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POLICY FRAMEWORK FOR IMPLEMENTATION OF A CIRCULAR ECONOMY IN CROATIA: PAST, PRESENT, AND FUTURE

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Abstract

This work aims to shed light on the evolution of the national policy framework in Croatia in its transition to circular economy (CE), and provide a better understanding of how Croatia stands in its transition to CE. The methodology employed in this research involves a systematic analysis of policy programmes, initiatives, and actions regarding Croatia's transition to CE since 1991. This has resulted in a list of 31 policy documents, mainly laws, action plans, and policy proposals, grouped according to the eight components of the European Green Deal. Institutional stakeholders, funding opportunities, and CE performance are also discussed in order to complement the descriptions of the policy framework. The main contribution of this research is the insight it offers into the history of CE policy development in Croatia, which can be roughly divided into four phases, starting from environmental protection in the 1990s and moving towards a more dedicated approach to CE that recently emerged in policy agendas during 2019 and 2020, mostly due to European initiatives and regulations. Progress is expected to emerge as a result of external factors, primarily European programmes such as the Recovery and Resilience Facility (RRF) and Just Transition Mechanism (JTM), which demand clearly defined priorities and elaborated projects.

Keywords: *circular economy, Republic of Croatia, policy framework, institutional set-up, historical overview*

1. INTRODUCTION

The future of humanity and the planet appears rather bleak as a result of the exponential growth of the world's population, which is predicted to increase from its current figure of 7.5 billion to 10.2 billion people by 2060. This runs in parallel with the global quality of life standards as resource consumption increases along with greenhouse gas emissions (European Commission, 2020c). There is an urgent need to transition to a more sustainable techno-economic regime, the process in which circular economy (CE) is perceived to play an important role. An extensive literature review suggests that CE and sustainability are closely related. A comprehensive study carried out by Geissdoerfer et al. (2017) summarises the main similarities and differences between sustainability and CE and identifies eight relationships between them. They "found that the Circular

Economy is viewed as a condition for sustainability, a beneficial relation, or a trade-off in literature" (Geissdoerfer et al., 2017:767). CE is viewed as an operationalisation for businesses to implement sustainable development principles in order to abandon "end of life" production models (Ghisellini et al., 2016; Kirchherr et al., 2018; Reike et al., 2018; Saidani et al., 2019) that lead to the exhaustion of natural resources and produce in parallel catastrophic climate changes. In short, CE is perceived as a solution to increase the sustainability of our economic system (Elia et al., 2017).

In this vein, Schroeder et al. (2018) conclude that CE practices can be understood as a "toolbox" for achieving a significant number of Sustainable Development Goals (SDGs) as determined by the *United Nations 2030 Agenda for Sustainable Development* (UN 2030 Agenda), especially in relation to clean water and energy, decent work and economic growth and sustainable consumption and production. Therefore, "CE can be considered as a tool that can be used by different countries, social agents, and institutions to achieve some SDGs" (Rodriguez-Anton et al., 2019:709).

In line with this global approach to SDGs, the European Commission launched the European Green Deal (European Commission, 2019a), a new growth strategy running until 2030, which seeks to separate economic growth from the consumption of resources by creating the first climate-neutral continent by 2050. The European Green Deal is focused on the implementation of the UN SDGs and the Commission adopted a new monitoring framework (European Union, 2019) which comprises around 150 indicators to assess progress towards the 17 SDGs in a European context. Therefore, the focus of monitoring the progress of EU member states towards EU 2020 strategic goals within a European semester (see Section 3.3.) has been shifted towards progress in SDGs in a European context and reported within the annual country reports. For example, the Croatian achievements in SDGs in the European context for the period 2013-2018 are given in Annex E of the Country Report for 2020 (European Commission, 2020b) (see Section 3.4.).

Despite the general agreement among countries, international declarations, strategies, and promotions of global actors such as the EU, OECD[1], WEF[2], or the Ellen MacArthur Foundation (Reike et al., 2018), the implementation of circular economy (CE) has not been satisfactory so far. A recent analysis reveals that the circularity gap has been set to increase, not decrease, as the "global economy is today only 8.6% circular while just two years ago it was 9.1%" (Circularity Gap Reporting Initiative, 2021:8). The circularity gap which indicates the share of cycled materials as part of the total material consumption is widening at the global level, sending a strong message that the global economy is still stuck in the "take-make-waste" linear production model. This has to change if humanity intends to survive. This calls for global collaboration in pursuing more sustainable development, and monitoring national progress in order to exchange data and experiences and therefore accelerate the transition to CE.

1 Organisation for Economic Co-operation and Development
2 World Economic Forum

Due to the importance of CE to the sustainability of humankind, it has received a growing amount of attention in academic research, particularly since 2017 (Reike et al., 2018). However, the concept and definition of CE remained unsettled and the wider implementation of CE requires "paradigmatic and theoretical clarity of the CE concept which has yet to emerge" (Blomsma and Brennan, 2017:610). This initiated a range of comprehensive studies, primarily based on systematic literature reviews, that sought to shed light on the concept and definition of CE (Geissdoerfer et al., 2017; Kirchherr et al., 2017; Homrich et al., 2018; Reike et al., 2018; Lahane et al., 2021). These studies presented various definitions of CE, discussed its origins, schools of thought of CE, main features, components and goals of CE, providing, thus, a solid basis for understanding the concept of CE and for outlining the future routes of exploration. Other types of studies explored various aspects of CE, such as CE indicators and its measurements (Kristensen and Mosgaard, 2020; Moraga et al., 2019; Švarc et al., 2021), new circular business models (Pieroni et al., 2019), factors pertaining to CE growth (George et al., 2015), remanufacturing (Lieder and Rashad, 2016), eco-innovation (de Jesus et al., 2019; Smol et al., 2017), relationships between digitalisation and Industry 4.0 (Kintscher et al., 2020; Maffei et al., 2019), etc.

Despite conceptual ambiguity and multiple barriers for transition to CE (Kirchherr et al., 2018; Ormazabal et al., 2018; Rizos et al., 2015; Govindan and Hasanagic, 2018), this research stems from the assumption that there is no alternative to CE and that worldwide CE transition depends on the successful transition of each individual country. As a result of the dense intertwining and interdependence of national economies and global value chains, no country can be considered an island (Altstoff Recycling Austria, 2019). As such, knowledge and awareness of the possibilities of implementing CE in one's own country is a prerequisite for a successful national CE transition, which in turn can aid the global processes.

However, citizens and even experts in many European countries, especially in South-Eastern Europe, which is traditionally weaker in terms of CE implementation (Busu, 2019:5), are largely unfamiliar with the national performance of CE and with the institutional and policy framework used to embed CE into the national development agenda. Therefore, the goal of this research is a simple one: to describe the evolution of national policy frameworks in Croatia for transition to CE in an attempt to understand how Croatia stands with its transition. The Croatian path towards CE can help serve as an illustrative example of the evolution of CE in other Eastern European countries that share similar contexts of weak political will, insufficient funds, and the absence of expertise and education for CE (Reike et al., 2018).

Because the policy framework usually consists of institutional landscapes (stakeholders) and policy programmes (strategies and targets), this research is designed to answer the following questions: How has CE policy historically evolved in Croatia? Which CE strategies and policies are currently relevant? Which institutions and stakeholders act as pillars of national CE implementation? How might these insights contribute to a better understanding of CE in Croatia's design of policy guidelines and organisational strategies?

The article starts with an explanation of the methodology in section two. The evolution of the national policy frameworks in Croatia for its transition to CE is presented in section three. Institutional capacities, possible funds, and performance are all addressed in section four. Section five then discusses the results of the research and concluding remarks are given in section six.

2. METHODOLOGY

This research uses the qualitative research method which involves a systematic review of national policy documents regarding the transition of Croatia to CE since 1991. This has resulted in a list of 31 policy documents, mainly laws, strategies and action plans which were analysed and grouped according to the eight components of the European Green Deal (European Commission, 2019c) (Table 1). The documents were identified by searching the Official Gazette of the Republic of Croatia by keywords specific for each of the eight components of the European Green Deal, such as: climate, energy, building, environment, protection, transport, etc. and their different combinations. The European Green Deal is focused on SDGs and low-carbon development which requires integrated planning when using natural resources. In this context, SDGs include many elements important for monitoring progress towards CE and provide a framework for systematic and structured analysis of the documents. The main criterion for including the document in the analysis was its comprehensiveness ("umbrella character"), meaning that the document has an impact on the general development of CE. Policy instruments, mechanisms, and measures are not discussed as they are scattered over many industries – in both the manufacturing and services sectors – and require sectoral analyses. Policy documents are numerous and sector dependent, as are various bylaws, regulations, and directives. Only an experienced specialist working in a certain area would be able to properly understand and manage the multitude of documents produced by the state bureaucracy since 2019, when European regulations were initiated.

Our comprehensive review and analysis of policy documents, therefore, resulted in 31 key documents, which are the most relevant for revealing the main direction of developments made towards CE. Different websites listing policy documents, including those indicated by the Official Gazette in a specific area, and different literature resources (e.g., Boromisa, 2020) were also searched to complement keyword retrieval from the Official Gazette. Each of the selected documents was then searched by the keyword "circular" and analysed to understand and interpret the context in which the term "circular" was used.

In addition, an analysis of institutional capacities, possible funds, and performance towards CE is provided. The analysis is based on the collected policy documents, many of which provide information about the main stakeholders and achievements in the related field. The majority of data are based on analyses of the country reports within the European semester, and the latest strategies and documents – such as the *National Recovery and Resilience Plan* / *Nacionalni plan oporavka i otpornosti* or *Just Transition Me-*

chanism (JTM) / *Fond za pravednu tranziciju* which provide an overview of the relevant areas and include aspects related to CE. Additionally, some internet resources are used and cited in the literature.

3. EVOLUTION OF NATIONAL POLICY FRAMEWORKS IN CROATIA REGARDING ITS TRANSITION TO CIRCULAR ECONOMY (CE)

In Croatia CE has its roots in environmental protection as it is a tourist country, and very proud of its natural resources and natural beauty, especially the Adriatic coastline, which it strives to protect. Therefore, Croatia has a long tradition of supporting environmental protection and sustainable development, both of which are concepts closely related to CE. Many scholars maintain that CE is a practical tool; a mechanism with which sustainable development – the ultimate goal of CE – can be achieved (Reike et al., 2018; Saidani et al., 2019). The development of CE in Croatia can be divided into four phases (Figure 2):

1. Environmental policy based on legacy (1992-2000);
2. Environmental policy in anticipation of EU membership (2001-2012);
3. Sustainable development phase in the EU framework (2013-2019);
4. Moving towards CE through the European Green Deal and SDGs (2019-present).

3.1. Environmental policy based on legacy (1992-2000)

The first phase of the development of CE in Croatia covers the approximate period between 1992 and 2000, in which public policy efforts in Croatia were focused on environmental protection based on previous legacies and commitment to international SDGs. The Croatian government supported *Agenda 21*, which was accepted at the United Nations Conference on Environment and Development (UNCED) or "Earth Summit" in Rio de Janeiro in 1992, and assumed the commitments arising from the *Millennium Declaration* and the *Millennium Development Goals*, which were adopted by the United Nations General Assembly in 2000.

Croatian support for international actions, especially those protecting the sea, water, and air, dates back to the 1970s and 1980s, and has continued through the 1990s. For example, the website of the Croatian Ministry of the Sea, Transport and Infrastructure lists 46 international agreements for protection of the sea and water from pollution dating back to the 1970s, while the website of the Croatian Ministry of Economy and Sustainable Development lists 19 international agreements on air protection, dating back to the 1980s.

One of the first documents adopted by the Croatian Parliament, which specifically mentions the importance of sustainable development, is the *Declaration on Environmental Protection* / *Deklaracija o zaštiti okoliša* (OG 34/1992-865) (Matešić, 2009), which was followed by the *Environmental Protection Act* / *Zakon o zaštiti okoliša* (OG

82/1994-1390) a few years later. The *Water Act / Zakon o vodama* (OG 107/1995-1769) declares the principles of sustainable development in water management in order not to resist jeopardising future generations – an early reflection of the principles of CE. The first *Law on Waste Management / Zakon o otpadu* (OG 34/1995-680) and the *Law on Air Protection / Zakon o zaštiti zraka* (OG 48/1995-992) also date from this period. Both focus on environmental protection but with an emphasis on waste utilisation and climate safety.

3.2. Environmental policy in anticipation of EU membership (2001-2012)

The second phase of Croatian development toward CE covers the approximate period between 2001 and 2012, in which public policy focus shifted from environmental protection more towards sustainable development. There are three documents from this period that can be considered crucial for the future orientation toward sustainable development and, later, for CE (Table 1).

The first is the *National Environmental Strategy / Nacionalna strategija zaštite okoliša* (OG 46/2002-924), adopted in 2002, which was avant-garde in its message that economic growth should be achieved in Croatia without a proportional increase in material and energy consumption or environmental pressures. These ideas became the underlying concept of CE almost 15 years later, which advocates for decoupling economic growth from resource usage.

The strategy identified two mechanisms for efficient environmental protection and the socio-economic progress of Croatia. The first involved the concept of sustainable development as a priority for national development strategies. The second mechanism was related to the expected accession of Croatia to the European Union (EU), which was understood in quite an idealistic and naive way, where the assumption was that complying with current EU standards would enable Croatia to bypass the production of obsolete, unclean, and inefficient technologies. Many such industries were indeed abandoned but this was simply because of the rapid deindustrialisation of the Croatian economy, which began in the mid-1990s, along with the rise of service sectors which resulted in slight relative decoupling (Domenech and Bahn-Walkowiak, 2019). On the other hand, EU membership accelerated Croatian progress toward renewable energy, the thermal protection of buildings, and waste management.

This strategy was followed by the *Environmental Protection Act / Zakon o zaštiti okoliša* (OG 110/2007-3226), which was in force from 2007 to 2013 and announced the adoption of the new umbrella document for Croatia's strategic development – *Sustainable Development Strategy / Strategija održivog razvitka* (OG 30/2009-658). This was in view of meeting one of the conditions of the pre-accession process to EU membership (Matešić, 2009). Although the strategy is almost identical to the basic principles of the *EU Sustainable Development Strategy* (European Council, 2006), except for some national specificities (Matešić, 2009), it was vital in encouraging the long-term transformation towards sustainable development. The strategy integrates different developmental policies (e.g., population, agriculture, social justice, sustainable economy) in an

effort to find a link between all three components of sustainable development: social, environmental, and economic. Unfortunately, the strategy did not include the sectoral action plans and measurement tools needed to monitor progress in individual sectors. Until 2019 and 2020, when CE became an integral part of some policy documents, the strategy presented, according to Matešić (2017), the only document in line with CE as a new model of production and consumption.

The third key document from this period is the *Strategic Development Framework 2006-2013* (Government of the Republic of Croatia, 2006) which was made in anticipation of the EU membership. This perspective opened up a platform for novel and original reflections regarding the future of the Croatian economy and society with a focus on business competitiveness and entrepreneurship. It also called for an integrative and holistic approach, emphasising that sustainable development (focused on environmental protection in regional and spatial development frameworks) was not only a priority, but also constituted the third "development link" of national development in addition to the macroeconomic environment and integrated financial services.

3.3. Sustainable development phase in the EU framework (2013-2018)

This phase covers the approximate period between 2013 and 2018. It is strongly influenced by Croatia's EU membership (Croatia became a member on 1 July 2013) and the need to harmonise institutional and legal frameworks with the EU rules and regulations, including sustainable development and related activities.

The progress of Croatia towards CE was observed throughout this period and up until 2020 by monitoring the goals achieved from the *EU Strategy 2020 of Smart, Sustainable, and Inclusive Growth,* adopted in 2010 (European Commission, 2010), and the *First Circular Economy Action Plan,* adopted in 2015 (European Commisssion, 2015). The strategy required, among other elements, reporting on climate change and energy through the annual country reports for the European Semester. The *First Circular Economy Action Plan* (European Commission, 2015) consisted of 54 actions that involved a mixture of regulations and voluntary initiatives, considering production, consumption, secondary raw materials, and waste management. The action plan is considered to be fully completed four years after its adoption (European Commission, 2019e). Generally speaking, this directed Croatia towards a more sustainable model for economic development.

Croatia is obliged, as are other EU member countries, to prepare a National Reform Programme (NRP) to enable the coordination of economic policy at a European level on a yearly basis. This is called the European Semester. The NRP elaborates upon the most important activities for national economic and social development that are evaluated by the European Commission (EC) and published in the national country reports, accompanied by each country's specific recommendations. NRPs, therefore, play an important role in the short- to mid-term development plans harmonised by the European strategic goals, enabling the EC to monitor their implementation.

An integral part of each NRP between 2013 and 2019 was the monitoring of progress towards the five main goals of the EU 2020 strategy, which provided the basis for economic recovery of Europe approaching 2020. This included indicators on climate chan-

ge and energy under four sub-goals: sharing renewable energy sources, greenhouse gas emissions, primary energy consumption, and final energy consumption. The remaining four goals were: employment rate, total domestic expenditure for research and development (R&D), educational attainment, and the reduction of poverty.

The last country reports that monitored progress towards the EU 2020 strategy in 2018 (European Commission, 2018) and in 2019 (European Commission, 2019d) revealed that Croatia had achieved its national targets in renewables (except in transport, which is one of the lowest in Europe) and energy efficiency. It was also quite successful in reducing greenhouse gas emissions (GHG) as the total emissions were reduced by over 23% between 1990 and 2017.

The term "circular economy" was used in the country report for the first time in 2016 (European Commission, 2016), most likely initiated by the EU's first *Circular Economy Action Plan* (European Commission, 2015). The country report stated: "Investment into key aspects of the circular economy is necessary for Croatia to address its low resource productivity and recycling rates" (European Commission, 2016:62). Resource productivity, which measures "how efficiently the economy uses material resources to produce wealth", has improved slightly over the last ten years. However, Croatia is, by producing €1.1 per kg of raw material, still significantly below the EU average of €2 per kg (European Commission, 2016:62).

The analysis of policy documents, grouped by the categories of the European Green Deal (Table 1) reveal that, during this period, policy focus and legislation centred around various aspects of waste management and environmental protection that generally did not recognise the importance of CE. There were some exceptions, such as the *Waste Management Plan 2017-2022 / Plan gospodarenja otpadom 2017.-2022.* (OG 3/2017-120), which explained the concept of CE in more detail and emphasised its aim to reduce the generation of waste to a minimum throughout the life cycle of a product and its components. The subsequent *Green Paper* (EIHP, 2018), adopted in 2018, dedicated only a short chapter (Chapter 5.2.2) based on European directives to emphasise that waste management, recycling, and bioeconomics were required for CE.

It is worth mentioning that the *Regional Development Strategy until the end of 2020 / Strategija regionalnog razvoja do kraja 2020.* (OG 75/2017-1832) recognised CE as a new concept for development and encouraged regional and local authorities to use their numerous mechanisms to support the shift towards CE. These are currently not in function. Finally, the *Strategy for the Development of Wood Processing and Furniture Production 2017-2020 / Strategija razvoja prerade drva i proizvodnje namještaja 2017.-2020.* (OG 44/2017-1001) concluded that forestry, wood processing, and furniture production were activities linked in a value chain and were good examples of the use of CE as a strategic determinant of EU policies.

3.4. Moving toward CE through the European Green Deal and SDGs (2019-present)

During this period, CE is being increasingly recognised as a new development paradigm and is becoming an integral part of a growing number of policy documents in Croatia.

This is most likely a consequence of the European Green Deal (European Commission, 2019a) – a new European growth strategy running until 2030. This was followed by the new *Circular Economy Action Plan,* adopted in early 2020 (European Commission, 2020a), which is one of the main components of the European Green Deal. The new action plan consists of 35 actions towards climate-neutral CE. These include, among many tasks, the transformation of industry towards climate neutrality and digitalisation as an accelerator for green transformation.

It should be stressed that the focus of the European Semester and related reports that included elements important to CE monitoring shifted in 2020, within the European Green Deal, towards SDGs, following the implementation of the *UN 2030 Agenda*. This idea was promoted by EC President Ursula von der Leyen (von der Leyen, 2019) and was given in her political guidelines: *My agenda for Europe.* Subsequently, the implementation and monitoring of the European Green Deal was integrated into the European Semester through the new *Annual Sustainable Growth Strategy* (ASGS) (European Commission, 2019b), which was published on 17 December 2019. The ASGS required each member state to include in their reports the new annex for monitoring their country's progress, based on Eurostat's EU SDG indicator set (SDG indicators in the EU context) (European Union, 2019). Croatian achievements in SDGs over the last five years (2013-2018) are given in Annex E of the Country report for 2020 within the European Semester (European Commission, 2020b).

There are two documents, both carried out by the Croatian Ministry of Environmental Protection and Energy in 2019, which promote CE as an important element for overall development. The first one is the *Proposal of the Environmental Protection Plan until 2020 / Prijedlog plana zašite okoliša do 2020.* (MEPE, 2019b), which is actually an inaugural document that tried to integrate CE as an important element for development by proposing four measures (MEPE, 2019b:42) to enable the achievement of this goal: (1) Integration of all relevant EU objectives on CE into national legislation, especially on waste; (2) Development of guidelines to promote research, innovation, and investment in CE; (3) Informing and educating stakeholders on the concept of CE (websites, media, etc.); and (4) Preparing CE activities for the European Structural Investment Funds (ESIF) funding cycle after 2021. Unfortunately, it is not clear whether or not this proposal has been adopted. There are no indications to suggest that these measures are being implemented.

The second document is the *Integrated National Energy and Climate Plan 2021-2030 / Integrirani nacionalni energetski i klimatski plan 2021.-2030.* (MEPE, 2019a), adopted by the Croatian Government in 2019. This can be considered a key document for the transition to CE, although it is essentially committed to the realisation of an energy union at a European level. It defines the national targets for each of the five key dimensions of the energy union (energy security; internal energy market; decarbonisation; energy efficiency; and research, innovation, and competitiveness), outlining the appropriate policies and measures required to achieve these objectives. One of the measures (MS-11) envisages the establishing of a platform for CE, which develops a systematic approach across all value chains related to the Croatian economy. The central block of the platform is its cross-se-

ctoral thematic working group, which will identify the main CE stakeholders (with a focus on the industrial sector and suppliers of energy-generating products, raw materials, and packaging). Unfortunately, the measure did not determine the executive bodies, finances, monitoring methods, or the period of implementation. CE is also an integral part of the measure (MS-9) focused on improving the sustainability of urban areas. It envisages the creation of a program for the development of circular management of space and buildings in order to reduce heating and energy consumption.

CE is also incorporated in the *White Paper – Draft Low Carbon Development Strategy until 2030 with a view to 2050* and *Action plan / Bijela knjiga – Nacrt Strategije niskougljičnog razvoja do 2030. s pogledom na 2050. i Akcijski plan* (OG 63/2021-1205), which does not offer new ideas, but mostly reiterates the plans and programmes of the *Integrated National Energy and Climate Plan 2021-2030* (MEPE, 2019a) to establish a platform for CE and the national action plan for transition to CE. The *Energy Development Strategy until 2030 with a view to 2050 / Strategija energetskog razvoja do 2030. s pogledom na 2050.* (OG 25/2020-602) states that waste management and energy resources should follow the principles of CE, such as recycling and use of renewable energy resources: primarily biomass and biogas. Finally, the most recent *Waste Management Act / Zakon o gospodarenju otpadom* (OG 84/2021-1554), by contrast to the previous acts, embraces CE and defines, for example, what percentage of waste recycling should be reached by 2035 in order to contribute to CE.

4. INSTITUTIONAL CAPACITIES, PERFORMANCE AND POSSIBLE FUNDS

Strategic development and policies for the green economy and related transition to CE are coordinated by central governments under the auspices of one ministry – the Croatian Ministry of Economy and Sustainable Development (MESD) and its five directorates (climate, environment and waste management, energy, water management, and marine protection) (Figure 1). The *Division for Environmental and Nature Protection* is also under the auspices of the Ministry. Because the transition to CE requires a departure from a sectorial approach and necessitates coordinated action across the entire government, it is not clear how coordination with other ministries, especially the Ministry of Physical Planning, Construction, and State Property and the Ministry of the Sea, Transport, and Infrastructure will be performed. It is estimated that coordination among the directorates of the MESD and among the ministries is complex and ineffective (Boromisa, 2020).

Under the jurisdiction of the MESD is the Environmental Protection and Energy Efficiency Fund (EPEEF), which was launched in 2004 to raise funds for environmental protection and energy efficiency through the implementation of the "polluter pays" principle. According to the recent proposal of the *Environmental Protection Plan of Croatia until 2020* (MEPE, 2019b), the EPEEF needs to be reformed in order to contribute to new goals and challenges in the implementation of environmental policy.

Table 1. *A tentative review of national policy documents related to the transition to CE through the lens of the European Green Deal*

Elements of the European Green Deal	Document	Enactment	Role of CE
1. Climate Action	*Integrated National Energy and Climate Plan 2021-2030 / Integrirani nacionalni energetski i klimatski plan za razdoblje od 2021.-2030.*	MEPE (2019a)	Key document with ambitious plans to establish: (1) Platform for circular economy; (2) Cross-sectoral thematic working group; (3) National action plan for transition to circular economy; (4) Program for circular management of space and buildings
	Law on Climate Change and Ozone Layer Protection / Zakon o klimatskim promjenama i zaštiti ozonskog sloja	OG (127/2019-2554)	Not mentioned
	Climate change adaptation strategy for the period up to 2040 with a view to 2070 / Strategija prilagodbe klimatskim promjenama za razdoblje do 2040. godine s pogledom na 2070.	OG (46/2020-921)	Not mentioned
	White Paper – Draft Low Carbon Development Strategy until 2030 with a view to 2050 / Bijela knjiga – Nacrt Strategije Strategija niskougljičnog razvoja do 2030. s pogledom na 2050.	OG (63/2021-1205)	Repeats the *Integrated National Energy and Climate Plan*
	Program for climate change mitigation, adaptation to climate change and protection of the ozone layer (by individual cities) / Program ublažavanja klimatskih promjena, prilagodbe klimatskim promjenama i zaštite ozonskog sloja (po pojedinim gradovima)	Some cities, (e.g., Zadar and Dubrovnik) since 2020	Not mentioned

2. Clean energy	*Decision on the Proclamation of the Changes and Supplementations of the Energy Act / Odluka o proglašenju Zakona o izmjenama i dopunama Zakona o regulaciji energetskih djelatnosti*	OG (68/2018-1397)	Not mentioned
	Energy Development Strategy until 2030 with a view to 2050 / Strategija energetskog razvoja do 2030. s pogledom na 2050. godinu	OG (25/2020-602)	Waste management and energy resources should follow the principles of CE, e.g., recycling, use of renewable energy resources, etc.
	Green Paper – Analyses and bases for the development of the energy strategy / Zelena knjiga – Analize i podloge za izradu energetske strategije	EIHP (2018)	CE is linked to waste management
3. Mobilising industry for a clean and circular economy	*Waste Management Act / Zakon o gospodarenju otpadom*	OG (OG, 84/2021-1554)	Embraces CE, by contrast to previous acts, and defines the percentage of recycled waste by 2035 to contribute to CE
	Sustainable Development Strategy / Strategija održivog razvitka	OG (30/2009-658)	Not mentioned (Sustainable production / consumption / agriculture)
	Industrial Strategy 2014-2020 / Industrijska strategija 2014.-2020.	MOE (2014)	Not mentioned (only SD)
	Regional Development Strategy for the period until the end of 2020 / Strategija regionalnog razvoja za razdoblje do kraja 2020.	OG (75/2017-1832)	CE is a new development concept for regional and local development and should be supported
	Waste Management Plan 2017-2022 / Plan gospodarenja otpadom 2017.-2022.	OG (3/2017-120)	Reduce the generation of waste to a minimum throughout the whole life cycle of the product and its components for CE
	Ordinance on waste management / Pravilnik o gospodarenju otpadom	OG (81/2020-1517)	Not mentioned (only recycling)

4. Resource efficient building	*Ordinance on energy audit of buildings and energy certification / Pravilnik o energetskom pregledu zgrade i energetskom certificiranju*	OG (48/2014-929)	Not mentioned (only energy savings)
	Spatial Development Strategy / Strategija prostornog razvoja	OG (106/2017-2423)	Not mentioned (only waste management)
	Long-term strategy to encourage investment in the renovation of the national building stock / Dugoročna strategija za poticanje ulaganja u obnovu nacionalnog fonda zgrada	OG (28/2019-575)	Not mentioned (only energy savings)
5. Sustainable mobility (transport)	*Decision on the Adoption of the Transport Development Strategy 2017-2030 / Odluka o donošenju Strategije prometnog razvoja Republike Hrvatske od 2017. do 2030.*	OG (84/2017-2014)	Not mentioned (only environmental protection)
6. Sustainable agriculture	*Strategy for the development of wood processing and furniture production 2017-2020 with Action Plan / Strategija razvoja prerade drva i proizvodnje namještaja 2017.-2020. s Akcijskim planom*	OG (44/2017-1001)	Forestry, wood processing, and furniture production make a value chain that serves as a true example of CE
	Decision on the Proclamation of the Law on Agriculture / Odluka o proglašenju Zakona o poljoprivredi	OG (118/2018-2343)	Not mentioned (only organic production)
7. Ecosystem and biodiversity	*Declaration on Environmental Protection / Deklaracija o zaštiti okoliša*	OG (34/1992-865)	Not mentioned
	Decision on the Proclamation of the Water Act / Odluka o proglašenju Zakona o vodama	OG (107/1995-1769, 66/2019-1285)	Not mentioned (only SD)
	National Environmental Strategy / Nacionalna strategija zaštite okoliša	OG (46/2002-924)	Not mentioned
	Strategy and action plan for the protection of biological and landscape diversity / Strategija i akcijski plan zaštite biološke i krajobrazne raznolikosti	OG (143/2008-3962)	Not mentioned

7. Ecosystem and biodiversity	*National Action Plan for Green Public Procurement for the Period from 2015 to 2017 With a View to 2020 / Nacionalni akcijski plan za zelenu javnu nabavu za razdoblje od 2015. do 2017. godine s pogledom do 2020.*	MENP (2015)	Not mentioned
	Strategy and Action Plan for Nature Protection 2017-2025 / Strategija i akcijski plan zaštite prirode 2017.-2025.	OG (72/2017-1712)	Not mentioned
	Decision on the Proclamation of the Environmental Protection Act / Odluka o proglašenju Zakona o zaštiti okoliša	OG (82/1994-1390, 110/2007-3226), etc.	Not mentioned
	Proposal of the environmental protection plan until 2020 / Prijedlog plana zaštite okoliša do 2020.	MEPE (2019b)	Recognises the importance of CE; proposes four important measures but implementation is unclear
	Decision on the Proclamation of the Law on Air Protection / Odluka o proglašenju Zakona o zaštiti zraka	OG (48/1995-992, 127/2019-2553)	Not mentioned
8. Zero pollution	*Regulations on the protection of the sea and water against pollution / Propisi o zaštiti mora i voda od onečišćenja*	15 national regulations and 46 international agreements	Not reviewed
	Air Protection Regulations / Propisi o zaštiti zraka	28 national and 19 international agreements	Not reviewed
General national strategies	*National Development Strategy until 2030 / Nacionalna razvojna strategija do 2030.*	OG (13/2021-230)	Recognises the importance of CE
	National Recovery and Resilience Plan / Nacionalni plan oporavka i otpornosti	Government of the Republic of Croatia (2021)	Recognises the importance of CE

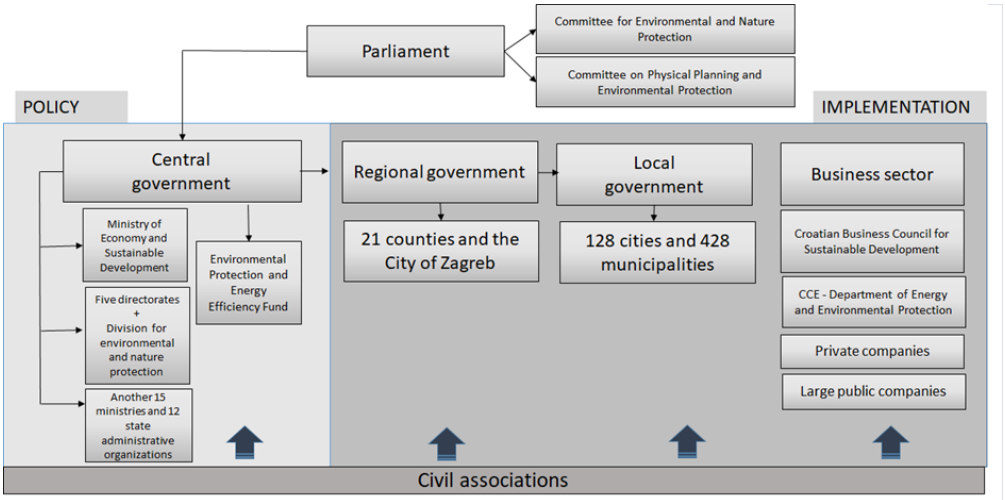

Figure 1. *Institutional framework for CE policy and implementation*

Regional and local governments in Croatia are complex and oversized. In addition to 20 counties and the City of Zagreb, there are another 128 cities and over 400 municipalities that must all participate in a coordinated transition to CE. However, the role of local governments in performing public tasks is limited (Boromisa, 2020), and the political will for change across all levels of governance is also questionable. Reforms in Croatia are few and far between and society as a whole has a low level of confidence that the government will implement any serious reforms, which puts the complex and mutually interrelated reforms related to CE under question. Therefore, it can be concluded that institutional capacities for reforms in Croatia, especially with regards to CE, are rather weak across all three levels of public management: central, regional, and local. Large corporations in dominant state ownership play a decisive role in the business sector for transition to CE as they manage the majority of natural resources, such as water, energy, and forest management. These companies are somewhat protected from market competition so they do not have much incentive to innovate and change. On the positive side, over 40 companies important for the Croatian economy (e.g., A1, AD Plastik, Atlantic Group, HEP, and Ikea) are members of the Croatian Business Council for Sustainable Development, which has been promoting sustainable development and socially responsible business for over a decade. Many small companies are members of the Department of Energy and Environmental Protection at the Croatian Chamber of Economy (CCE). Furthermore, the civic scene is also quite active through various associations that have been established in essence for two reasons: to protest against environmentally unacceptable activities in their own environment (e.g., *Crisis Eco Headquarters Mariščina, Koprivnica as we deserve*), or to encourage more systematic actions in the field of sustainable development. The *Society for Sustainable Development Design, Friends of the Earth Croatia (Zelena akcija)*, and the *Institute for Political Ecology* are examples of such civic activist associations.

Judging from the implementation of the strategies so far, Croatian political elites are lacking the political will and management capacities for strategic planning and implementation (Boromisa, 2020). According to Reike et al. (2018:252), this is a common feature of developing countries that have failed to intensify their transition to CE because of their "lack of political will, lack of a national waste management, policies, rules and regulations, insufficient funds dedicated to CE, and the absence of expertise and education at all levels".

For example, despite Croatia carrying out the *Waste Act / Zakona o otpadu* (OG 34/1995) almost 35 years ago, in 1995, and significantly modernising this law in 2017 by incorporating CE principles, there has not been much progress made in waste management. Currently, Croatia faces the possibility of waste recycling penalties by the EU as it is still stuck landfilling instead of re-using and recycling. Low trust in Croatian institutions (Jurlina Alibegović and Marošević, 2020) along with a high level of corruption and clientelism which interfere with policy making (Vuković, 2019) suggest that group interests might have prevented a shift from expensive and inefficient regional centres for mechanical and biological treatment of garbage towards new approaches to waste management. Similar corruption affairs are related to wind farms because of the favouring of certain interest groups by local authorities (Sušec, 2020). Generally speaking, the awareness of the ruling elite, bureaucracy, and even experts on the importance of CE seems to be very low and is influenced by corruption instead of public welfare or economic interest. Unfortunately, it seems that the private sector shares similar weaknesses, such as limited management capacities and a lack of interest in changing business models to embrace paradigm shifts towards CE. The shift towards circular business models seems unrealistic within the current socio-political system, which is driven by group interests instead of public welfare. Important barriers to new business models in private sectors include the lack of knowledge about business risks arising from investments in CE.[3] It is essential to provide more instructive assessment methods and guidelines, and offer a system of indicators for decision-makers to use to assess progress towards CE (European Commission, 2019a).

A turning point in the transition to CE is expected to manifest in the framework of the European initiative – the Next Generation EU (NGEU), agreed by EU leaders in July 2020 in an attempt to make Europe green, digital, and resilient. Croatia should receive around €6.3 billion from the Recovery and Resilience Facility (RRF), which was adopted in February 2021 and forms a central component of the NGEU. Of all the proposed projects by national governments 37% should contribute to the green transition and 20% should contribute to the digital transition.

Another €169 million should be provided by the Just Transition Fund (JTF) / *Fond za pravednu tranziciju* (European Commission, 2020d) with the aim of creating a clima-

3 For example, production of 1 kg of virgin PET for plastic bottles produces 2.18 kg of CO^2 emissions, versus 0.21 kg for the production of recycled PET (rPET). However, virgin PET is much cheaper, which makes many producers give up on recycled PET (Petrović, 2020).

te-neutral economy in Europe by 2050 as a part of the European Green Deal effort. The JTF will mobilise at least €100 billion for the period 2021-2027 for countries to use to overcome the social and economic costs of the transition to a green economy. It will provide financial and technical support to carbon-intensive countries which are the most vulnerable in the transition. A preliminary analysis for Croatia (European Commision, 2020d) has identified two counties most suitable for receiving funds from the JTF: Sisak-Moslavina (chemical and oil industry) and Istria County (power plant, cement industry). These counties have the most intensive GHG emissions and require reorientation of long-term investments towards climate-neutral technologies and workforce education. The most acute obstacle to the green transition in Croatia can be seen in skill mismatches in the labour market. "This may become particularly challenging for Sisak-Moslavina county with the highest unemployment rate (24.3%) registered in 2018" (European Commission, 2020d).

5. DISCUSSION

An insight into the history of CE development in Croatia reveals that the transition to CE can be roughly divided into four phases (Figure 2). It is rooted in the long Croatian tradition of supporting environmental protection and natural resources, inherited from ex-Yugoslavia. The first phase focused on environmental protection and lasted until approximately 2013, when Croatia became a member of the EU and shifted the policy focus towards sustainable development under the influence of EU strategies and regulations. Monitoring the progress of Croatia towards European development goals – through national reform programmes and related country reports within the European Semester – shows that elements related to CE play a pivotal role in introducing CE into national policy agendas.

This type of EU reporting remains relevant today: the last Croatian report (European Commission, 2019e) focuses on SDGs in a European context following the strategic goals of the European Green Deal strategy. SDG indicators are, however, integral to more than 150 indicators, making it rather difficult to identify indicators relevant to CE in order to deduce whether or not Croatia is moving in the right direction.

The concept of CE became increasingly recognised among policy makers between 2013 and 2018 due to the need to harmonise institutional and legal frameworks with EU rules and regulations. Consequently, a greater number of policy documents, especially those focused on waste management and renewable energy, integrate CE into their policy agendas.

However, more systematic and coherent approaches to CE – as an important element of the entire future of Croatia – were recently introduced to the policy agenda during 2019 and 2020 owing to European initiatives and regulations. The *Integrated National Energy and Climate Plan 2021-2030* (MEPE 2019a) can be considered a key document in the current period of CE transition. It envisaged concrete measures for fostering CE,

such as the platform for CE and the national action plan for transition to CE. However, the question remains as to whether or not any of the planned activities will actually be realised and put into action.

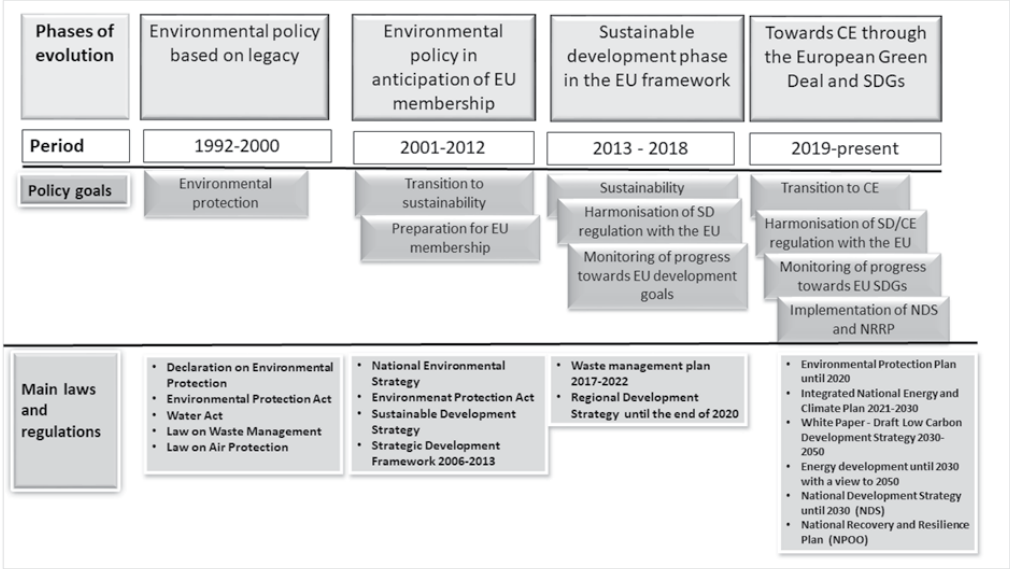

Figure 2. *Evolution of policy framework towards CE*

The *National Development Strategy until 2030* (OG 13/2021-230), a pivotal document for the future of Croatia, encourages CE in the context of a green, decarbonised, and digital economy. However, the indicative list of acts that support the strategy's implementation only refers to spatial planning and energy savings to buildings. This raises doubts with regards to the government's true intention to integrate CE objectives into overall development.

Many sub-systems that could significantly contribute to CE are incomplete, non-transparent, inefficient, and require change. For example, Croatia is rather good at collecting PET bottles and over 90% of PET bottles placed on the market are collected through a deposit system. However, there are no recyclers who are able to convert the collected bottles into "food grade" rPET material and thus "close the loop" in the so-called "bottle-to-bottle" system. Most of the collected bottles end up as ground PET, which is not suitable for food packaging, or – even worse – the ground PET is sometimes incinerated (Petrović, 2020).

Methods of measuring Croatia's progress and performance in its transition to CE are poorly developed. Measurement frameworks, such as those within the EU Semesters or within the *Eco-Innovation Action Plan Community Platform* (European Commission, 2021), do not provide consistent, comprehensive, and easy-to-understand answers on progress made towards CE due to their high contextuality, volatility in interpretation, and complexity of the CE concept itself. There is definitely a growing number of initiatives towards CE, but they are fragmented, unconnected, and poorly known.

Some recent analyses and benchmark studies (Hervey, 2018; Škrinjarić, 2020) show that Croatia is at the bottom of the list of European countries for all CE indicators, especially waste management and recycling. Our main advantages lie in natural preservation and renewable energy, thanks to our strong hydropower industry. With a renewable energy share of 28.3% in 2016, Croatia is well above its target for 2020: set at 20% and a European average of 17%. However, there is a lot of room for development because Croatia uses very little hydropower. Over the last 30 years, only one hydroelectric power plant was built (Lešće in 2010). Solar and wind capacities accounted for only 11% of Croatia's power generation in 2016 (against the EU average of 26%), meaning that the country has a great deal of potential in expanding its renewable energy sources (European Commission, 2019d).

According to the *Eco-Innovation Action Plan Community Platform* (European Commission, 2021), Croatian companies face the most difficulties when it comes to complex administrative or legal procedures and accessing finance. However, either over 70% of companies have no access to information that might help them to obtain funding, or they have not searched for such information. Consequently, 67% of companies rely on their own resources to finance CE activities.

There are, however, some good results when it comes to the number of companies that facilitate recycling or the extending of product life, although the reliability of this data may be questionable. Croatia, like many countries, has also experienced a slight relative decoupling (separation of economic growth from resource consumption) (Domenech and Bahn-Walkowiak, 2019).

There are also positive examples of green economy, such as the solar power plant on the island of Vis. This is the largest solar power plant in Croatia and was put into operation in 2020 by HEP and Končar groups. On a local level, the municipality of Stankovci is one of the few self-sustainable municipalities in terms of energy in Croatia. It can be supposed that there are many such initiatives in Croatia leading to CE, but monitoring and promotion activities are much neglected. The Osatina Group is an agricultural company from Slavonia (neglected "Croatian granary") that has introduced the principles of CE into its production using digital technologies. It achieves better production results in greenhouse production than the Netherlands, which is a world leader in this branch of production. However, little is known about this company and this is probably the case for many others.

When it comes to waste management, it is estimated that the shift away from landfilling towards separate collection and recycling is stalling (European Commission, 2019d). Croatia recycles only 21% of its waste materials compared to the EU average of 46%, which jeopardises the binding target of 65% recycling by 2035 (European Commission, 2019d). Therefore, the separate collection of municipal waste and building recycling infrastructure is a crucial issue.

Two factors play decisive roles in the promotion of CE in Croatia. The first is external and includes EU initiatives on both CE and green transition; primarily the European Green Deal, the Recovery and Resilience Facility (RRF), and the JTM. The second

factor is internal and refers to the social impact of civic associations devoted to sustainability. For example, the left-green platform run by former political activists focused on democratic values and environmentalism and they won the elections for the capital city of Zagreb in mid-May 2021. Citizens evidently desired a new way of governing the city not only to provide financial transparency and democratic principles in decision-making, but also to make changes towards ecological sustainability. As emphasised in the previous section, a turning point in the transition to CE is expected in the next several years under the framework of the *National Recovery and Resilience Plan* (Government of the Republic of Croatia, 2021), which is worth around €6.3 billion, 37% of which should be allocated to projects dedicated to green transition.

6. CONCLUSIONS

The concept of CE in Croatia emerged rather recently, during 2019 and 2020, mainly under the influence of EU strategies and regulations. It is oriented primarily towards waste management, energy efficiency, and recycling. Recently, construction waste disposal has also become important because of buildings destroyed in earthquakes. The application of new business models with respect to CE are fragmented and scattered over different companies enthusiastic for CE, while the systemic paradigm shifts towards CE are still not the focus of public policies and national strategies. Some positive examples in both the public and private sectors illustrate that the capacity and the will for transition to CE is there, but policy leadership – which is the most important factor for CE transitions (Govindan and Hasanagic, 2018) – is still not in place.

Croatian policies, public narratives, and interpretations of CE belong, as the analysis of the national policy frameworks reveals, to a school of reformists which base CE paradigms on environmental protection, sustainability, and the recycling of natural resources. This opposes other discourses, such as transformative and technocratic schools, which require more radical changes to the entire socio-economic system (manufacturing, retail, consumption, property rights, etc.) (Reike et al., 2018; Friant et al., 2020) and demand significant institutional capacities for reform. Unfortunately, these capacities have so far proved to be rather weak in Croatia. The awareness of the ruling elite, bureaucracy, and even experts on the importance of CE seems to be insufficient. Strategic projects are mostly in traditional sectors (e.g., transport and energy infrastructure) and their links to green transition have not been established (Boromisa, 2020). Despite recent strategies (e.g., *Integrated National Energy and Climate Plan 2021-2030* and the *National Development Strategy until 2030*) including CE as an underlying element of development, it is not clear whether CE principles will be put into practice. The transition to CE requires a deep understanding of the processes within each sector and their coordination, which is hardly attainable with current institutional capacities.

Concrete projects on a larger scale in public and business sectors, as well as incentives for companies to introduce CE principles, are lacking, as are the necessary legal and legislative regulations. Given that CE requires parallel actions across many mutually

related areas and demands changes be made to the relationships within the entire value chain (Blomsma and Brennan, 2017), weak institutional capacity, administrative obstacles, and a lack of both political desire and agility for change can be major obstacles hindering the achievement of CE.

The main contribution of this research is the systematic insight into the history of CE policy development which is useful for scholars and policy makers who want to understand the main incentives, reasons and context of policy initiatives related to CE since the 1990s to the present. It helps to realise how the policy for transition towards CE has passed through different phases and experienced a momentum only since 2019 under the strong influence of the EU. The analysis also revealed that an institutional set-up has not been put in place for policy implementation (except the EPEEF established in 2004) suggesting that existing institutions might not be able to cope with the challenges of new ambitious policy initiatives. Therefore, future research should be focused on institutional and organisational barriers, including socio-cultural and political obstacles for a faster transition to CE in the business and government sectors and society in general.

Progress is expected to stem from the Recovery and Resilience Facility (RRF) and the JTM, which seek clearly defined priorities and elaborated projects related to CE. Croatia delivered its *National Recovery and Resilience Plan* (Government of the Republic of Croatia, 2021) to serve as a prerequisite for receiving the RRF funds but it remains to be seen whether or not the CE initiatives and principles expressed in the document will be implemented.

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POLITIČKI OKVIR ZA PROVEDBU KRUŽNOG GOSPODARSTVA U HRVATSKOJ: PROŠLOST, SADAŠNJOST I BUDUĆNOST

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Sažetak

Ovo istraživanje nastoji rasvijetliti evoluciju okvira nacionalne politike u Hrvatskom tijekom njene tranzicije ka kružnom gospodarstvu te doprinijeti boljem razumijevanju kako Hrvatska stoji u toj tranziciji. Metodologija korištena u ovom istraživanju uključuje sustavnu analizu političkih programa, inicijativa i akcija vezanih za tranziciju Hrvatske prema kružnoj ekonomiji od 1991. godine. Dobiven je popis od 31 političkog dokumenta, uglavnom zakona, akcijskih planova i prijedloga politika, koji su grupirani prema osam sastavnica Europskog zelenog dogovora (EU Green Deal). U radu se raspravlja i o institucionalnim dionicima, mogućnostima financiranja i izvedbi kružne ekonomije, kako bi se nadopunila analiza političkog okvira. Glavni je doprinos ovog istraživanja uvid u povijest razvoja politike kružnog gospodarstva u Hrvatskoj, a koja se može ugrubo podijeliti u četiri faze, počevši od zaštite okoliša 1990-ih i krećući se prema posvećenijem pristupu kružnoj ekonomiji koji se tek nedavno pojavio u politikama 2019. i 2020. godine, uglavnom zahvaljujući europskim inicijativama i propisima. Očekuje se da će do napretka doći kao rezultat vanjskih čimbenika, prvenstveno europskih programa kao što su Recovery and Resilience Facility i Just Transition Mechanism koji zahtijevaju jasno definirane prioritete i razrađene projekte.

Ključne riječi: *kružno gospodarstvo, Republika Hrvatska, politički okvir, institucionalni ustroj, povijesni pregled*

POLITISCHER RAHMEN FÜR DIE IMPLEMENTIERUNG DER KREISLAUFWIRTSCHAFT IN KROATIEN: VERGANGENHEIT, GEGENWART UND ZUKUNFT

Jadranka Švarc

Zusammenfassung

Diese Arbeit versucht, ein Licht auf die Evolution des nationalen Politikrahmens in Kroatien während seiner Transition zur Kreislaufwirtschaft zu werfen und die Lage Kroatiens in der Transition besser zu verstehen. Die in dieser Forschung angewandte Methodologie schließt eine systematische Analyse von politischen Programmen, Initiativen und Aktionen in Verbindung mit der Transition Kroatiens zur Kreislaufwirtschaft seit dem Jahr 1991 ein. Es entstand eine Liste von 31 politischen Dokumenten, hauptsächlich Gesetzen, Aktionsplänen und Politikvorschlägen, gruppiert gemäß acht Komponenten des Europäischen Green Deals. In der Arbeit werden auch institutionelle Teilnehmer, Finanzierungsmöglichkeiten und Leistungen der Kreislaufwirtschaft erörtert, damit die Analyse des politischen Rahmens ergänzt werden kann. Der wichtigste Beitrag dieser Forschung ist die Einsicht in die Geschichte der Entwicklung der Kreislaufwirtschaftspolitik in Kroatien, sie kann in vier Phasen eingeteilt werden, angefangen mit dem Umweltschutz aus den neunziger Jahren zum engagierteren Ansatz der Kreislaufwirtschaft, der erst unlängst in den Politiken 2019 und 2020 erschien, hauptsächlich dank europäischen Initiativen und Vorschriften. Es ist ein Fortschritt unter Einfluß von externen Faktoren zu erwarten, vor allem von den europäischen Programme wie z.B. Recovery and Resilience Facility und Just Transition Mechanism, die klar definierter Prioritäten und erarbeiteter Projekte bedürfen.

Schlüsselwörter: *Kreislaufwirtschaft, Republik Kroatien, politischer Rahmen, institutioneller Aufbau, geschichtlicher Überblick*