SUSTAINABLE ENVIRONMENT FUTURES: EUROPEAN GREEN DEAL STRIVING TO BE THE FIRST CLIMATE-NEUTRAL CONTINENT

Milan Douša[1]

Abstract

The aim of the article is to point out the possibilities of transformation to a green economy in individual countries and regions of the EU in connection with the fulfillment of the objectives of the European Green Deal. At the same time, the aim is also to present appropriate measures in all sectors of the economy to achieve this goal, such as investing in environmentally friendly technologies, introducing cleaner, cheaper, and healthier forms of private and public transport, etc. The partial aim of the article is a content analysis of steps towards Sustainable Environment Futures in EU countries and Indonesia, followed by a comparative comparison of results and possible recommendations. In connection with the implementation of measures to restore biodiversity and the level of stability of the landscape and its territory, several methodological tools will be used to calculate the coefficient of ecological stability (CES). At present, the CES is a key element in the design of land-use measures resulting from the design of local territorial ecological stability systems processed for landscaping projects in countries. We will monitor the results of the calculations to point out the importance of spatial and landscape planning and the transformation of the territory into nature-friendly nearby ecosystems. These calculations will allow us to determine the ability of ecosystems to cope with changes caused by external factors while maintaining their natural properties and functions. These calculations will be applied to both selected cities in EU countries and cities in Indonesia.

Keywords

Sustainable Environment, European Green Deal, Sustainable Futures, Sustainable Development, Landscape Planning, Coefficient of Ecological Stability, European Union, Indonesia

[1] Department of Economics and Management of Public Administration, Faculty of Public Administration, Pavol Jozef Šafárik University in Košice

1 INTRODUCTION

Climate change and environmental degradation are an existential threat to Europe and the world (Allan, 2017). While overall the state of the environment has improved, major concerns remain in particular regarding the large-scale degradation of natural resources (Rotmans et al., 2000). To overcome these challenges, Europe needs a new growth strategy that transforms the Union into a modern, resource-efficient, and competitive economy where:

- there are no net emissions of greenhouse gases by 2050
- economic growth is decoupled from resource use
- no person and no place are left behind.

The increasing complexity of European society means that sustainable development cannot be addressed from one perspective, one country or one scientific discipline. Processes like scale-enlargement, technological development, time acceleration and knowledge increase largely contribute to this increasing complexity, causing major shifts in political and institutional, social-cultural, economic, and ecological structures of Europe (Rotmans, 1997). Considering the Paris Agreement's aspirational goal to hold global average temperature increases to 1.5 °C by the end of the century, mechanisms, and processes by which to imagine and govern diverse climate futures are increasingly coming to the forefront of sustainability debates and practice (Habegger, 2010). The new problem of planning for sustainable development is far more complex than problems of the past. Planning for sustainable development requires different methods and a changed paradigm from traditional planning. Traditional planning supposes that the combination of professional expertise, scientific methods and well-defined goals would ensure an efficient and effective planning process. A new conception of planning is therefore needed, which is based on new approaches and new tools. Such tools are needed on the interface between the short-term and the long-term, the objective and value-laden, the quantitative and qualitative, and the certain and uncertain (Čepelová and Douša, 2020). The aim of the Sustainable Development Goals is to end poverty, protect the planet, and ensure prosperity for all; and their delivery depends on a healthy and productive environment. Europe, like many other parts of the world, is facing several major environmental challenges. These include habitat loss and degradation, climate change and associated extreme weather events, environmental contamination resulting from urbanization, agricultural intensification, and increased per capita consumption of natural resources. These environmental challenges, which are a consequence of human activities, are resulting in biodiversity loss; increasing natural hazards; threatening food, water, and energy security; impacting human health; and degrading environmental quality (Civantos et al., 2012; Leip et al., 2015). In the face of climate change and global pressures on the environment, governments and other actors are increasingly looking to foresight to help imagine and experiment with potential future climate conditions, and their interactions with other (economic, political, socio-cultural) uncertainties (Vermeulen et al., 2013). The European Green Deal is one of the possible strategic tools to tackle this problem.

The European Union has stated repeatedly its aim to be at the forefront of global action against climate change. The EU has adopted policies to reduce its greenhouse gas emissions and support energy from clean sources, while being active in international climate negotiations. However, the EU has not managed to reduce its greenhouse gas emissions convincingly and has not done enough to tackle emissions in some sectors. In transport, greenhouse gas emissions are rising, while in electricity systems coal continues to play a persistent role. Energy efficiency improvements in buildings have been unsatisfactory and the decarbonisation of industry has proved difficult. Meanwhile, climate policy has become one of the most divisive EU topics. The FridaysForFuture movement has mobilised mainly young people to demand stronger climate policies. In contrast, there has been a backlash against fossil-fuel price increases perceived as unfair, as seen with the gilets jaunes movement in France and beyond. In this context, European Commission president-designate Ursula von der Leyen has promised to broaden and strengthen EU climate policy (von der Leyen, 2019). She intends to propose a European Climate Law that would require the EU to become climate neutral by 2050 – likely making Europe the first continent to do so. To reach this ambitious goal, a comprehensive policy framework is required, encompassing the climate, energy, environmental, industrial, economic, and social aspects of this unprecedented process. This is what the European Green Deal is all about.

2 METHODS OF RESEARCH AND DATA

The aim of the article is to point out the possibilities of transformation to a green economy in individual countries and regions of the EU in connection with the fulfillment of the objectives of the European Green Deal. At the same time, the aim is also to present appropriate measures in all sectors of the economy to achieve this goal, such as investing in environmentally friendly technologies, introducing cleaner, cheaper, and healthier forms of private and public transport, etc. The partial aim of the article is a content analysis of steps towards Sustainable Environment Futures in EU countries and Indonesia, followed by a comparative comparison of results and possible recommendations. In connection with the implementation of measures to restore biodiversity and the level of stability of the landscape and its territory, several methodological tools will be used to calculate the coefficient of ecological stability (CES). At present, the CES is a key element in the design of land-use measures resulting from the design of local territorial ecological stability systems processed for landscaping projects in countries. We will monitor the results of the calculations to point out the importance of spatial and landscape planning and the transformation of the territory into nature-friendly nearby ecosystems. These calculations will allow us to determine the ability of ecosystems to cope with changes caused by external factors while maintaining their natural properties and functions. These calculations will be applied to both selected cities in EU countries and cities in Indonesia with the same population. Furthermore, qualitative methods were used to fulfill the goal and results, to examine the calculation of the coefficient of ecological stability of the area according to Míchal and Miklós. To capture the landscape multifunctionality and to indicate the environmental quality of the area under study, land use provided in parallel by arable land, forests, and bodies of water were studied.

2.1 The coefficient of ecological stability (CES) represents a ratio number (coefficient), which determines the ratio of so-called stable and unstable areas of landscape-forming elements in the monitored area (Míchal, 1994). In addition, ecological stability is the ability of an ecological system to persist even under the influence of a disturbing influence and to reproduce its characteristics in the conditions of disturbance from the outside (especially disturbance by humans). CES thus expresses how a certain territory can cope with these influences (Kolejka, 2011).

This ratio is calculated according to the following formula:

Stable elements	Unstable elements
WL - woodland	PL - ploughland
WS - water areas and streams	AA - anthropogenized areas
PG - permanent grassland	HG - hop-garden
Pa - pastures	
We - wetlands	
Or - orchards	
Vi - vineyard	

The method of calculating CES is based on a clear and final classification of a landscape element into a group of stable or unstable and does not allow the assessment of the specific state of these elements.
The general classification of CES is as follows:
CES ≤ 0.10 areas with maximum disturbance of natural structures
0.10 < CES ≤ 0.30 areas used above average with a clear disruption of natural structures
0.30 < CES ≤ 1.00 areas intensively used with considerable ecological instability
1.00 < CES < 3.00 quite balanced landscape
CES ≥ 3.00 natural and nature-friendly landscape (significant predominance of ecologically stable structures)

At present, there is no longer a purely natural landscape on Earth, because through the changes of the atmosphere, man affects the entire surface of the planet. However, a natural landscape is one whose construction components and processes do not show man-made manifestations. However, the natural landscape is the material environment (starting point and then background) for each cultural landscape. The natural landscape is therefore of interest to experts even in areas that are deeply man-made and intensively used. In the cultural landscape, under the “cultural layer”, “cultural layer” or “cultural superstructure”, it is necessary to identify the potential natural landscape that would arise under current conditions if one left it and removed one’s products. It largely regulates human behavior in the landscape. Territorial differentiation of the potential natural landscape as a "natural environment" or "natural background" is the main reason for the selection and spatial distribution of human activities in the territory. It is to be stated with some regret that the study of the natural landscape is in the background of the now very fashionable study of various aspects of the use, changes or damage to the landscape by man (Löw and Míchal, 2003).

2.2 The Coefficient of Ecological Stability According to I. Míchal et al. (1985)
Calculation of CES (in ha) = natural and near-natural areas divided by cultural areas. pecifically, CES = (woodland + water areas and streams + permanent grassland + pastures + wetlands + orchards + vineyard) / (built-up areas + ploughland + hop-garden). The higher the number, the greater the proportion of permanent vegetation areas, the greater the stability of the area. CES for the Czech Republic (average) is 1,144 (Míchal, 1985).

$$CES = \frac{WL+WS+PG+Pa+We+Or+Vi}{PL+AA+HG} \quad \begin{array}{l} = \text{stable elements} \\ = \text{unstable elements} \end{array}$$

The higher the value of CES, the more stable and better the landscape – *according to Míchal.*

- Ces < 0.10 – areas with maximum disturbance of natural structures, basic ecological functions must be intensively and permanently replaced by technical interventions
- 0.10 < Ces < 0.30 – areas used above average, with a clear disruption of natural structures, basic ecological functions must be systematically replaced by technical interventions
- 0.30 < Ces < 1.00 – areas intensively used, especially by large-scale agricultural production, weakening of autoregulatory processes in ecosystems causes their considerable ecological lability and requires high deposits of additional energy
- 1.00 < Ces < 3.00 – quite balanced landscape, in which the technical objects are relatively in accordance with the preserved natural structures, the result is a lower need for energy-intensive deposits
- Ces > 3.00 – stable landscape with a predominance of natural and nature-friendly structures (Míchal, 1985).

There are many methodologies, but all are based on the same principle. The calculation is always based on the evaluation of the ratio of ecologically stable and ecol. labile components of the landscape, individual methodologies differ in the categorization of landscape segments, or in the use of more detailed coefficients.
The most used methods include:
1. According to Míchal (1985)
2. According to Miklós (1986)
3. According to Agroprojekt
4. According to Rohon (Míchal, 1985; Miklós, 1986).

2.3 Miklós ecological stability coefficient (1986)

Unlike the following methodologies, it is not based on the division of areas into stable and unstable, but differentiates their ecological significance by introducing numerical coefficients:

- pn i - area of individual areas
- kpn i - coefficient of ecological significance of areas p - area of the area of interest (or cadastral)
- field - 0.14; meadows - 0.62; pasture - 0.68; gardens - 0.5; fruit orchards - 0.3; forests, water, wetlands - 1.00; others - 0.10 (+ lada - 0.62, vineyards - 0.3, rocks - 0.4, line company - 0.4) (Miklós, 1986)

$$K_{es} = \frac{\Sigma p_{n\,i} * \Sigma k_{pn\,i}}{\Sigma p}$$

The rest of the paper is organized as follows. Section 2 presents the methods. Section 3 discusses data and variables, stressing the literature background that supports the use of such variables. Section 4 shows the empirical findings and results whereas Section 5 is devoted to discussions and conclusions. The article is meant as an input to the urgently needed discussion on how the European Green Deal can shift the EU economy to a new development path that realizes a carbon-neutral Europe by 2050 while strengthening European cohesion in the ecological stability of cities.

3 BACKGROUND

3.1 The European Green Deal

The global energy and climate agenda has been progressing fast, going through different stages and co-evolved with scientific advancements (McLaren and Markusson, 2020), as stock taken in the assessments of the Intergovernmental Panel on Climate Change (IPCC). It has also been through significant challenges, including among others the recent rise to power of narratives that have been hostile towards energy transitions and climate action (Fraune and Knodt, 2018) and to some extent impeding international efforts; or the COVID-19 global health emergency (Steffen et al., 2020) and associated recovery efforts looming large over policy prioritization (Rosenbloom and Markard, 2020). Nonetheless, the European Union (EU) has consistently taken a leading role in international climate policy (Parker, Karlsson and Hjerpe, 2017) throughout, adopting relevant strategies in as early as 1992, and currently pushing forward an ambitious Green Deal to achieve climate neutrality by 2050 (European Commission, 2019). But, despite its ambition and current success in achieving most 2020 goals, the EU is not on easy track to meet its 2030 climate and energy targets (European Environment Agency, 2019). This diverging trajectory is frequently attributed to governance issues (Ringel and Knodt, 2018) and challenges of monitoring nature.

The European Green Deal is a roadmap for making the EU's economy sustainable and inspiring other countries and continents to engage in similar strategies and measures.

The European Green Deal provides a roadmap with actions to:

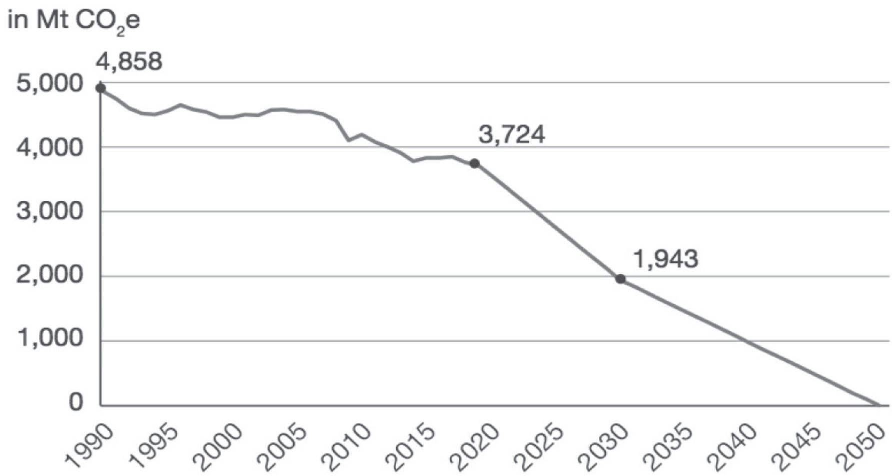
- boost the efficient use of resources by moving to a clean, circular economy
- restore biodiversity and cut pollution. (Wolf et al., 2021)

Fig. 1 The ambitions of the European Green Deal

Source: Smol et al., 2020

The European Green Deal (EGD) has been proposed as a mission for Europe to become the world's first carbon neutral continent by 2050, and to strengthen European cohesion through this mission (von der Leyen, 2019). Both goals present massive challenges; we argue that they can be turned into not only an environmental, but also a social and economic opportunity. The target to cut greenhouse gas (GHG) emissions by at least 55 % by 2030 (compared to 1990), proposed by the European Commission, has gained geopolitical weight with Chinese plans to peak carbon emissions in 2030 and reach carbon neutrality no later than 2060 (United Nations, 2020). A whole range of nations and regions has declared similar goals. Over the last two decades, processes of divergence and polarization have been unfolding in the EU and the eurozone (Gräbner et al., 2020; Algan et al., 2017). With the coronavirus pandemic and the measures taken to control its spreading, these processes have intensified. Expected growth rates for Spain, Italy, and Portugal in 2020 are -11 %, -8.8 % and -7.6 % respectively; the expected losses for Germany and Denmark are less severe, at -5 % and -3.5 % respectively (European Commission, 2020). At the same time, the fiscal impulse in response to the crisis amounts to 8.3 % of GDP in Germany and 5.5 % in Denmark, whereas in Spain, Italy, and Portugal it amounts to 4.3 %, 3.4 % and 2.4 % respectively (Anderson et al., 2020). The EU recovery plan promises to mitigate these processes – as should the EGD. A European climate strategy aiming at carbon neutrality by 2050 can only be successful if it shifts the economy to a new development path that generates broad social and political support early on. This means it needs to come with tangible improvements of living conditions for European citizens at large, across all regions and social groups. Grounded in a line of research about how climate policy can trigger a transition to a new growth path (Jaeger et al., 2011, 2015; Jaeger, 2012; Schütze et al., 2017).

Fig. 2 Climate-neutral EU27 by 2050 via a 60 % greenhouse gas emission reduction by 2030



Source: GHG Emissions 1990–2018 from Eurostat (2020b); 2019 own estimation following trend 1990–2018

Among the multitude of dynamics relevant for the EGD, the EU's GHG emissions can be rather reliably specified; as illustrated in Fig. 1, the pattern shows variation around a linear trend. In the baseline year of current climate policy, 1990, GHG emissions of today's EU27 countries stood at 4,857 Mt CO2. This includes CO2 emissions and other gases like methane, calculated by CO2 e. By 2018, they had fallen to 3,764 Mt (with 3,055 Mt CO2 emissions), i.e., the decline was about 39 Mt per year on average (Eurostat, 2020b). A 60 % reduction by 2030 implies a target of 1,943 Mt. This requires an annual decline in the order of 162 Mt, a massive break with the trend of past decades. After 2030, two decades remain for reducing the remaining 1,943 Mt to zero, implying an average annual decline of 97 Mt. It is reasonable to expect that if the challenging 2030 target is reached, the EU will then be able to move towards climate neutrality in 2050.

With the pattern thus illustrated, emission dynamics fluctuate around three different speeds of linear decline: a phase of sluggish reduction for the past three decades, a breakthrough decade starting at the time of writing, and two decades for bringing the effort to completion. Once available, the EU27 figures for 2020 may seem on track

with emission reductions required for the coming decade, but the economic recovery expected for 2021 is likely to increase emissions again, leaving little time for achieving the 2030 goal. (Wolf et al., 2021)
This is relevant for the role of carbon prices as they can quickly influence the way existing capital stocks and other durable goods are used. But they fail to incentives the quick replacement of exisiting stocks necessary for carbon neutrality (Patt and Lilliestam, 2018). Therefore, direct regulation is as important as carbon prices, as shown by the rapid impact of recent EU emission rules for cars. (Financial Times, 2020)

3.1.1 Bioenergy related policy for EU to 2030

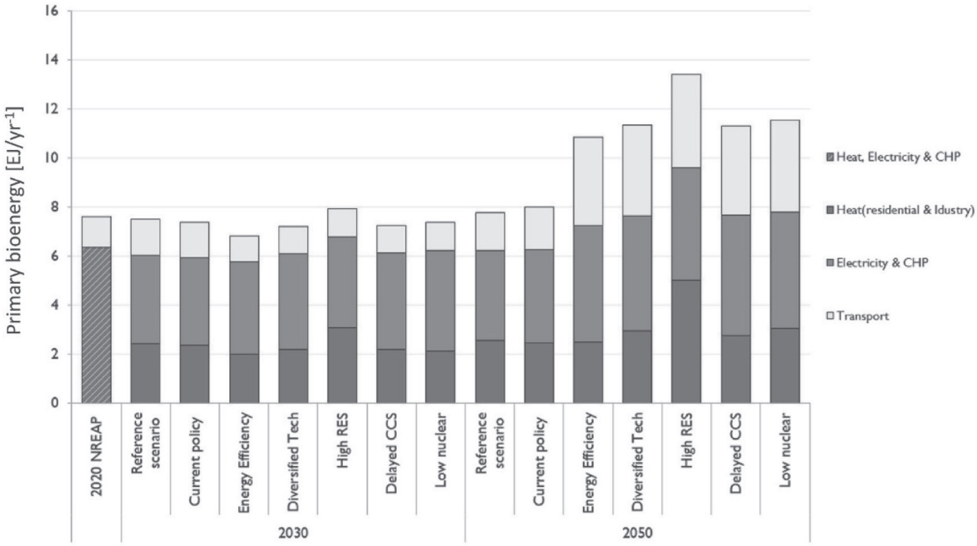
While the global population grows, incomes rise and the world economy continues to expand, demands for biological resources, food and energy are ever-increasing. By 2030, for example, the world will need to produce around 50 % more food and energy, together with 30 % more freshwater. At the same time, governments must also take major steps in combating climate change by phasing out the use of fossil resources in materials and energy production and replacing these with renewable resources. Major EU policies that affect the development of bioenergy are tied to renewable energy. The EU 28 as a political union is currently party to the United Nations Framework Convention on Climate Change (UNFCCC)'s Kyoto protocol, which after the extension for a second commitment period through the DOHA agreement is set to expire post 2020 (Council of the EU, 2015). Beyond this point, the EU 28 is committed to the UNFCCC Paris agreement with the intended response of steering global temperature rise below 2 °C above 1990 levels, with each of the EU MS (Member states) set to announce nationally determined contributions (NDC's) for which next round preparations began in 2018. The EU 28 have agreed on a collective delivery and committed to a 40 % reduction in GHG emissions by 2030 (European Commission, 2013), acknowledging that increased uptake of RES into the energy sector as the key climate strategy. If the current momentum of renewable energy development within all end-use sectors (heat, electricity, and transport) is maintained as projected in the short-term (2018–2023) market analysis for the IEA (International Energy Agency, 2018a), renewables would attribute about 18% of final energy consumption in 2040. This is significantly below the absolute RES energy mix required to follow exploratory development scenarios aligned to achieve climate mitigation targets established within the Paris Agreement such as the IPCC's pathways to curb global warming to 1.5 °C (IPCC, 2018) and the IEA's Sustainable development scenario which projects a needed RES mix of 28% by 2040 (International Energy Agency, 2018b). The renewable energy directive II recast (European Parliament, 2018) has increased the EU targeted RES contribution from 27 % to 32 % by 2030 with a minimum of 14 % within the transport with a strict cap of 7 % placed on conventional biofuels. Bioenergy used in heating and electricity end-use sectors must comply with a mandatory 70 % GHG saving compared to fossil incumbents from 2021 to 80 % post 2026 with a stringent list of sustainability constraints. (European Parliament, 2018)
To meet these ambitious mid-term targets, the EU energy system must swiftly transition to low-carbon fuels. The pathways to achieving such a transition are unique per member

state and will become clearer with the release of the 2020 NDC's. The EU 28 currently sources approximately 74% of gross available energy from fossil fuels with individual member states deploying varying national strategies to achieving an energy transition to low carbon fuel mixes, largely based on the geographical resources at their disposal and economic ability, with some countries reliant on a substantial share of fossil power generation. 59% of renewable gross inland energy consumed in the EU is derived from bioenergy with some MS's relying on biomass almost entirely, >80% of renewables consumed (Czechia, Estonia, Latvia, Lithuania, Hungary, Poland, and Finland) only Norway has <25% of renewable consumption from bioenergy. At present the largest absolute bioenergy consuming nations are France [0.67 EJyr−1], Italy [0.52 EJyr−1], UK [0.52 EJyr−1], Sweden [0.5 EJyr−1] and Finland [0.41 EJyr−1] (Eurostat, 2020a)

3.1.2 Bioenergy related policy for EU to 2050

At COP 24, the European Commission strengthened its 2050 aspirations for bioenergy within its 'long-term vision for a prosperous, modern, competitive and climate neutral economy' acknowledging the bio-economy and natural carbon sinks as one of seven strategic action areas (European Commission, 2018). On a longer-term scale, there are no binding targets for RES or bioenergy apart from a commitment to emissions reductions of 80–95% by 2050 as part of the efforts required by developed nations as a group (European Commission, 2012). As this study is aimed at quantitative comparisons of EU bioenergy to 2050 data is drawn from the European Commission's adopted communication 'Energy Roadmap 2050' (Fig. 3) and the envisioned decarbonization scenarios to bring about 85% domestic energy related GHG emission reductions below 1990 levels without reliance on international carbon offsets. The roadmap aims to provide the EU with a set of alternative energy system development pathways that align with the UNFCC Paris agreement limiting global temperature rise. It is the only policy strategy at EU level that provides quantitative energy mix proposals and gives an indication of the bioenergy contributions required to meet targets under varying climate policy packages. The modelling framework employed is documented within the impact and scenario analysis publication (European Commission, 2019). The roadmap explores a reference scenario incorporating energy system relevant policies adopted by 2010 with the current policies scenario including updated measures proposed at the time of publication (2012). The decarbonisation strategies are designed to investigate the EU energy mix when steered to varying degrees by policy facilitating the EU's 2050 key routes to a competitive and secure energy system; energy efficiency, renewable energy, nuclear energy, and carbon capture and storage. Facilitation policies for bioenergy include agricultural policies stimulating the production of energy crops, increased residue collection, and/or increased yield of crops. Fig. 2 indicates all decarbonisation pathways are characterised by a significant growth by 2050 in bioenergy for transport fuels when compared to the reference and current policy projections. (European Commission, 2011)

Fig. 3 Evolution of Absolute Domestic EU Primary bioenergy within major end-use sectors: Own calculations using data from the EU Energy Roadmap 2050



Source: European Commission, 2011

It should be noted that BECCS is not included within the technology portfolio assessed – while fossil CCS is. Biomass used for heat only sees a noticeable growth under the 'High Res' policy pathway with bioelectricity generation observing a small growth. The roadmap indicates that by 2050 under the policy pathways assessed, the EU would require an increased primary bioenergy consumption of 3.3–5.8 EJyr−1 (+43–76 %) compared to the 2020 EU combined NREAP bioenergy consumption target. This correlates to a bioenergy contributing (22–28 %) of EU gross inland energy consumption in 2050 throughout the decarbonisation pathways. Key reasons that bioenergy holds a substantial share throughout the decarbonisation scenarios assessed within the EU2050 roadmap is due to its versatility across the three end-use sectors of heat, electricity, and transport and its dispatchable characteristics, especially within the electricity sector. Advances in bioeconomy research and innovation uptake will allow Europe to improve the maintenance and management of biological resources and to open new and diversified markets in food and bio-based products. This will be important in order to cope with an increasing global population, rapid depletion of natural resources, increasing environmental pressures and climate change. The Europe 2020 Strategy called for a bioeconomy as a key element for smart and green growth in Europe. Developing a bioeconomy in Europe also holds a great potential in this respect: it can maintain and create sustainable economic growth while respecting the limits of our biosphere, create prosperity and many high-value jobs in rural, coastal and industrial areas, where these are greatly needed, reduce fossil carbon dependence and improve the economic and environmental sustainability of primary production and processing industries. This development of a bioeconomy will therefore contribute significantly towards political objectives including mitigating the impact of climate change as outlined in the Paris COP21 agreement, contributing to the delivery of the UN Sustainable Development Goals, Circular Economy and other EU's objectives such as, creating jobs, growth and competitiveness and resource efficient products and processes. (Bell et al., 2018)

3.2 The smart city vision

Towns and cities are a manifestation of human activity in the environment. They degrade the natural habitats of animals, destroy hydrological systems, or modify the flow of energy and the circulation of nutrients very often. Urban areas are developing very quickly all over the world. For this reason, priority should be to consider the concept of sustainable development in actions for cities and regions. It is particularly important to control the consumption of natural resources, especially not renewable, and to monitor the state of the natural environment. Sustainable urban development (SUD) is often a possibility of solving the problem. There are growing expectations that the emergence of smart cities will drive sustainable development (Hollands, 2008; Viitanen and Kingston, 2014). The idea of SUD is to minimize the external effects caused by common human activities on the environment. Despite the fact that the SUD concept has existed for many years, so far such development has not been achieved on large scales around the world. (Yigitcanlar and Teriman, 2015).

The smart city emerged as the successor to visions of first the information city (Hepworth, 1990), and then the digital city (Couclelis, 2004). The information city, prominent in the urban development discourses of the 1990s, was critiqued for adopting a narrow focus on how digital technologies – including the internet and virtual public spaces – could transform the city (Allwinkle and Cruickshank, 2011; Hollands, 2008). The digital-centric vision of the smart city that subsequently emerged was intended as a paradigm shift in digital urban development, a move away from a techno-centric perspective towards a socio-technical perspective of the city (Lee, Hancock and Hu, 2014). This shift in framing emphasised the ability of digital technologies to solve economic and social problems, such as low levels of citizen participation in local democratic processes (Schuurman et al., 2012) and social exclusion (Tranos and Gertner, 2012). From the late 1990s onwards, this digital-centric vision converged with visions of the entrepreneurial city (Mahizhnan, 1999), resulting in a vision of the smart city in which digital technologies would boost competitiveness and create new engines of economic growth. This vision layers the digital-centric vision of the smart city over the neoliberal orthodoxy that cities are engaged in a global competition with winners and losers (Kitson, Martin and Tyler, 2004) and must compete to attract residents, workers, and businesses.

More recently, this vision of the smart (digital-entrepreneurial) city has been connected to visions of the sustainable city. For example, Caragliu, Del Bo and Nijkamp (2011) highlight that smart city visions offer a mode of governance in which social equity and environmental protection can be achieved in parallel with digitally catalyzed economic growth. The smart city with its digitally mediated, efficient and integrated infrastructure is positioned as a facilitator of sustainable development by aligning the aims of environmental protection, social equity and economic development. This framing is prominently featured in the European Commission's smart city policy (Haarstad, 2016; Marciano, 2013; Russo, Rindone and Panuccio, 2016) as well as in the marketing materials of global technology companies such as IBM (Viitanen and Kingston, 2014). However, reviews of the literature suggest that the concept of the smart city does not emphasize concerns of sustainability (de Jong et al., 2015).

This latest incarnation of the smart city vision can be understood as advancing an amended sustainable development paradigm, in which the logic of economic development is replaced with the compound entrepreneurial and digital logic of smart urban development (see Fig. 1). In effect, this smart city vision reinforces the emphasis of sustainable development on neoliberal economics and capitalist growth under the guise of digital innovation.

In Indonesia, the implementation of sustainable development agendas has been mandated to the lower level of regional authority: making regional sustainable development (RSD) now an issue for regional authorities. Measuring sustainable development at this level remains challenging, as several factors hinder the development of sustainable regional development indicators. First, there are complexities of measurements of various indicators of sustainability, and it is a multifaceted business. Second, a lack of capacity at the regional level makes it difficult to assess the state of sustainable development based on various indicators. Third, the available existing methods of measuring RSD are too complex to be implemented in developing countries such as Indonesia due to variations in data availability. (Rahma et al., 2019)

The transformation of the city into an intelligent city is a complex and long-term process. The evolution of the city is important for its ambitious development goals. The goal of the Smart Cities concept is to improve public services. To achieve this goal, it is necessary to create infrastructure that allows smart access to public services such as parking, transport, waste disposal, lighting, energy distribution, and so on. Globally, the concept of the smart city is getting more and more relevant for both academics and policymakers (Korenova, 2021).

4 RESTORE BIODIVERSITY AND THE LEVEL OF STABILITY OF THE LANDSCAPE AND ITS TERRITORY

Urban green areas, which are integral to human health, represent a complex and necessary feature of the urban landscape (Momm-Schult et al., 2013; Schäffler and Swilling, 2013; Tzoulas et al., 2007). Green areas provide ecosystem services, either through local climate regulation (Jim and Chen, 2008), carbon sequestration (Strohbach and Haase, 2012) or reduction of stormwater runoff (Ellis, 2013), amongst other things. There is increasing pressure for the urban planning sector to be able to account for all these ecosystem services. If the usefulness of these planning tools is not assessed, it is possible that more will be developed that are never fully applied in practice. Therefore, it is pertinent to investigate their use and usefulness. This short communication presents a qualitative pilot case study in the cadastral area of the city center city of Prague (Žižkov) to ask how the tool for the calculation of CES is being used and how the existing planning context affects its use. Cities with a similar population were selected for this study. Indonesia was chosen based on personal experience and working at the University of Denpassar. At the same time, it is the landscape that contributes the most to environmental pollution, so it is important to also explore the possibilities of functionality and transformation of land formation in ecosystems close to nature.

The following stable and unstable landscape elements are in the cadastre of the center of Prague (Zižkov):

Tab. 1 Stable and Unstable Elements of the Prague city center (Žižkov)

Stable elements	Area (in m²)	Unstable elements	Area (in m²)
Woodland	85 090	Ploughland	2 696
Water areas (artificial reservoirs, ponds, natural streams)	313	Athropogenized areas (built-up areas)	2 707 104
Permanent grassland	27		
Gardens	194 090		

Source: Czech Geodetic and Cadastral Office, 2022

CES = The value of CES according to the Míchal methodology in the cadastre of the Prague of the city centre (Zizkov) is 0.103, which is assessed as an area used above average with a clear disruption of natural structures. There is a significant predominance of ecologically unstable structures. In this, let us notice especially the high share of Athropogenized areas (built-up areas). Ecologically unstable structures included urban areas in the extent of 2.709.800, i.e., built-up area, not another area with a total area of 14.000.940m2, representing another area, handling area, barren land, other roads, burial sites, roads, sports, and recreational areas and green. According to Míchal, we calculate the CES: 85.090 + 313 + 27 + 194 090 / 2 696 + 2 707 104 = 279 520 / 2 709 800 = 0.103

CES = The value of CES according to the Miklós methodology in the cadastre of the Prague of the city centre (Zizkov) is 0.226 = the area is used above average, with a clear disruption of natural structures, basic ecological functions must be systematically replaced by technical interventions. In the cadastre of the Prague of the city centre (Zizkov) there are the following landscape elements with areas: (Field - 0.3 km2 – Meadows - 1.2 km2 – Gardens - 0.2 km2 – Forests, water, wetlands - 0.2 km2 – Others - 5.2 km2). According to Miklós, we calculate CES according to: (0.3 x 0.14 + 1.2 x 0.62 + 0.2 x 0.5 + 0.2 x 1.00 + 5.2 x 0.10) / (0,3 + 1.2 + 0.2+ 0.2+ 5,02) = 1.606 / 7.1 = 0.226

Czech landscape schools know and use various methodologies. None of them is anchored in the legislation, the closest to the legal norm is the calculation of CES according to Míchal, because it is also implemented in the concept of TSES = Act No. 114/1992. Because each methodology uses division into different landscape segments and different coefficients, the result may be different, see. result of applied methodologies. The following stable and unstable landscape elements are in the cadastre of the municipality of Denpasar city center (Indonesia).

Tab. 2 Stable and Unstable Elements of the Denpasar city center

Stable elements	Area (in m²)	Unstable elements	Area (in m²)
Woodland	1 938 437	Ploughland	1 294 871
Water areas (artificial reservoirs, ponds, natural streams)	215 322	Athropogenized areas (built-up areas)	79 539
Permanent grassland	1 817 776		
Gardens	154 680		

Source: Kementerian Agraria dan Tata Ruang/Badan Pertanahan Nasional, 2022

CES = The value of CES according to the Míchal methodology in the cadastre of the municipality of Denpasar city centre is 3.00, which is assessed as a natural and nature-friendly landscape. There is a significant predominance of ecologically stable structures. In this, let us notice especially the high share of forest land and permanent grassland, occupying almost 4 million m2 of the total area of the examined cadastral area. Ecologically unstable structures included urban areas in the extent of 79.539, i.e., built-up areas, not another area with a total area of 356.635 m2, representing another area, handling area, barren land, other roads, burial sites, roads, sports, and recreational areas and green. According to Míchal, we calculate the CES: 1.938.437 + 215.322 + 1.817.776 + 154.680 / 1.294.871 + 79.539 = 4.126.215 / 1.374.410 = 3.00

CES = The value of CES according to the Miklós methodology in the cadastre of the municipality of Denpasar city center is 0.64623 = the area is moderately stable. In the cadastre of the municipality Denpasar there are the following landscape elements with areas: – Field - 1.3 km2 - Meadows - 1.8 km2 – Gardens - 0.2 km2 – Forests, water, wetlands - 2.2 km2 – Others - 0.08 km2. According to Miklós, we calculate CES according to: (1.3 x 0.14 + 1.8 x 0.62 + 0.2 x 0.5 + 2.2 x 1.00 + 0.08 x 0.10) / (1.3+1.8 +0.2+2.2+0.08) = (0.182+1.116+0.1+2.2+0.008)/5.58= 3.606 / 5.58 = 0.64623

5 SUMMARY AND CONCLUSION

The European Green Deal (EGD) announced by the European Commission (Commission) in December 2019 amounts to an unprecedented attempt at the level of the Union to foster the transition towards the common goal of a climate-neutral economy by reducing carbon emissions by at least 50 % by 2030 (and towards 55 %) and achieving carbon neutrality by 2050. The Commission construed its work programmed through the concept of environmental re-orientation of EU activities in areas identified as leading actions of the EGD Communication such as climate ambition, clean affordable and secure energy, industrial strategy for a clean and circular economy, sustainable and smart mobility, agriculture and fisheries, biodiversity, zero pollution and toxic-free environment, mainstreaming sustainability, trade and foreign policy and the European Climate Pact. Based on the concepts of sustainability and protection of the EU's natural capital, combined with legal and financial discipline, it is meant to transform the EU by 2050 into a state "fair and prosperous society, with a modern, resource-efficient and competitive economy". The goal of this article was fulfilled, because the possibility of the use of selected types of territory in the investigated cities was analyzed, pointing to the possibility of applying sustainable methods.

During the past century, global climate change has entailed rising temperatures and so heatwaves and droughts; increasing precipitation, storms and floods risk; and higher levels of carbon dioxide in the atmosphere. These climate and human-induced changes have created major challenges for attaining sustainability through the depletion of natural resources. In recent years, new planning tools have emerged to aid planners in achieving multiple goals for sustainability. The calculated coefficient of ecological stability is one of them.

It is clear from the conclusion of the article that the investigated area of the cadastral territory of the municipality of Denpasar city centre falls into the territory where ecologically stable natural structures predominate. This means that the impact of anthropogenic human intervention is at an acceptable level. This territory is therefore in line with the principles set out in the European Landscape Convention. On the opposite side, the cadastre of the Prague of the city centre (Zizkov) is assessed as an area used above average with a clear disruption of natural structures. The transformation of the land will be a key feature for the protection of natural ecosystems and adaptation to climate change in both surveyed landscapes.

Despite the fact of different results in both applied methodologies, it is necessary to state the fundamental fact that the definition and subsequent implementation of the territorial system of ecological stability is a proven tool for nature and landscape protection, fundamentally involved in protecting and restoring the natural ecological functions of the landscape. Despite several uncertainties, this study demonstrates that it is possible to analyze long-term land-use trends to generate more meaningful, spatially explicit information, which can form the basis for landscape planning and ecosystem management.

A related and even more daunting challenge lies in establishing a common will to realise the European Green Deal across EU member states. The nationally fragmented initial response to COVID-19 has confirmed the need for reversing the trend of decreasing European cohesion, observable in rising support for anti-European parties in many countries, with Brexit as its most obvious example. It remains to be seen whether and how the ambitious mission of becoming the first climate-neutral continent may be turned into an opportunity for uniting the European people.
This Contribution seeks to contribute to the design of the European Green Deal by outlining a realizable plan focused on efficient land use in selected countries and on what can be considered its four foundational pillars: carbon pricing, sustainable investment, industrial policy and a just transition.

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Contact

PhDr. Milan Douša, PhD.
Faculty of Public Administration, Pavol Jozef Šafárik University in Košice
Department of Economics and Management of Public Administration
Popradská 66, 041 32 Košice, Slovakia
milan.dousa@upjs.sk