industry has a better prediction and decision making. Also, the automation helps in combining traditional technologies with artificial intelligence, which reduces the error rates, adds speed and cuts operating costs. Connectivity shortens the production lead times and innovation cycles. Lastly, Digital Customer Access offers full transparency and new kinds of services by having direct access to customers. Besednjak Valić (2019, 25) mentions that the industry sector faces a challenge and opportunity of digitalisation. Thus, there are several key technologies that encompass the processes of digitalisation: Social Media, Mobile Services, Cloud technologies, Internet of Thing (IoT), Cybersecurity solutions, Robotics and automated machinery, Big data and data analytics, 3D printing, and Artificial Intelligence. Some of these are not technologically too demanding, others as Artificial Intelligence, Big Data, and IoT demand the usage of High-Performance Computing – HPC. For that purpose, at the EU level, there is present the Digital Transformation Scoreboard. The aim of the Digital Transformation

Scoreboard is to monitor the transformation of existing industry and enterprises (High-performance computing for Effective Innovation in the Danube Region 2017). The data is obtained on two levels: firstly, it adopts national indicators to monitor digital transformation in Europe with a geographic focus and from a macro-perspective; secondly it uses qualitative and quantitative data to investigate the adoption of digital technologies across two non-ICT sectors. Nonetheless, it monitors two indexes, first being Digital Technology Integration Index (DTII) and second Digital Transformation Enablers' Index (DTEI).

As the European Commission highlighted in the Report of the Strategic Policy Forum, the digitalization of European manufacturing can contribute to 15 % to 20 % growth by 2030 (in Ștefăniță 2019). Thus, in order to achieve this level of development and considering the challenges in the Danube Region, EUSDR proposed a number of Guidelines for the Digital Transformation.

Table 1. Digital transformation of Industry Guidelines at Danube region level

<b>Digital transformation of Industry Guidelines at Danube region level</b>	
<b>EUSDR</b>	<b>PA7: To develop the knowledge society through research, education and information technologies</b> <b>PA8: Competitiveness</b> <b>PA9: To invest in people and skills</b>
<b>EUSDR Action Plan</b>	<b>To develop and implement strategies to improve the provision and uptake of Information and Communication Technologies in the Danube Region</b> <ul style="list-style-type: none"> <li>• To improve the coverage and penetration of broadband in rural areas</li> <li>• To support certain parts of society in particular need for targeted ICT policies, such as groups with a low uptake, those excluded from access or others with particular training needs</li> </ul> <b>To draw up internet strategies</b> <ul style="list-style-type: none"> <li>• To increase the availability of internet access</li> <li>• To protect the freedom of expression on the web</li> <li>• To protect critical infrastructures.</li> </ul> <b>To use e-content and e-services to improve the efficiency and effectiveness of public and private services</b>

- To increase the availability of technical infrastructure such as broadband and technical equipment
- To use better the EU Funds for ICT
- To create synergies between the building of energy, transport and telecom networks, in order to reduce the cost of broadband installation

**To stimulate the emergence of innovative ideas for products and services and their wide validation in the field of the Information Society, using the concept of Living Labs**

- To establish Living Labs through which businesses, universities and public administration jointly develop new products by involving customers/users from very early stages, including design
- To support openness to new research and market developments in a public and people-oriented approach
- To support the development of initiatives to stimulate the creation of new markets, the diffusion of new technologies, enhancement of intellectual property protection and standards and impact assessments of new legislative or regulatory proposals on innovation

**To foster cooperation and exchange of knowledge between SMEs, academia and the public sector in areas of competence in the Danube Region**

- To promote actions supporting the internationalisation of SMEs and facilitating interdisciplinary cooperation

**To improve framework conditions for SMEs in areas where competitive infrastructure is missing**

- To construct joined or networked industrial and technological parks, as well as transportation, logistics and exhibition centres
- To support investments in competitive infrastructure for SME, especially in rural and border regions

Source: High-performance computing for Effective Innovation in the Danube Region 2017

In the new discourse in order to reshape the Danube Region economy, EUSDR identified several key actions:

- To develop and implement strategies to improve the provision and uptake of Information and Communication Technologies in the Danube Region,
- To draw up internet strategies,
- To use e-content and e-services to improve the efficiency and effectiveness of public and private services,
- To stimulate the emergence of innovative ideas for products and services and their wide validation in the field of the Information Society, using the concept of Living Labs,
- To foster cooperation and exchange of knowledge between SMEs, academia and the public sector in areas of competence in the Danube Region,
- To improve framework conditions for SMEs in areas where competitive infrastructure is missing.

Each of the key, as a result can be considered one piece that together form the discourse toward shaping the Danube Region imaginary toward a knowledge society. Thus, the discourses focus on the spread of ICT in the Danube Region. At the same time there is the need of improving the internet strategies. These two contribute to the development of another particularity of the discourse. More specifically, the usage of e-content and e-service, which can improve the efficiency and effectiveness of public and private services. Nevertheless, aspects as stimulation the emergence of innovative ideas, foster cooperation and exchange of knowledge between the Triple Helix model (SMEs, academia and public sector) and improving framework conditions for SMEs are also considered for further development of the new political and economic imaginary in the Danube Region with the help of these actions. All these specific steps, go in hand with the new imaginary regarding the European knowledge (Lisbon 2000), where the aim was to improve innovation and create better conditions for areas as digital technologies. Additionally, we can observe how an already existing imaginary reshaped in a new one, considering the new circumstances that arise. Thus, this allows to remark that imaginaries can always be re-shaped and adapted. As a result, relying on these pillars EUSDR created a new political and economic imaginary. The imaginary was created with the help of this new discourse, which motivates actions between the stakeholders in the real world when the new discourse is retained and reinforced. Additionally, what was once a lived experience of the complex world, this imaginary transformed into concrete

actions (joint projects, networks, synergies, etc.), where a new order is created. The new imaginary relies on Digital transformation of Industry Guidelines

### **3.2. Assessment of HPC in the Danube Region**

The HPC Strategy was adopted by the EU in 2012. Thus, the discourse aimed to optimise national and European investments, addressing the entire HPC ecosystem. (Suklan 2019, p. 48). The HPC strategy is implemented through and Action Plan, which consists of four objectives: 1) build exascale systems, 2) access to the supercomputing facilities and services by industry and academia – PRACE, 3) excellence in HPC application delivery and disseminate knowledge to stakeholders, 4) EU's position as a global actor (ibid.). Nevertheless, as the author highlights, it seen as a good opportunity to raise awareness, provide training as well as education and skills development within HPC areas.

As mentioned earlier there are several key technologies that encompass the processes of digitalisation, some of which need the utilisation of High-Performance Computing (HPC). HPC has to be understood as an emerging general-purpose technology. Because it has the possibility to reduce the product development time and increase the effectiveness of innovations, it improves the framework conditions for innovations. Moreover, the capability to process massive data affects the innovative capacity of companies (Zelkowitz in Coscodaru, Modic and Rončević 2019). Therefore, in the framework of reshaping Europe's economic imaginary, HPC has an important role for Europe's economic growth. In order for Europe to maintain the top position on the innovative competitive worldwide area, HPC is a tool for allows industry and academia to develop world-class products, services and inventions (Ștefăniță 2019, 74). As the author emphasizes, there is a need to provide for a European world-class HPC capability. Even if there are important initiatives in framing discourses oriented toward the development of HPC, European HPC is still fragmented in terms of funding and critical mass applications. Another problem that arises is the unequal capability in building and maintaining such infrastructure across Europe. Thus, the discourses should be oriented toward pooling and rationalizing efforts at the European Union level as well as regional levels, such as inside the Danube region.

In present, at the level of the EU, there is a Joint Undertaking – EuroHPC, formed from:

- the European Union, represented by the Commission;

- Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and Turkey;
- the European Technology Platform for High-Performance Computing (ETP4HPC) Association and the Big Data Value Association (BDVA) (EuroHPC 2019).

The aim is to deploy in Europe a world-class supercomputing infrastructure and a competitive innovation ecosystem in supercomputing technologies, applications and skills with the help of the EU and participating countries. The reality of the HPC in the EU is that it does not match the computing and data needs of European scientists and industry. Even more, the existing HPC depend on non-European technology and are not in global 10 (ibid.). As a result, the EU promoted a discourse on investing in an ambitious supercomputing infrastructure strategy, which would result EU to become one of the world leaders in supercomputing.

Through the HPC present discourses, these trigger HPC development, which is one of the most important challenges of the Danube Region. One of the challenges, is the underdevelopment and differences the core and periphery regions. These differences arise because of several factors as poor entrepreneurial spirit, and poor technology transfer between academia and the business sector, as well as across the borders inefficient utilization of available resources and differences in innovative capabilities (Coscodaru, Modic and Rončević 2019, 8). Thus, the discourses that transform into policies and projects at the Danube region focus on the unique cultural and natural heritage of the region. These emphasise on poorly-defined advantages in the least developed parts. As a result, low value added and labour-intensive activities are supported, which contribute even more to underdevelopment, because participating actors are equipped with skills that make them even more likely to migrate (Coscodaru, Modic and Rončević 2019, 12). On the opposite, are the projects promoting HPC development. As the authors stress, these types of projects provide tailor-made and transferable technology and skills necessary for knowledge-intensive and high value-added entrepreneurial activities. An eloquent example of how the discourses on reshaping the imaginary and their reinforcement, are the appearance of project as the High-performance computing for Effective Innovation in the Danube Region (InnoHPC). One of the results was the *Regional HPC capacity report with detailed and systematic assessment of competencies and*



*opportunities of HPC applications for the electronic and automotive industry and assessment of awareness and entrepreneurial spirit of academic institutions* (High-performance computing for Effective Innovation in the Danube Region 2017). Thus, the report provided an overview on:

- general appraisal of situation, availability of HPC hard infrastructure and soft competencies, including experience, thematic focus, available infrastructure etc.,
- applications of HPC in the industry R&D (good practices, level of technological development),
- cooperation between academia and industry (appraisal of situation, good practices, applications of HPC),
- other country-specific relevant aspects, references & data sources.
- data on HPC capacities in the Danube region in five different themes that are relevant for the whole innovation ecosystem: overview of HPC and innovation profile, institutions, networks, cognitive frames and providers needs.

As the result, the project can be regarded as a revolutionary effort to improve the framework conditions for innovation by providing unique institutional and technological infrastructure, designed specifically to pool and exploit HPC infrastructure on a transnational level. Going in hand in hand with the discourses about knowledge society, the project is one of the means through which the reshaping of the imaginary is possible. InnoHPC is a platform for transnational co-creation and technology transfer without the need for extensive investments in expensive hardware infrastructure in all parts of the Danube region (High-performance computing for Effective Innovation in the Danube Region 2017). Additionally, in line with the discourses on triple helix collaboration in the new imaginary, the project created a transnational cooperation in the Danube region, connecting enterprises, HPC providers (HEIs and RIs), national and regional policy-makers and business support. Thus, as stated this approach is in line with the new discourse on HPC and reshaping the imaginary. This is a success story among many others that contribute to the development of the Danube Region and the reshaping of the imaginary. Considering the available existent HPC technology it can improve the conditions for innovation in the Danube Region if all stakeholders carefully apply it and disseminate for a wider range of public (Coscodaru, Modic and Rončević 2019, 15). Also, it is important as the authors point, to connect providers, business and innovation support organizations, higher education and research institutions and policy-makers on a transnational level. Nevertheless, it is important to point that the

implementation of projects in the Danube Region can be considered as part of the reinforcement mechanism of the main discourse (Europe 2020 strategy).

#### **4. Conclusions**

The complex discourses that appeared at the EU level during and after the economic crisis, generated a number of processes that the society had to embrace and understand. As Jessop pointed (2004), the new discourses had the aim to switch toward the creation of a knowledge-based economy which is a distinctive semiotic order. One of this process is the creation of new economic imaginaries that lead to the creation of a knowledge society. For the economic imaginary it is not compulsory to have only one discourse. These imaginaries can adapt, but are vulnerable in case of contradictory experiences in the real world. The complexity of the real world determines these realities to have a variation of discourses which compete between them. As a result, there are selected some of them, which are responsible for later actions. Once the discourses are selected, stakeholders and other actors retain these discourses through the articulation into widely accepted accumulation strategies or state projects (for example Europe 2020 and later Danube Region Strategy for the EU). Once these strategies have been retained, the goal is to filter out contrary discourses and practices that are rivaling the created new imaginary.

This article had the aim to show how Cultural Political Economy can be adopted toward the explanation of various imaginaries, in particular with a focus on the Danube Region and its path toward knowledge society. With the help of its mechanisms (variation, selection, retention) the process of economic imaginary creation can be traced and the complex changes can be explained. As emphasized earlier, the new imaginary of the Danube Region was created in the framework of Europe 2020 strategy. Within the analysis with the help of two specific ramifications of the main discourse (Digital Transformation and High-Performance Computing) it was exemplified how the co-evolution of semiotic and extra-semiotic processes impact the constitution and dynamic of reshaping a new economic imaginary. It was highlighted how the initial discourse of the Danube Region Strategy pinpointed the path of reshaping the economic imaginary in the Danube Region. Thus, on one hand the Digital Transformation background created the necessary semiotic conditions for implementation of the Strategy. On the other hand, the framework of High-Performance Computing is a new economic initiative through which the region changes its economic imaginary. Following these trends, it is to utmost importance to understand that

imaginaries will be in constant change, because of the appearance of new discourses in response to new challenges. Additionally, it is more than expected that after the end of Europe 2020 strategy, we will encounter new discourses that will reshape the created economic imaginary in the Danube Region and in Europe.

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## IMPACT OF CIRCULAR ECONOMY AS THE EU'S AMBITIOUS POLICY

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**Abstract:** *The article describes the role of legislative and legal framework which brought about a new approach to waste management through the concept of circular economy, and its drivers. We explicitly focus on the impact of ambitious EU environmental policy and its financial support from the European Commission (EC) which helped social actors recognize not only the ecological, but also the economic and social benefits of the circular economy. Over 50 actions under the “Circular Economy Action Plan” launched in 2015 have been delivered or are being implemented in this period in European Union (EU). Through overview of the EU’s ambitious policy, best practice of the circular economy in the world and status quo in circular economy at EU level we also show the circular economy is nowadays a crucial megatrend and there is still needed to increase up action at EU level, provide the competitive advantage it brings to EU economy and close the loop. Beside impact of ambitious EU environmental policy article focuses on the Cultural Political Economy (CPE) approach as a political economy approach with the purpose for explaining the role of legislative and legal framework as a mechanism for selection and retention of the paradigm of circular economy.*

**Key-words:** *circular economy, EC, policy, Europe 2020, Cultural Political Economy, status quo*

### 1. Introduction

After 1970 – that is in the last 40 years – countries adopted a broad spectrum of environmental legislation, which can be described today as the most exhaustive modern standards compendium in the world. European Union environmental legislation – also known as environmental *acquis* – comprises over 500 directives, regulations, and decisions (EUR-Lex 2015).

Social actors in the global market have been increasingly trying to keep up with environmental legislation and policies of European Union (EU) for the past decade, resulting in efficient handling of primary resources through

reuse of waste in the domain of circular economy, which is the primary subject of this article.

For the purpose of tracking and enforcement of EU's environmental policies, transformation into circular economy is financially supported predominantly from European structural and investment funds, European Fund for Strategic Investments, LIFE program and Horizon 2020 as the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years – from 2014 to 2020 (Horizon 2020 2019). In addition to the private investment this money will attract – it promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market (ibid.). Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing competitiveness in Europe (ibid.) where is the crucial idea of Europe 2020 precisely a strategy for smart, sustainable and inclusive growth.

This article first briefly describes the legislative and legal framework which brought about a new approach to waste management through the concept of circular economy, and its drivers. We use the concept of Ellen MacArthur Foundation (2016, 2017) to characterize the model of circular economy as a response to the pressures of growing economy, consumption of limited resources, and overall capacity of the environment. Afterwards, we use combining critical semiotic analysis with an evolutionary and institutional approach to political economy offers one interesting way to achieve this goal (Jessop and Oosterlynck 2008) transformation from linear to circular economy where an evolutionary and institutional approach to semiosis enables us to recognize the semiotic dimensions of political economy (ibid.). We focus on the impact of ambitious EU environmental policy and its financial support from the European Commission (EC) which helped social actors recognize not only the ecological, but also the economic and social benefits of the circular economy.

## **2. Overview of the EU's ambitious Policy**

Directive on waste (2008/98/EC) proposed a completely new approach to waste handling and turning waste into raw materials and required EU members to adopt measures ensuring that as much waste as possible is reused in the future (EUR-Lex 2008). Considering the worrisome status quo related to the low proportion of waste being recycled in Europe in 2014, EU published a proposal of new legislation on recycling titled "*Towards a circular economy: A zero waste programme for Europe*" (EUR-Lex 2014).

Suggested amendments involved the following goals: (1) increase the



proportion of reused and recycled municipal waste to a minimum of 70% by 2030; (2) increase the recycling rate for packaging waste to 80% by 2030; (3) ban the landfilling of recyclable waste; (4) decrease landfilling of waste food for 30% by 2025; (5) implement a system for monitoring compliance of EU members and inform EU about flaws and discrepancies in individual countries for a faster feedback; (6) ensure absolute traceability in handling of hazardous waste; (7) improve cost efficiency of extended producer responsibility schemes by setting minimum requirements for producer responsibility at EU level; (8) simplify reporting obligations for Small and Medium Enterprises (SMEs); (9) provide harmonized universal calculation of goals and improve reliability of Key Performance Indicators (KPIs); and (10) update obsolete legislative requirements to provide universal definitions (EUR-Lex 2014).

The amendment intervened with a very complex and broad legislation framework on waste management, which had been in use in the EU for previous four decades (EUR-Lex 2014). The framework directive from 2008 also introduced by-product (only applies to remains of a production process) and end-of-waste (waste flows collected from different sources and turned into raw material for industrial processes) into terminology (ibid.). The universal rules defining when a waste flow no longer has a waste status are defined on EU level through EU regulations (ibid.).

In 2015, the EC published a proposal (*“Closing the loop: Commission delivers on Circular Economy Action Plan”*) of new legislation on decreasing waste landfilling and increasing processing for reuse and recycling of the key waste flows, such as municipal waste and packaging waste (EUR-Lex 2015). Through the goals defined in the *“Circular Economy Action Plan*, EU members would gradually achieve benchmarking results and encourage required investment in waste management (ibid.). The purpose of additional measures was to clarify and simplify implementation of the new policy and to support economic incentives, as well as improve extended producer responsibility schemes (ibid.).

During the same year, United Nations signed *“Agenda 2030 for sustainable development containing 17 goals of sustainable development in three dimensions – economic, social, and environmental”* – where the 12th goal focuses on implementing sustainable production and consumption methods (World Health Organization 2016, 2–3). The deadline for all goals is set for 2030, however the most important characteristic of this new Agenda is its universality (ibid.). Considering national specifics, its goals are attainable by all countries, whether they are developed or still in development phase (ibid.).

Two years later, the EC published a communication and working

document titled “*Strengthening Innovation in Europe’s Regions: Strategies for resilient, inclusive and sustainable growth of the Commission’s committees*”. The document described proposed development of smart specialization while tackling the following main challenges (EUR-Lex 2017): (1) boosting the innovation and competitiveness potential of European regions, as a basis for a sustainable growth model; (2) increasing interregional cooperation, which is a key element in globalised economies; (3) strengthening the focus on less developed and industrial transition regions; (4) improving and building on joint work across EU policies and programs supporting innovation.

The challenges in this communication consider different aspects – environment, energy, sustainable development, and efficient resource usage – and can be integrated into the industrial policy of a certain country. In Slovenia, for the example, the smart specialization strategy is depicted in a strategical document aiming to increase investment into research, development and innovation in the areas with the highest potential to boost the economy (Ministry of Economic Development and Technology Republic of Slovenia 2013).

In 2018, the EC signed the “*Circular Economy Action Plan*”, which involved several new strategies, measures and suggestions concerning (EC 2019): (1) managing the complete lifecycle of plastics from design to recycling for the whole EU, demanding that all plastic packaging is recyclable by 2030. For this to happen, EU countries would have to come up with new cost-efficient and effective methods of plastic recycling, reduce plastic packaging altogether, and increase investments in this area to provide innovative approaches (ibid.). To reduce marine litter originating from the sea, the EC demanded that port receptions use oxo-degradable plastic and published a report on its impact; (2) connection between legislation on chemicals, products, and waste; (3) the framework for monitoring the progress of individual countries and EU in general, including ten KPIs for all lifecycle phases and economic aspects, such as production, consumption, waste management, jobs, and innovation; (4) 27 of the most critical materials, which the EC proposes to prioritize in circular economy, as published in “*Report on Critical Raw Materials and the circular economy*” (ibid.).

Further on in 2018, the EC adopted some additional ambitious initiatives (EC 2019): (1) proposal of legislation considering reducing the environmental impact of certain plastic products, which would represent the implementation phase of the EU-wide strategy for adopting circular economy on plastics. The proposal allowed different measures, such as market restrictions on single-use plastics, when alternatives are clearly available, more user-friendly labelling, raising awareness, and extended producer responsibility schemes, where

producers were also responsible for the cost of cleaning up the litter; (2) proposal of minimum requirements regarding water reuse to ensure stable, safe, economically viable and efficient reuse of water for irrigation (ibid.). In the following, we clarify the role of circular economy for EU economy through concepts, theory and best practice examples in the world.

### **3. The Circular Economy: Concepts, Theory and Examples**

Between 7000 and 3000 BC, when the main farming practices were livestock and agriculture, the population of Earth was 25 million (ra-rod 2018). After WW2, when mass industrialization set off, population grew to 5 billion and consumption of fossil fuels increased exponentially (ibid.). Today, Earth's population is well over 7 billion projections show that 9.8 billion people will be threading the Earth by 2050 (ibid.). In turn, this accelerated population expansion results in an additional increase in global demand for (natural) resources (ibid.).

As states World Wildlife Fund (2016 in De Angelis 2018), nowadays we live in an economy that is exhausting natural capital: *'by 2012, the bio-capacity equivalent of 1.6 earths was needed to provide the natural resources and services humanity consumed in that year'*. Ellen MacArthur Foundation and McKinsey (2012 in de Angelis 2018) continue *surely 'humanity to be better off in a capital restoring, and regenerative circular economy. But there are the following crucial questions: (1) what does such an economy look like, and exactly why do we need it, (2) who are the key players in creating and maintaining a circular economy and (3) what changes will they need to adopt for such an economy to flourish'* (ibid.).

According to the report from World Economic Forum the circular economy concept and terminology has gained momentum after the 2012 World Economic Forum, where this report, prepared in collaboration with the Ellen MacArthur Foundation and McKinsey & Company, showed for the first time its convenience and the way to drive a new economic development (World Economic Forum in Barbero 2017, 9). *'However, popularity very often carries disadvantages or risk as, for example, becoming just a buzzword – some people affirm the true substance of circular economy is lost in translation and is misunderstood'*, states Barbero (2017, 9). *'There are many misconceptions of circular economy such as that it is just another way of describing recycling, or that it encourages people to re-use and keep products for a longer time, therefore it decreases sales since it might be an opportunity for some people, but on the long term will have a negative impact on manufacturers, and so on'*, also

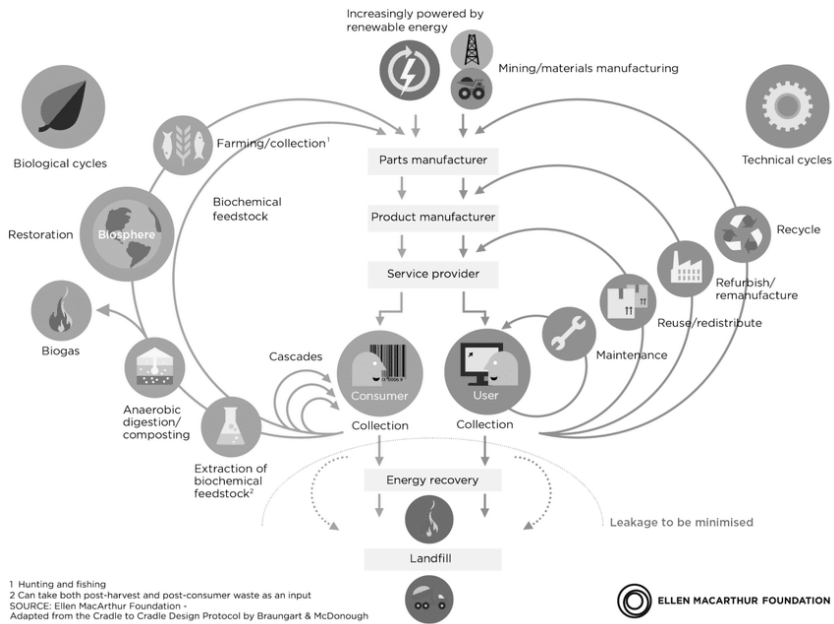
explains Barbero (2017, 9). That is not the case this chapter aims to clarify the role of circular economy through concepts, theory and examples.

Circular economy represents the EU's way of dealing with the pressures of growing economies and consumption on limited resources and environmental capacity as one of its most highly developed concepts (Ellen MacArthur Foundation 2016, 2017). The metamorphosis into circular economy is therefore based on re-use, adaptation, and processing of existing materials and products (ibid.). In order to minimize waste production, it also allows for using more renewable energy sources, discontinuing hazardous chemicals, cutting down on raw material, and reinventing product design to make it more recyclable and still retain its added value for as long as possible (ibid.). In circular economy, products remain in the environment even after they have reached the end of their lifespan (ibid.).

To summarize, circular economy can be defined from different aspects (ibid.). In its essence, it represents a global model of sustainable economic development in which resources are used moderately and reasonably (ibid.). From resource point-of-view, the model discriminates between biological and technical materials and results in prolonging the useful lifespan of both as much as possible (ibid.). In the pre-manufacturing phase, circular economy model requires that products are designed effectively and efficiently so as to enable their circular flow (ibid.). With regards to economic opportunities, it stimulates innovative approaches to all stages of product lifespan, and by providing all of the above, sets course for a new sustainable system (ibid.).

In Picture 1, the linear economy is clearly observable by its straightforward flow downwards, while circular economy is depicted in the form of loops, representing the bilateral flow of different materials (Webster 2017, 18). Circular economy diagram, as shown below, depicts three principles, or stages. The goal of the first stage is to retain and fortify natural capital by controlling the limited resources and harmonizing the renewable resource flows. The second stage focuses on improving profitability of resources through circulation of products, components, and materials being used. Its goal was to make the products, components, and materials as useful as possible in every phase of technological or natural cycle. The third stage in the diagram wishes to increase the system's efficiency by opening the system and re-structuring it in such way to avoid negative external expense.

Picture 1: Circular Economy Diagram



Source: Ellen MacArthur Foundation 2016

In the process of applying circular economy into practice, certain concepts are being put in place, which can be used as drivers for enforcement of circular economy. One of such drivers is Cradle-to-Cradle® which is a registered trademark of McDonough Braungart Design Chemistry, LLC (C2C-Centre 2013; McDonough and Braungart 2013). Cradle-to-Cradle® Certified<sup>CM</sup> is a certification mark licensed exclusively for the Cradle-to-Cradle® Products Innovation Institute (C2C-Centre 2013). Cradle-to-Cradle® used by EPEA<sup>1</sup> in Switzerland since 1995, it ensures the quality of resources through its multiple lifecycles, whereas all resources must be manufactured from nontoxic materials and return to manufacturing process of the same social actor once their lifespan expires (ibid.). This concept is based on a

<sup>1</sup> EPEA GmbH – Part of Drees & Sommer (formerly EPEA Internationale Umweltforschung GmbH, founded in 1987 by Dr. Michael Braungart) was founded in 2019 is an internationally active scientific research and consultancy institute we work with actors and companies from economy, politics and science and support them in the introduction of circular processes (EPEA 2019). EPEA combine different sciences: chemistry, biology and environmental science with product optimization and product development (ibid.).

defining materials as belonging to biological or technical material (ibid.). While biological materials are biodegradable and result in natural decomposition, technical materials should be kept separately from biological materials and used in separate manufacturing processes (ibid.). Cradle-to-Cradle® concept defines all waste as food, necessitates the use of renewable energy sources, and supports diversity as fundamentally creative and resilient force driving the system (ibid.).

Founding Cradle-to-Cradle® principles include: (1) all materials flow in one of the two cycles: biological (can be safely decomposed through the biosphere) or technical (non-biodegradable, kept at high quality and away from the biosphere in their own industrial cycle); (2) everything is food (sometimes described as waste = food); (3) shift towards clean energy, essentially renewable; (4) celebrate diversity (since it is a source of both creativity and resilience in system (ibid.)). In the following, we outline the key impacts of Cradle-to-Cradle® and support our assumptions by one of the most famous example of Cradle-to-Cradle® best practice – ECOVER professional®.

In 2013 ECOVER professional®, which is a pioneer in the development of powerful, ecological cleaning products, has developed its Ecover Professional range with three new products (C2C 2013). So impressive was the new range that it has been awarded a ‘Cradle to Cradle Certified’ title – a first in the world of professional cleaning – no other professional cleaning product can say the same (ibid.). After almost 20 years of providing professional cleaning products that pack a punch, this breakthrough in sustainability takes powerful, professional cleaning products to a new level (ibid.). The new Ecover Professional products are sold across Europe through the existing business to business dealer network to the public sector, the healthcare sector, the leisure sector and contract cleaners (ibid.). The formulas of Ecover professional products have been designed with a maximum of renewable ingredients – most products are composed of 95% or 99% renewable ingredients (ibid.). The Professional range’s packaging bottles are made entirely from Plantastic PolyEthylene (PE), which is a revolutionary green plastic made from sugarcane that is 100% renewable, reusable and recyclable (ibid.). Their Plantastic bottles meets the Gold criteria in the category of material reutilization of Cradle to Cradle certification (ibid.). The most dangerous particles were found in the packaging of their cleaning products (ibid.). That is why Ecover Professional changed the caps of the bottles into transparent-coloured caps (ibid.). The ingredients of the cleaning agents are selected in that way to have an optimal biodegradability and a minimum impact on aquatic life (ibid.). Ecover Professional already uses 100% green energy for their electricity and they are also looking into the possibilities of

biogas and works together with a local water purification company to clean their production water before going to nature (ibid.).

Re-use enables savings in the cost of raw materials and energy, and better long-term reliability in the supply of natural resources. Turning waste into resource is of key importance for circular economy, however the resources represent only part of the overall cycle. To make the cycle complete, these resources from one industry need to be processed and recycled to become raw material for another industry. Only in this case we can speak of the second driver of circular economy – industrial symbiosis – which has in the last two decades become an extremely important sustainable mechanism for recycling of waste and waste resources in industrial and non-industrial processes. We can therefore understand it as relationship between three or more social actors, which are linked through direct exchange of material, water, or energy waste, mostly in the form of scraps and by-products, while the exchanges between actors represent synergies (Rončević and Fric 2015). We are speaking about a flow of unexploited waste from one social actor, who was going to discard the waste, to the other social actor, who is able to use it as substitute for new/primary resources (Deutz 2014, 4). The synergies between social actors today are increasingly moving towards exchange of knowledge and logistics services as support and municipal services for exchange of waste resources. In this mutually-dependent relationship, each social actor reaches their own benefits and goals, while contributing to the welfare of other social actors and society in general (Manahan 1999, 58). Industrial symbiosis exists on local, regional, national and international levels. Chertow (2007) claims that geographical proximity of social actors is the pre-condition for implementation of industrial symbiosis. In other words: social actors involved in direct flow of secondary material resources must be located nearby. However, this depends on economics of specific exchange, linked with logistical costs. Furthermore, social actors taking part in industrial symbiosis network, but who are not directly involved in material flows, geographical proximity is not as important, especially due to recent development of Information Communication Technology tools for management of industrial symbiosis. Next, we outline the key impacts of industrial symbiosis and support our assumptions by one of the most famous example of industrial symbiosis best practice – Kalundborg.

Kalundborg case study is considered one of the earliest and most famous examples of best practice in industrial symbiosis in the world. Kalundborg is a small harbor town on the northwest coast of the largest Danish island of Sjælland in Denmark. The case study began in 1961 as water management project (Ehrenfeld and Gertler, 1997). Because supply of fresh water in

Zealand region, where Kalundborg is located, was not always available, the local authorities decided to install a pipeline for the new refinery to provide the refinery with water intake from Lake Tissø (ibid.). In 1981, Asnæs thermal power plant began supplying Kalundborg with steam for heating new neighborhoods (ibid.). Soon afterwards, the system was extended to Statoil and Novo Nordisk towns (ibid.). The steam-driven heating system from the thermal power plant had replaced about 3,500 oil furnaces, which would otherwise have represented a significant source of air pollution (ibid.). The thermal power plant uses sea water for cooling, thus reducing the use of fresh water from Lake Tissø (ibid.). The plant feeds part of the hot salty water, which is produced as a by-product in the process of cooling, into 57 ponds of the nearby fish farm (ibid.). Consumption of fresh water for cooling is also reduced by using pre-treated water, which is supplied by Statoil oil refinery and amounts to approx. 1 million cubic meters of water per year (ibid.). In turn, the refinery supplies its excess gas to Gyproc company – after observing a flame at the top of the refinery and the burning gas, the company quickly identified it as a potentially cheap source of energy (ibid.). Novo Nordisk pharmaceutical company sells biomass, produced as by-product in their industrial process, to local farmers to be used as fertilizer (ibid.).

These best practices are not best practices due to some revolutionary technological development and legislative and legal framework which brought about a new approach. If this was the case, dissemination of technology would suffice for rapid development throughout the world. Instead they exemplify that formation of well-functioning circular economy is primarily dimension of the social aspect. Other research based on sustained development without including “sustainability” (environmental) dimension (Adam et al. 2005) and on multi-criteria decision modeling of successful cases demonstrated definitively that social factors, alongside technological and economic aspects (Mileva Boshkoska et al. 2018), play important role in establishment of successful circular economy. This should not come as a surprise, since we have demonstrated the impact of social factors on other aspects of technological innovations (Modic and Rončević 2018; Rončević and Modic 2012), and applicability of this line of analysis in others (Fric and Rončević 2018) however, in research on circular economy this perspective is poorly developed and worthy for further research.

In 2018 have been drafted the case studies as part of a study funded by the EC, on “*Cooperation for Industrial Symbiosis: Policy Aactions and good Practice*”, performed by a consortium led by Technopolis Group in partnership with UCL (Univeristy College London), Trinomics B.V., TNO and International Synergies (UCL and Technopolis Group 2018). In this study with



the title “*Cooperation fostering Industrial Symbiosis: Market potential, good Practice and Policy Actions*”, the types of industrial symbiosis that are being analysed included two crucial groups: (1) self-organised activity, emerging as the result of direct interaction among different social actors, without any top-down coordination; (2) managed networks, those that have a third party intermediary that coordinates the activity (Baas 2011 in *ibid.*). Two distinct types of managed networks exist: (1) facilitated networks, working with existing companies to raise awareness of industrial symbiosis and foster activity and (2) planned networks, where the networks are formed following a central plan or vision that includes attracting new businesses to purpose – built developments, generally offering shared infrastructures and services (*ibid.*). Industrial symbiosis networks contain different social actors belonging to different sectors of activity that engage in mutually beneficial transactions of waste and by-products – materials, energy, water, capacity, expertise, assets etc. (*ibid.*). Industrial symbiosis has been seen as a solution to enhance environmental sustainability and achieve economic benefits at the same time (*ibid.*). As state UCL and Technopolis Group (2018) while there are cases of successful implementation of industrial symbiosis, there is still little overview of the market for industrial symbiosis, and the scale at which it has been adopted. Moreover, the importance of intermediary bodies as facilitators of industrial symbiosis has only just begun to be considered as a crucial factor for the success of industrial symbiosis initiatives (*ibid.*). In this study, UCL and Technopolis Group aim to provide an overview of the market potential for industrial symbiosis and a mapping of the major initiatives that have been implemented in Europe and their results (*ibid.*).

#### **4. Status Quo: EC delivers on Action Plan of Circular Economy**

In 2019 EC announced a summary of activities in “*Circular Economy Action Plan*”. As reported EC 54 actions under the mentioned plan launched in 2015 have now been delivered or are being implemented (European Commission – Press release 2019). This status quo are going to contribute to boost Europe's competitiveness, modernise its economy and industry to create jobs, protect the environment and generate sustainable growth (*ibid.*).

The EC in march 2019 published a comprehensive report on the implementation of the “*Circular Economy Action Plan*” it adopted in 2015 (*ibid.*). This report presents the crucial results of implementing the “*Circular Economy Action Plan*” and sketches out open challenges to paving the way towards a climate-neutral, competitive circular economy where pressure on natural and freshwater resources as well as ecosystems is minimised (*ibid.*).

Three years after adoption, the “*Circular Economy Action Plan*” can be considered fully completed, states EC (ibid.). According to the findings of the report, implementing the “*Circular Economy Action Plan*” has accelerated the transition towards a circular economy in Europe, which in turn has helped putting the EU back on a path of job creation (ibid.). EC continues that in 2016, sectors relevant to the circular economy employed more than four million workers, a 6% increase compared to 2012 (ibid.). Circular economy has also opened up new business opportunities, given rise to new business models and developed new markets, domestically and outside the EU – in 2016, activities such as repair, reuse or recycling generated almost €147 billion in value added while accounting for around €17.5 billion worth of investments (ibid.).

EC states also that the EU “*Strategy for Plastics in a Circular Economy*” is the first EU-wide policy framework adopting a material-specific lifecycle approach to integrate circular design, use, re-use and recycling activities into plastics value chains (ibid.). This strategy sets out a clear vision with quantified objectives at EU level, so that inter alia by 2030 all plastic packaging placed on the EU market is reusable or recyclable (ibid.). For boosting the market for recycled plastics, the EC launched a voluntary pledging campaign on recycled plastics (ibid.). Approximately 70 companies have already made pledges, which are going to increase the market for recycled plastics by at least 60% by 2025 – there is still a gap between supply and demand for recycled plastics (ibid.). For closing this gap, the EC launched the “*Circular Plastics Alliance*” of key industry stakeholders supplying and using recycled plastics (ibid.). EC emphasizes also that the rules on “*Single-Use Plastics*” items and fishing gear, addressing the most found items on EU beaches place the EU at the forefront of the global fight against marine litter (ibid.). The measures include a ban of certain single-use products made of plastic (straws and cutlery for example) when alternatives are available and of oxo-degradable plastic, and propose actions for others such as consumption reduction targets, product design requirements and “*Extended Producers Responsibility Schemes*” (ibid.).

EC notes that to accelerate the transition to a circular economy, it is essential to invest in innovation and to provide support for adapting Europe's industrial base (ibid.). Over the period 2016–2020, the EC has stepped up efforts in both directions totalling more than €10 billion in public funding to the transition (ibid.). For stimulating further investments, the “*Circular Economy Finance Support Platform*” has produced recommendations to improve the bankability of circular economy projects, coordinate funding activities and share best practices (ibid.). The platform are going to work with the European Investment Bank on providing financial assistance and

exploiting synergies with the “*Circular Economy Action Plan*” on financing sustainable growth (ibid.).

EC adds that sound and efficient waste management systems are an essential base of a circular economy (ibid.). For modernising waste management systems in the EU a revised waste legislative framework entered into force in 2018 (ibid.). The revised waste legislative framework includes new ambitious recycling rates, clarified legal status of recycled materials, strengthened waste prevention and waste management measures, including for marine litter, food waste, and products containing critical raw materials (ibid.).

The most important in this process is also smart design at the beginning of a product's lifecycle is essential for ensuring circular economy (ibid.). Through the implementation of the “*Ecodesign Working Plan 2016–2019*”, the EC has further promoted the circular design of products, together with energy efficiency objectives (ibid.). Ecodesign and Energy Labelling measures for several products now include rules on material efficiency requirements – availability of spare parts, ease of repair, and facilitating end-of-life treatment (ibid.). The EC has also analysed, in a dedicated “*Staff Working Document*”, its policies for products, with the intention to support circular, sustainable products (ibid.).

For transition towards a more circular economy requires an active engagement of citizens in changing consumption patterns (ibid.). The Product Environmental Footprint (PEF) and Organisation Environmental Footprint (OEF) methods developed by the EC can enable companies to make environmental claims that are trustworthy and comparable and consumers to make informed choices (ibid.).

For the transition is also the most important engagement (ibid.). The systemic approach of the action plan has given public authorities, economic and social actors and civil society a framework to replicate in order to foster partnerships across different sectors (ibid.). The role of the EC in speeding up the transition and leading international efforts for circularity was also recognised at the World Economic Forum 2019 where the EC received the “*Circulars Award in the Public Sector Category*” (ibid.).

This implies that actual efforts for transition from linear to circular economy can be explained in part, as well as interpreted in terms of semiosis which is the umbrella term for different approaches to the cultural turn insofar as they assume both that semiosis is causally efficacious as well as meaningful (Jessop and Osterlynck 2008). CPE namely studies the role of semiotic activities and practices not only in the continual (re-)making of social relations but also in the contingent emergence (variation), privileging

(selection), ongoing realization (retention), and subsequent reinforcement through structural coupling (consolidation) of their extra-semiotic properties (ibid.). As discussed Jessop and Osterlynck (2008) the same basic mechanisms serve to select and consolidate radically new practices – drivers of circular economy for transition from linear to circular economy and to stabilize routine practices – culture and political engagement towards to a circular economy.

## 5. Conclusion

As notes EC the circular economy is now an irreversible, global trend – yet, much is still needed to scale up action at EU level and globally, fully close the loop and provide the competitive advantage it brings to EU economy (European Commission – Press release 2019). Increased efforts are going to be needed to implement the revised waste legislation and develop markets for secondary raw materials (ibid.). Also, the work started at EU level on some issues (chemicals, the non-toxic environment, eco-labelling and eco-innovation, critical raw materials and fertilisers for the example) needs to be accelerated if Europe wants to reap the full benefit of a transition to a circular economy also still EC notes (ibid.).

Interaction with different stakeholders and social actors suggests that some areas not yet covered by the “*Circular Economy Action Plan*” could be investigated to complete the circular agenda (ibid.). Building on the example of the “*European Strategy for Plastics in a Circular Economy*”, many other sectors with high environmental impact and potential for circular economy such as information technology (IT), electronics, mobility etc., the built environment, mining, furniture, food and drinks or textiles could benefit from a similar holistic approach to become more circular (ibid.).

Last but not least there is reasonable to add policy makers for faster transition from linear to circular economy should follow some recommendations of CPE. As state Jessop and Osterlynck (2008) the most important in this process are the following recommendations: (1) to consider with cultural studies as a whole and not just with one preferred theorist or institution in the area under consideration and (2) to engage the complexities of semiosis and explore the discursive and material mechanisms that shape the manner and extent to which ‘ideas matter’ in political economy.

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## **PUBLIC POLICY INSTRUMENT EVALUATION IN SERVICE OF ENABLING GRAND STRATEGY DISCOURSE – CASE OF HORIZON 2020 KEY INDICATORS**

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**Abstract:** *The purpose of the article is to illustrate the problem of public policy evaluation in regards to the availability of the information. By that, we want to warn about the issue of a disabled discourse of relevant social groups and institutions in the European Union. For this article, we evaluate public policy instrument H2020. The evaluation covers the availability of the data, that should enable interim and ex-post evaluation. The article offers a solution to the emerging issue. Through the prism of Cultural political economy, the evaluation results also indicate the issue of Europe 2020 instruments retention. Consistency and transparency are not needed only throughout the different policies and strategy goals but also throughout their retention to assure the set goals.*

**Key-words:** *evaluation, discourse, horizon, indicators, policy analysis, Europe 2020, Cultural Political Economy*

### **1. Introduction**

Relatively successful economic imaginaries have their own, performative, constitutive force in the material world. For their operation presupposes a substratum of substantive economic relations and instrumentalities as their elements; in addition, where an imaginary is successfully operationalized and institutionalized, it transforms and naturalizes these elements and instrumentalities into moments of a specific economy with specific emergent properties. For economic imaginaries identify, privilege, and seek to stabilize some economic activities from the sum of economic relations and turn them into objects of observation, calculation, and governance. Technologies of economic governance, operating sometimes more semiotically, sometimes more materially, constitute their own objects of governance rather than governing already pre-constituted objects (Jessop 1990, 1997). Observing through the aspect of Cultural political economy, when the economic crisis hit the economic imaginary of European Union, the variation in discourses led to

the common European strategy for smart, sustainable and inclusive growth (Europe 2020) was prepared to steer the members of EU to more innovative, educated, cleaner EU. During the selection of particular discourses, Horizon 2020 was set as a programme with the aim to boost the EU innovation.

When question the possibility of rational strategic steering in the context of complex modern societies we are dealing with a contradictory situation. On one hand, there is an ever-increasing need for rational societal steering, on the other hand, the very attempt to deal with complexity by means of rational action produces hyper-complexity, thus rendering successful societal steering even less probable. Nevertheless, societies continuously attempt to find the key to two crucial elements of societal steering, i.e. efficient goal setting and control over their implementation (Rončević and Makarovič 2011, see also Makarovič and Rončević 2010, Rončević 2008, Rončević and Makarovič 2010). Since the world cannot be grasped in all its complexity in real time (see Jessop 2010), actors (and observers) must focus selectively on some of its aspects in order to be active participants in that world and/or to describe and interpret it as disinterested observers (*ibid*). In that way, the European Commission prepared key indicators (by which one could measure its own achievements and policy effects) and extended the policy by implementing it in relevant documents (guidelines and action plans) for all to follow.

Horizon 2020 is the biggest EU research and innovation programme ever, with a substantial budget of 80 billion EUR. Besides the importance of transparent budget relocation, the expected effect should be seen not only in innovation boost but a consequently better life for each European. By this research, we do not aim to evaluate the importance and need for grand strategies and policies. We do, however, evaluate its' transparency. We predict the problem of accessibility of data, the actuality of data, and above all comparative data values. How will we know where we are if we cannot make comparative analysis? And even more - how to then set new policies and instruments if we do not know the outcomes and effects of previous ones? How can we assure discourse, if we do not have relevant information to support argumentation? The purpose of the article is to illustrate the problem of public policy evaluation in regards to the availability of the information. By that, we want to warn about the issue of the disabled discourse of relevant social groups and institutions in the EU.

## 2. Importance of the H2020 instrument

As Makarovič, Šušteršič and Rončević say (2014, 610-626) the European Union (EU) has been continuously rethinking its global position amidst emerging economic and geopolitical challenges and attempting to formulate strategies to increase its competitiveness (Makarovič, Šušteršič and Rončević 2014, 610-626). Howorth (2010, 455-474) argues, that the European Union, in the wake of Lisbon, has become an international actor and it now faces two major external challenges. (i) to develop a strategic vision for a potentially tumultuous emerging multi-polar world. The European Council's December 2008 'Report on the Implementation of the European Security Strategy' recognized that, over the last five years, the threats facing the EU had become 'increasingly complex', that 'we must be ready to shape events (by) becoming more strategic in our thinking'. (ii) to help nudge the other major actors towards a multilateral global grand bargain. The author further argues (ibid.), that such a bargain will be the necessary outcome of the transition from a US-dominated post-1945 liberal world order, towards a new 21st-century order accommodating the rising powers and sensitive to the needs of the global south. Without such a comprehensive and co-operative bargain, the emerging multi-polar world will be rife with tensions and highly conflict-prone (ibid.).

In that regard, the European Commission started Horizon 2020 in 2014. H2020 is (European Commission, n. d.). the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness (ibid.). H2020 is seen as a means to drive economic growth and create jobs. As European Commission stated on its webpage, Horizon 2020 (European Commission n. d.) has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in our future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs (ibid.).

*"By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation (European Commission n. d.)."*

Klisz and Aluchna (2012) argue, that European companies consider Horizon 2020 as one of the most important funding programme of this century. They say, that this funding will also serve to promote international cooperation, which will enhance the attractiveness of the EU's research, and

enable the joint addressing global issues and to promote the EU external policy. The analysis of possible synergy with funds awarded under the EU cohesion policy will be made to provide the greater number of participants across Europe. The weaker regions will identify potential centers of excellence, which will propose a strategic advisory and financial support under the program Horizon 2020, and the EU Structural Funds will be spent on upgrading infrastructure and equipment (ibid).

As Renda says (2015, 20 - 24) EU institutions have increasingly shown "performance anxiety" in trying to catch up with the growing gap between the EU and the United States in this field, claiming that Europe was experiencing a true innovation emergency (ibid). The past years of innovation policy have brought some beacons of hope. These are not exclusively related to the amount of money allocated to research and innovation in the EU budget but instead, are mostly due to the emphasis placed on the governance of innovation rather than on the selection of projects based on pre-determined criteria. In this respect, the three pillars of Horizon 2020 – excellent science, industrial leadership, and societal challenges – appear much more in line with the needs of potential innovators and entrepreneurs than past projects like the 7th Framework Programme for Research and the Competitiveness and Innovation Programme for SMEs (ibid).

Horizon 2020 reflects efforts to invest in massive accumulation of laboratories that can perform extremely sophisticated research (Klisz and Aluchna 2012). There is a lot of information about research and innovation implementation in Europe in Horizon 2020, but this idea is a challenge in a time of the economic crisis. This does not mean that funds will be used solely for these disciplines and research (ibid.). The budget of the ERC, which finances basic research, has been increased by 70 percent. This means tremendous support for the funding of theoretical and basic research, which is often determined by the development of an implementation study (ibid).

European Commission states that Horizon 2020 is open to everyone, with a simple structure that reduces red tape and time so participants can focus on what is important. This approach makes sure new projects get off the ground quickly – and achieve results faster (European Commission n. d.). The steering is done by the EU and the rest is left to the beneficiaries (HEI, SME...) and evaluators to find the niche, where to do in-depth projects.

The current form of Horizon 2020 will accumulate funds and investments in very large scientific enterprises (Klisz and Aluchna 2012). An additional benefit is the scientific specialization of the various European regions. The creation of powerful research laboratories will make the regional-focus view on the most innovative research projects in specific fields (ibid.). Authors also

make a relevant comment that it is important not to duplicate the same infrastructure in every region, but adapt it to the research capacity, quality of academic staff and also the realistic possibilities of implementation (ibid).

### **3. Questioning Grand Strategies**

All in all, the promise we get from H2020 grand strategy are very positive and grand in the true word of meaning. But, is steering the field of research and development through grand strategy appropriate? Makarovič, Šušteršič and Rončević (2014, 610-626) argue, that EU long-standing policy implementation deficit is recognized for its grand strategies, including the initially ambitious Lisbon Strategy and are asking if Europe 2020 is set to fail as well? (ibid.) According to the Innovation Union Scoreboard (IUS) indicator (Veugelers and Cincera 2015, 4 – 9), developed by the European Commission in support of its Innovation Union Strategy, Europe is not doing well. Europe's gap relative to the US holds across almost all individual indicators that go into the IUS score. This reflects the systemic nature of Europe's failing innovation capacity. Europe's overall R&D-to-GDP ratio currently stands below two percent, significantly lower than the ratios in the US, Japan, South Korea and Singapore. Furthermore, there are relatively few signs of progress. China is fast catching up and already on par with the EU (ibid).

From the other point of view, Frietsch, Rammer and Schubert (2015, 9-13) say, that the US is still the most important national science and research system in the world, with China quickly catching up – not only in terms of quantity but also in terms of quality. Europe, however, as the largest translational science and research system, is ahead of these national systems. They argue (ibid.) that recent analysis suggests that the European Union as a whole overtook the US concerning the performance of the science system. This is not only due to input factors but also to an increase in output. The US, on the other hand, has continuously lost ground in recent years, as is continuously exemplified by the results of the Innovation Indicator (ibid).

Frietsch, Rammer and Schubert (2015, 9-13) see one of the reasons for this gradual decline can be attributed to the country's science and research policy, which is traditionally designed as non-interventionist and market-conforming and envisions a rather passive role for the state. They say (ibid.) that one result of this policy was that for many years public spending on science and research in the US did not increase at the same rate as it did in most other highly developed countries. Also, the US struggled with the economic and financial crises, and other policy areas had priority over science and research. Even the US economic stimulus package, which envisaged a

slightly more active role for science and research policymaking, was only able to produce a flash in the pan, leaving the overall trend hardly affected (Frietsch, Rammer and Schubert 2015, 9-13). One cannot argue against the fact that there is considerable heterogeneity (Frietsch, Rammer and Schubert 2015, 9-14) of the science and innovation systems in Europe, not only concerning their resource endowment but also concerning their efficiency in producing scientific and innovative outputs (ibid).

Taking pros and cons into consideration there is a short but very relevant statement, done by Makarovič, Šušteršič and Rončević (2014, 610-626) saying that strategic steering is essentially a discursive practice influenced by both semiotic and extra-semiotic factors. Hence, the success or failure of a strategy essentially depends on the ability to steer the discourse.

#### 4. Why measuring is important

EC states, that Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020). EC also adds significant information that they expect this amount will attract private (see European Commission, n. d.). Both the EC and the EU are aware that studying in Europe can only be financed from public funds. Thus, the system support of the research programs will also require input from industries and what is particularly most important – from local SMEs (Klisz and Aluchna 2012). EC It promises more breakthroughs, discoveries, and world-firsts by taking great ideas from the lab to the market (see European Commission, n. d.).

How has EU Research and Innovation funding evolved over recent years? Recording to Table 1, the budget in the last three frameworks increased extremely.

Table 1: Framework programmes for research and innovation 1984-2020

ID	Period	Budget (billions of €) <sup>1</sup>
FP1	1984–1987	3.3
FP2	1987–1991	5.4
FP3	1990–1994	6.6
FP4	1994–1998	13.2
FP5	1998–2002	14.9
FP6	2002–2006	19.3
FP7	2007–2013	50.5

<sup>1</sup> Budget is in constant prices.

FP8 Horizon 2020	2014–2020	74.8
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Source: EPRS 2015

Klisz and Aluchna (2012) argue, that although the budget seems to be extremely high, it's only one-third what China is planning to invest in R&D. New re-defined European research and innovation are the EU various investments which will become the foundation for the development of the region, which is now plunged into a deep crisis. The new dimension of R&D will become part of the stimulation of the European market. This has a much better impact, comparing with *pumping* more funds in the failing banks and public budgets (ibid.). The authors stress, that Horizon 2020 is not created for *patching holes*, but to increase development and stimulation of the region and it's designed to combine the cooperating organizations to improve the EU position in the highly competitive global market (ibid.).

Whit all the expected outcomes and long-term effects one still needs to keep in mind, that it is a programme with a lot of financial stakes and uncertain outcomes. How to make it as successful as possible? Makarovič, Šušteršič and Rončević (2014, 610-626) say that in the case of the Lisbon Strategy communicating as such has been a part of communicating the EU. Segmental units such as local communities, nation-states as well as sub- and supranational regions are not some pre-given "natural" entities but social systems produced and reproduced only through communication. EU is no exception: it exists as long as it is able to communicate itself since it—just like its nation-states (although they may seem somewhat more "given" to common sense)—only exists as communication. The Lisbon Strategy has contributed to this communication and so may the future strategies through their success or even through another failure (Makarovič, Šušteršič and Rončević 2014, 610-626).

Following the above statement, one can agree, that if the EU is to develop the ability to meet the challenges with a strategic approach (Makarovič, Šušteršič and Rončević 2014, 610-626), repeating current communicative processes will not be sufficient. Authors suggest (ibid.) that for Europe 2020 or any following economic imaginary, it is vital that the EU develops more efficient mechanisms of "retention" of selected discourses, as well as selective "recruitment", "inculcation and retention" by relevant social groups and institutions. Without this, no economic imaginary can become successful. Success or failure of a strategy essentially depends on the ability to steer discourse (ibid). If the discourse is a deal-breaker for success or failure of a strategy, measures should be set to enable the discourse. Is the money well spent? Where the amounts sufficient? Are the funded fields relevant? Does it

strengthen EU innovation, economy, sustainability, better life? How are regions dealing with the policy? This and more of similar questions can be relevantly discussed if we have relevant data to support the argumentation. European Commission itself says, that (European Commission 2015) monitoring generates data on an intervention's activity and impact over time continuously and systematically. It helps identify and address any implementation problems of an intervention at the same time as it generates factual data for future evaluation and impact assessment (ibid.). Further on, the EC agrees, that evaluation takes a broader look (ibid.) at all aspects of performance, looking more at “whether” the changes and any movement towards the set objectives are due, at least in part, to the intervention and “why” an intervention has been more or less successful in achieving its policy objectives. It looks at what has happened, why something has occurred and in particular how much has changed as a consequence (ibid.).

Public policies set their own key indicators with the aim to measure the outcomes and effectiveness of the policy. In that regard, European Commission says, that (European Commission 2015) assessing the impact of Horizon 2020 on growth and jobs through indicators at project and programme level, including in terms of its efficiency and quality, is a challenge. Reliable indicators of results and impacts are limited, the importance of individual indicators varies by discipline and sector, and there can be a considerable time lag between inputs and outputs (ibid.). However, at this point it is also important to decide, what do we want to measure and evaluate when referring to H2020. Do we want to know how countries and regions are doing among selves and discuss region capabilities, or do we (as EU members) compete together, namely EU vs USA China, Japan, etc?

H2020 will have an important effect on EU countries. Frietsch, Rammer and Schubert (2015, 9-13) said, that they expect that if the Horizon 2020 programme follows its rhetoric and focuses on funding world-class researchers and disruptive research in enabling industrial technologies, some member states will benefit more from these investments than others. Therefore, Horizon 2020 will likely increase the heterogeneity of innovation systems in Europe, while its impact on growth and jobs will hardly target those countries that would need them most urgently. They also expect, (ibid.) however, that the aims of excellent research, increased growth and job creation are better attainable by Horizon 2020 across the whole of Europe by foregoing the goal of reduced heterogeneity. In a longer perspective, a general upgrade of science and innovation and an increase in the number of research and innovation-oriented member states is a worthwhile pathway. As such,



this new approach in Horizon 2020 is especially promising, even for the countries that are less oriented towards science and innovation (ibid).

The statements written above need to be taken into consideration especially when talking about equal development inside the EU. Never the less, for the purpose of this article we will research key indicators for H202 Industrial leadership and follow the aim, set by European Commission: "... securing Europe's global competitiveness..." (European Commission n.d.), meaning we will look into the set key indicators and evaluate if they are relevant for comparative analysis EU vs. other industry-leading countries. By this research, we do not aim to evaluate the importance and need for grand strategies and policies. We do, however, evaluate its' transparency. We predict the problem of accessibility of data, the actuality of data, and above all comparative data values. How will we know where we are if we cannot make comparative analysis? And even more - how to then set new policies and instruments if we do now know the outcomes and effects of previous ones? How can we assure discourse, if we do not have relevant information to support argumentation?

## **5. Evaluation through the eyes of policy analysis**

As written above, to be able to discuss and to steer the discourse one needs relevant information. To assure relevant information, policy analysis is a suitable tool. The aim of the policy analysis is (in the case of the applicative type of policy analysis) (Fink - Hafner and Lajh 2007, 20-21) to formulate a recognition on a relatively narrow problem, issues that are as directly applicable in the processes of the political decision - making. It differs from the academic policy analysis by its length and problems since the academic type of policy analysis deals with the theory and with "big questions" and is of more explanatory nature (ibid.).

Public policy can be defined as a long series of more or less related choices - along with with the decisions of non-action taken by government bodies and officials (Dunn 1994, 61). The processes of designing and implementing public policies are empirical processes (Fink - Hafner 2007, 17). Several theoretical models of public policy analysis have been developed to help clarify the empirical decision-making processes on public policies, the characteristics of these processes and their effects. In the literature, the following models are most often presented: institutional theory (intuitionism), rational theory (rationalism), Incremental theory (incrementalism), Mixed scanning, Process theory, Group theory, Elite theory, Game theory and Public choice theory (Fink Hafner 2007, 33-34). For the

understanding “of” science (Fink - Hafner 2007, 17) and “in” science regarding public policy, the *public policy process* is a very model, which is based on the understanding of the process of shaping public policies as a sequence of temporally separated and substantially different phases:

1. identification of public policy issues and the creation of a political agenda;
2. the formation of public policy alternative solutions to the social problem;
3. legalization of the chosen public policy solution;
4. Implementation of public policy;
5. Evaluation of public policy effects (Fink - Hafner 2007, 17).

Public policy actors have public policy mechanisms, (instruments, tools, techniques and measures) to influence the processes of policy design and implementation (Pal, 1987). The most obvious (Kotar 2002, 53) is the special position of state structures as decision-makers in policy-making since they have the sole legal powers, privileged use or access to public policy mechanisms. In particular, the possibility of state actors is exemplified by defining the decision-making process or by deferring the agenda of solving public problems. Non-state public-political actors do not have such power in institutionalized decision-making on public policies (ibid).

According to Majchrzak (1984), the relevant public policy mechanisms, concerning the discussed issues, are the following:

- mechanisms related to information: the production of information through the collection, display, evaluation and monitoring of information; grouping information; disseminating information through reports, conferences, etc.; stimulating interests through publicity, propaganda, intimidation and threats; retention of information; templates of model legislation;
- financial mechanisms: investments, compensation of losses; resource redistribution; setting financing priorities, etc.
- regulatory and control mechanisms: regulatory provisions; legislation; setting standards; granting monopolies, etc.
- operational mechanisms: construction and management of facilities; public works (eg construction), etc.
- mechanisms that are directly linked to public policies: the creation of a political agenda; defining priorities and objectives; postponing decisions; coordinating public policies (Majchrzak 1984, 26).

Bayers (2004, 213-216) defines two impact strategies: *voice* and *access*. The voice strategies refer to public policy strategies, such as media campaigns

or protests. They represent activities in various public spheres, an arena where communication between social groups, policy-makers and citizens becomes visible to the general public. We separate the *information policies* and the *policy of protest*. Both represent the presentation of information in a particular strategic point, except that others are conceptually different, contain an explicit presentation of events to attract attention and expand the conflict. They are easier to distinguish according to the actions used by players in the context of these two strategies, namely:

- information policies: organizing press conferences, informing in the form of brochures, leaflets, participating in debates in the media, involving known persons in campaigns, etc.;
- protest policy: organizing manifestations / demonstrations, street actions, petitioning, civil disobedience / disruptive activities (Bayers 2004, 226).

*Access strategies* are synonymous with lobbying (Bayers 2004, 213-216). They concern a surrounding where political bargaining takes place. They are exchanging publicly-relevant information with civil servants through formal or non-formal networks. Contrary to the voice strategy, access strategy transforms information directly from stakeholders to policymakers. They are mainly used for the transmission of operational and technical information (ibid). In practice (Bayers 2004, 213-216) it is difficult to distinguish between various manifestations of political mobilization, which can be grouped in the overall strategy of influence. The choice and combination of tactics are shaped by two possible obstacles. The first is the costs and benefits associated with different strategies, the second being the position of the playing structure or the actual gain. The author (Bayers 2004, 213-216) says that to understand the changing of the use of political strategies, analysts have hypothesized that specific interests' useless voicemail and are looking for more accessible than diffuse interests. The difference between *diffuse* and *specific* interests relates to the interests of voters, which made mobilization, in fact, a reality (Bayers 2004, 213-216).

Evaluation research of public policies is an integral part of the scientific research methodology, and on the other hand, it is different and very specific and never completely methodologically objective, but precisely for this reason exceptionally is varied and complex (Kustec-Lipicer 2009, 22-23). Evaluation research is a set of research procedures, targeted research that enables the acquisition and presentation of valuable assessments of the studied public policy content (Kustec-Lipicer 2009, 117). It must be designed specifically for each case studied, including the contextual factors that are relevant to this case (Bressers, van Twist and ten Heuvelhof 2013, 23-37).

Evaluation (Parsons in Kustec-Lipicer in Fink Hafner 2007, 177) has a particular role in the life process and/or public policy cycle in two key points:

- in the phase before the formal adoption of a public policy that provides a balanced evaluation of all potential alternative solutions and their effects (*ex-ante evaluation*),
- in the phase that follows the implementation of the already adopted public policy, when it is necessary to collect and evaluate the actual effects caused by the adopted public policy (*ex-post evaluation*) (ibid.).

Different views and approaches can also be seen through four larger groups (see Kustec-Lipicer 2009, 81-113), which distinguishes:

- Time series (It is based on the expectation of the initiators that the performers are properly evaluated in the various periods before the implementation of public policy, between and after the implementation)
- Performance category (Its key content refers to the question of entities or groups that evaluate the phenomena studied, who are those entities, what purposes and objectives do they have, and from which the positions evaluations is performed,
- Content category (The most important is the motivator's motive - to improve and develop public policy through evaluation, and to pronounce judgment on it.) and
- Methodological type of evaluation of public policies (ibid.).

The categories do not exclude each other, but are complementary or at least they intertwine (ibid.). For the purpose of this article, we will evaluate public policy instrument H2020. We will not evaluate indicators set by the policy instrument documents per se. The evaluation will cover the availability of the data, that should enable interim and ex-post evaluation.

## **6. Key indicators and their evaluation**

Indicators are used by people in everyday life, and especially are providing the basis of companies or governments decisions (Cornescua and Adamb 2013). Indicators are used not only by researchers and stakeholders but also by civil society to better understand specific interests. Cornescua and Adamb (2013) say, that indicators are used by people for daily decisions. People voluntarily or involuntarily, are always using indicators when they analyze, forecast and so on. Its importance is given by the fact that indicators are describing a topic of interest, reducing information overload for data users and provides the necessary information for decision-making. The power of

the indicators it represents also a weak point because when it is intended to describe a wider topic of interest, the selection of one or more representative indicators is difficult, there is a loss of information risk or manipulation of obtained data (Cornescua and Adamb 2013).

From the literature (see Cornescua and Adamb 2013) we identify several important features that a relevant indicator should meet:

- be specific - to clearly identify the results;
- be measurable - preferably to be quantitative;
- be practical – that can be used;
- be available - allowing the necessary data collection for indicator;
- be transparent in methodology and selection;
- be well-grounded in scientifically (ibid).

Since there are 28 member states in EU, semiotics in setting key indicators for all to understand and follow in the same way is necessary. European Commission (see European Commission, n. d.) set measures to complete and further develop the European Research Area by the EU Framework Programme for Research and Innovation. These measures aim at breaking down barriers to create a genuine single market for knowledge, research and innovation (ibid). European Commission also stated, that despite the complexity, the Horizon 2020 indicators will deliver information on outputs and results across all areas of the programme. They will provide the basis for analyzing the nature and scale of impact of Horizon 2020 on the European research and innovation system and how Horizon 2020 has contributed to building a society and an economy based on knowledge and innovation across the Union by leveraging additional research, development and innovation funding (EC DGRI 2015).

The legal basis of Horizon 2020 specifies a list of compulsory Key Performance Indicators to be considered in its evaluation and monitoring system (EC DGRI 2015). The legal basis also indicates a list of 14 cross-cutting issues that serve to monitor on an annual basis Horizon 2020 programme implementation and which are reported in the Annual Horizon 2020 Monitoring Report (ibid). Key Performance Indicators are divided into three sections: Excellent Science, Industrial Leadership and Societal Challenges. For the purpose of this article, we will look into Industrial Leadership performance indicators. Also, for the purpose of this article, we will make a general search of the indicators. We do need to take into the account that there are data not available for the general public which enables a different kind of calculations. Never the less, general data to evaluate the indicators

should be broadly available. There are several sources, offered by the European Commission to track data.

The *Horizon Dashboard* is a webpage, that provides monthly, aggregated data (see EC n. d.):

- Implementation figures - it presents an overview on evaluated proposals (incl. success rates) and detailed statistics and data on funded projects and their participants, broken down by countries and regions, research domain/programme part, organization type, etc.
- Country Profiles – where one can find out more about how a country is performing in Horizon 2020: funding received, participations by region, top beneficiaries, collaboration with other countries, SMEs participation and many more information at your fingertips
- Project Results- presents information on results of funded projects, notably Intellectual Property Rights (IPRs) and scientific publications (ibid.).

Expecting to find all key indicator results, one can find only two, namely IPRs and scientific publications, the last one not containing additional information on public-private publications. In 2017 *Interim evaluation of Horizon 2020* was published. The evaluation assesses (see EC DGRI 2017) Horizon 2020's current progress toward its objectives. The findings are to contribute to drafting the last Work Programme for 2018-2020, provide the evidence-base for the report of the High-Level Expert Group on maximizing the impact of EU R&I programmes and will inform the design of future Framework Programmes (ibid.). The document itself is well structured, offers different data and data explanations. It addresses all the Key indicators with more or less up to date data. But there is one general remark: The data is available for EU. Data per country or comparison with non-EU countries is not available. We break down the information on key indicators below. Also, we have noticed that most of the data for selected indicators were provided by CORDA. CORDA is the European Programme (see CORDA) for the establishment of a European capacity for Earth Observation. Copernicus products are created using satellite imagery and in situ data which is defined as all non-space-born data with a geographic dimension, including observation data from ground-, sea- or airborne sensors as well as reference and ancillary data licensed or provided for use in Copernicus (ibid.). It does not have much to do with industry and innovation per se, however, if they can provide spot-on data, one should not have any concerns. There is one fact that that does not imply good transparency. The general public does not have insight into the database. Their webpage states: "If you are not a CORDA Data

Provider please note that due to data policy issues CORDA is currently only available to Copernicus services and their contractors” (CORDA).

Searching through the European Commission webpages one can also find *European Innovation Scoreboard 2019*. The annual European Innovation Scoreboard (EIS) provides a comparative assessment of the research and innovation performance of the EU Member States and the relative strengths and weaknesses of their research and innovation systems (EC DGRI 2019). It helps the Member States assess areas in which they need to concentrate their efforts to boost their innovation performance. Innovation performance is measured using a composite indicator – the Summary Innovation Index – which summarizes the performance of a range of different indicators. The EIS distinguishes between four main types of indicators – Framework conditions, Investments, Innovation activities, and Impacts – and ten innovation dimensions, capturing in total 27 indicators (ibid.).

EIS (EC DGRI 2019) provides a comparative assessment of the research and innovation performance of the EU Member States and selected third countries and the relative strengths and weaknesses of their research and innovation systems. It helps countries assess areas in which they need to concentrate their efforts to boost their innovation performance (ibid.). The document contains not only the data but also methodology, where the data was collected, the definition of indicators, etc. The main measurement framework for the European Innovation Scoreboard was significantly modified in 2017 (EC DGRI 2019). For the 2019 edition, no changes have been made to the main measurement framework. However, due to data revisions for some indicators, the results for earlier years in this report are not directly comparable to those reported in previous editions of the EIS (ibid.). The changes were made by following a need for additional contextual analyses to better understand performance differences between the innovation indicators used in the main measurement framework, a set of contextual indicators was introduced to the country profiles in the 2017 edition and revised in the 2018 edition (ibid.). Thoe the comparison to previous reports cannot be made, the changes made can only be marked as positive, because they enable better understanding. What we do miss in this document is an alignment with H202 key indicators. There are only four of them, listed in the document: Venture capital, SMEs introducing product or process innovations, Public-private co-publications per million population and. PCT patent applications per billion GDP. Further on we describe where we found data for the indicators and to what extent.

### *Patent Applications*

The data for Patent Application in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, page 132) is available for EU. Data per country or comparison with non-EU countries is available only by the year 2013. Searching the EUROSTAT database gives us poor statistic on the patent application (Eurostat 1). The numbers for the EU are up to date, however, the comparison with other countries is not possible. Other data is available up to the year 2014 (we are in 2019 now), Russia and Japan in 2013, and there are no data for China<sup>2</sup>. There is, however, another source one can get information from – WIPO, World Intellectual Property Organization. One cannot search the metadata, but there are two, up to date publication available, that give us information, that can answer the question to our Patent Application indicator: Patent Cooperation Treaty Yearly Review 2019 (WIPO 2019) and World Intellectual Property Indicators 2018 (WIPO 2018). The Patent Cooperation Treaty Yearly Review 2019 (WIPO 2019) offers us interesting statistics on the international phase: PCT applications, Global trends in PCT applications, PCT applications by receiving office, PCT applications by origin, PCT applications by applicant type, Top PCT applicants, PCT applications by fields of technology, even Participation of women inventors in PCT applications and may other (see WIPO 2019). The data in World Intellectual Property Indicators 2018 (WIPO 2018) goes up to the year 2017, but the breakdown of data is detailed, enables national comparison and very graphic (see WIPO 2018).

### *Private Companies Introducing Innovations*

The data for Private Companies Introducing Innovations in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, page 153) is available for EU. Data per country or comparison with non-EU countries is not available. Source of data was Corda, to which database we do not have access to. We found an additional source in OECD. The data enables comparison by country, but it is only up to 2014 (see OECD 1).

### *Joint Public-Private Publications*

The data for Joint Public-Private Publications in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, 132) is available for EU. Data per country or comparison with non-EU countries is not available. Searching through H202 dashboard one can find information on scientific publications by year, priority and comparison to other countries. But one cannot find information

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<sup>2</sup> For more information visit EUROSTAT 1.



on Joint Public-Private Publications. The H202 dashboard captures data on publications from the Scimago Journal & Country Rank (see SJR). The website offers a broad database, rankings by Journal or by Country. It is possible to filter data by Subject areas, Subject categories, Regions in years from 1996 up to 2018. There is, however no information about Joint Public-Private Publications. To broaden the search, we have run the keywords on google, trying to find other sources, but we were not successful. At last, it was found in the European innovation scoreboard 2019. In the Annex of the document, one can read, that the data source was Eurostat, but in the main text it is written, that the data was provided by Scopus, Science – Metrix as part of a contract to the European Commission (see EC DGRI 2019).

#### *Venture Capital Investments*

The data for Venture Capital Investments in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, page 141) is available for EU. Data per country or comparison with non-EU countries is not available. Eurostat offers data on Venture Capital Investments only for the year 2015. The data is available for only several EU countries (EUROSTAT 2). OECD offers data on Venture capital up to the year 2017 by country, by Start-ups and Later stage venture (see OECD 1). Also, European innovation scoreboard 2019 offers the same data (EC DGRI 2019).

#### *Debt Financing*

The data for Debt Financing in the Interim evaluation of Horizon 2020 (see EC 2017, page 143) is available for EU. Data per country or comparison with non-EU countries is not available. OECD offers data on Financial corporations' debt to equity ratio by country, by year, up to 2017 (see OECD2).

#### *Number of organizations funded*

The data Number of organizations funded in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, page 141) is available for EU. The data is available from 2014 – 2016. Data on the number of organizations funded is also available on the H2020 Dashboard. Data per non-EU countries is not necessary.

#### *SMEs that have introduced innovations to the company or to the market*

The data on SMEs that have introduced innovations to the company or to the market in the Interim evaluation of Horizon 2020 (see EC DGRI 2017, page 153) is available for EU. Data per country or comparison with non-EU countries is not available. European innovation scoreboard 2019 has the data

available for the year 2016. It enables comparison with other countries. In the Annex of the document, one can read, that the data source was Eurostat, but in the main text it is written, that the data was provided by OECD (see EC DGRI 2019).

*Turnover of company, Number of employees*

There is no concrete data on SME - Growth and job creation in participating SMEs or Turnover of company or Number of employees in the Interim evaluation of Horizon 2020. Eurostat shares similar data on SMEs up to the year 2015, but not the exact indicators (see Eurostat 3). European innovation scoreboard 2019 includes data on Employment fast-growing enterprises of the innovative sector and Employment in knowledge-intensive activities (see EC DGRI 2019).

Table 2: Horizon 2020 Industrial Leadership Key Performance Indicators

	<b>Key performance indicator</b>	<b>Definition of the indicator</b>	<b>WHERE TO FIND</b>	<b>Year of data available</b>	<b>Enables comparison with non-EU</b>
1	LEIT <sup>3</sup> – Patent applications and patents awarded in the different enabling and industrial technologies	Number of patent applications by theme; Number of awarded patents by theme	Interim evaluation of Horizon 2020; WIPO	2017	Yes
2	LEIT – Percentage of participating firms introducing innovations new to the company or to the market (covering the period of the project plus three years)	The percentage of private companies introducing innovations in the total number of project participants validated as private companies	Interim evaluation of Horizon 2020; OECD	2017	No/Yes
3	LEIT - Number of joint public-private publications	Number and percentage of joint public-private	Interim evaluation of Horizon 2020; European innovation scoreboard	2018	yes

<sup>3</sup> LEIT - Leadership in enabling and industrial technologies

		publications out of all LEIT publications	2019/Scopus/Science-Metrix		
4	Risk Finance - Total investments mobilised via debt financing and Venture Capital investments	Total investments mobilised via Venture Capital investments	Interim evaluation of Horizon 2020; OECD; European innovation scoreboard 2019	2017	yes
5	Risk Finance - Total investments mobilised via debt financing and Venture Capital investments	Total investments mobilised via debt financing	Interim evaluation of Horizon 2020; OECD	2017	yes
6	Risk Finance - Number of organizations funded and amount of private funds leveraged	Number of organizations funded; Amount of private funds leveraged	Interim evaluation of Horizon 2020, H2020 Dashboard	yes	Not necessary
7	SME – Percentage of participating SMEs introducing innovations new to the company or the market (covering the period of the project plus three years)	Number and % of participating SMEs that have introduced innovations to the company or to the market	Interim evaluation of Horizon 2020; European innovation scoreboard 2019/Eurostat, Community Innovation Survey/OECD	2016	yes
8	SME - Growth and job creation in participating SMEs	Turnover of company, Number of employees	Eurostat	2015	no

Source: EC DGRI 2015, authors contribution

## 7. Conclusion

If we take a look to the list of what features relevant indicator should be met (see Cornescua nad Adamb 2013) we can conclude, that H2020 Key Indicators are specific, are measurable, are practical (can be used). When collected, they are transparent in methodology and selection and well-grounded. We do, however, have problems with availability. According to Table 2, we were successful to assure all the relevant information. How we managed to retrieve

them is another story. EC document *Interim evaluation of Horizon 2020* has solid, well-structured data, answering all the key indicators, but does not enable comparison with non-EU countries. Also, some data was outdated. Due to lack of information, we had to do an extra search in OECD, Eurostat, H202 Dashboard etc. It took a lot of time and extra knowledge. When preparing *Interim evaluation of Horizon 2020* they had to use several different sources as well: Monitoring reports of H202 and statistical data, from internal IT tools, Eurostat and OECD. Extensive analysis was carried out by the responsible Commission service on the different programme parts of H202, external evaluations, participants network, internal assessment, etc. (see EC DGRI 2017). This kind of methodology cannot show transparent access to information for the general public. Never the less it could be solved, if the report would be published each year.

Since we do not believe the methodology will change by the end of the instruments' life, we should find another possibility to enable and support the discourse. One can find it in the European Innovation Scoreboard. It does not answer all H2020 Key Indicators, but it does have many other attributes: it measures innovation performance and trends, offers benchmarking innovation performance with non-EU countries, shows expected short-term changes in EU innovation performance and sets country profiles. In addition to that, it is published each year.

As important as the discourse and its continuing variation is, this evaluation also shows, that institutions of economic imaginary need to be careful with their retention. Eventhoo we want to avoid complexity, one needs to have in mind, that there are discourses, that can overlap because of their nature, because of the need or because they can offer each other more clarity. Consistency and transparency are not needed only throughout the different policies and strategy goals but also throughout their retention to assure the set goal.

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