



Wellbeing and sustainability in Europe in the 2010s—An empirical analysis

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ABSTRACT

The decade of the 2010s was characterized by relative economic stability in Europe. Most of the countries had recovered from the financial crisis of the previous decade while the new socio-economic crises, brought by the early 2020s, were not yet on the horizon. The economic stability of this period does not mean the absence of systemic issues at all. Environmental degradation, aging societies, refugee crisis, or offshore scandals are but just to mention a few. However, due to the period of relative stability, the direct impact of these issues in different countries can be better illustrated and compared over the 2010s than during the crisis periods. In order to prove empirically this presumption, I apply longitudinal statistical data analyses, as well as cross-sectional regressions, among 39 European countries. The examined outcome variables are the Happy Planet Index (HPI), as an informal indicator of progress, and its sub-components, as proxy indicators for (subjective) wellbeing and (objective) sustainability. The results confirm the diverse trends in terms of wellbeing and sustainability in spite of the roughly even formal economic growth over the period. This highlights the necessity for a multifaceted approach to assess progress.

1. Introduction

Academic research and public debates, from both theoretical and empirical aspects, have been proliferating on the concept and measurability of sustainable development (SD), as well as on its relation to the formal economic performance and the (rather informal) wellbeing objectives. Generally, the indicators used by the wellbeing-based approaches of social progress correlate to a certain extent, and with diminishing marginal utility, with the formal macroeconomic measures, while SD indicators do not or negatively correlate with that (Fuchs et al., 2020). This is because most of the wellbeing indicators do not include nature-related environmental considerations and, conversely, many SD indicators do not consider or understate the aspects of human wellbeing (O'Mahony, 2022). Although, the dimensions of wellbeing (either social, economic or political) and natural environmental quality cannot be separated in the long run. For example, as Gale (2018) argues, healthy natural environment is indispensable for a persistent happiness and good mental state.

Sameer and coauthors (2021) argue that happier societies, with higher consumption, are actually more responsible. To underpin their statement, the authors present an elaborated statistical analysis where responsible behavior is proxied by the United Nations' SDG (Sustainable Development Goals) Index score, which 'indicates the percentage of

achievement in 17 sustainable development goals and shows a country's position between the worst (0) and the top or desired (100) outcomes'. They find that happier nations consume more and in a more responsible way in general. Another empirical analysis by Lakócai (2022), where sustainability is expressed in terms of the Ecological Footprint, confirms that the wealthier societies have the potential to decouple their economic development from the environmental (over)exploitation. However, this study also revealed that this is not always the case; some wealthy countries have even higher Ecological Footprint than their economic performance would indicate when regression analysis is performed.

The main reason behind the inconclusive findings in these studies is that sustainability (or rather responsibility) is expressed with different proxy variables. Although SDG Index can be an adequate policy monitoring indicator, using it for measuring the environmental responsibility of societies is misleading mainly for two reasons. First, SDG Index is a complex measure in which Responsible Consumption and Production is only one of the 17 indicators (i.e. the goals). Second, it discounts the effect of outsourced polluting activities of multinational corporations as a causality between the wealth in certain (mainly developed) countries and the environmental deterioration in other (mainly developing) countries. On the other hand, the consumption-based Ecological Footprint considers the place of consumption, not production, of market

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products (see [Happy Planet Index Methodology Paper, 2021](#)). Therefore, it is a more appropriate and direct measure of environmental responsibility. With regard to the Ecological Footprint, empirical research finds contradictory results about the connection between environmental and socio-economic performance of societies, indicating a complex interdependence that is worth analyzing across diverse development levels ([Chu et al., 2023](#)).

To eliminate the existing, and sometimes contested, antagonism between wellbeing and sustainability, an integrated concept of 'sustainable wellbeing' (SW) has been created. To measure SW properly, [Hoekstra \(2019\)](#) highlights the need for creating a 'Wellbeing and Sustainability Community', which accounts for all (i.e. environmental, societal, economic, distribution, political, quality etc.) domains of development. [Pillay \(2020\)](#) advocates for the concept of 'ecosocialism', a post-capitalist framework, in order to reconcile the objectives of social wellbeing with the environmental concerns. Some composite wellbeing indicators, such as the Gross National Happiness Index, which is used officially in Bhutan, integrate both social wellbeing and sustainability-related components (*Ibid*). Yet, integrating these dimensions into composite indicators does not automatically eliminate negative correlation between them.

Not only sustainability, but also wellbeing is a multidimensional concept. The European Social Survey, for example, distinguishes six different dimensions of wellbeing, namely the evaluative, the emotional, the functioning, the supportive relationships, the vitality, and the community wellbeing. These dimensions often tend to correlate with each other, but not always and everywhere ([European Social Survey, 2015](#)). The World Values Survey assesses happiness and life satisfaction as the two subjective wellbeing components, finding an 81% societal-level correlation between them ([Inglehart, 2018](#)). [White \(2015\)](#) argues that the interpretation of wellbeing is culture-dependent and not universal therefore, the possibility of objective measurability and, especially, comparability is limited.

This paper does not intend to argue for one or another theoretical framework of wellbeing and/or sustainability. Instead, this study employs an empirical analysis based on longitudinal data from the European countries for the 2010s to illustrate that the relationship between social and environmental trends can vary from country to country even when there is a similar level of formal economic growth. This is demonstrated within a group of countries that are geographically, politically, and economically proximate to one another. For the statistical analysis, I use the Happy Planet Index (HPI), a composite wellbeing indicator, which includes both social and environmental components, and its sub-components.

The objective of this paper is to make a contribution to the existing literature on contemporary European societies by undertaking an empirical examination of the issues of wellbeing and sustainability. The study's principal value lies in its distinctive comparison of these dimensions within the European context over a relatively short inter-crisis period. The choice to examine 39 European countries is supported by the rationale that the European continent constitutes a discrete group of nations whose developmental trajectories are interdependent due to geographic proximity.

The next section provides a context about the main socio-economic tendencies in the 2010s globally and in Europe. The following section describes the dataset and methodology. Then, sections titled 'Ways of wellbeing and sustainability in the countries of Europe over the 2010s' and 'Correlates of wellbeing and sustainability among the European countries' present and discuss the findings. The Conclusion part summarizes the results implying the relevance of similar researches and provides future research direction.

2. Global and European tendencies of socio-economic development in the 2010s

In a way, the new socio-economic crises in the early 2020s

(pandemic, inflation, war, energy-shortages) have only magnified many of the existing structural issues. The symptoms of these decades-long issues are, among other things, pollution and climate change, aging societies, social inequalities, refugee and migration crisis, offshore scandals and corporate tax evasion, rising political populism etc. ([IMF, 2021](#); [OECD, 2021/1](#)). Even conventional economic organizations, such as the OECD, highlight that the decision-makers should consider all these issues for the recovery ([OECD, 2021/2](#)). In other words, the goal should not be to restore the conditions before 2020, but to ensure a transition that meets the economic, social and environmental aspects of sustainability ([UNDP, 2022](#)). The aspect of promoting the economic transition through progressive crisis management also appears in the policy communication of the European Union ([European Commission, 2021](#)).

[Stiglitz and coauthors \(2019a, 2019b\)](#) highlight the interrelated nature of systemic issues and the methods used to assess socio-economic performance. The establishment of policy objectives based on a comprehensive range of measures, encompassing the social, economic, political, and environmental dimensions of development, may prove an effective means of addressing these issues.

In terms of formal development policies, the Legatum Prosperity Index (LePI¹), developed by the Legatum Institute, provides a comprehensive and detailed indicator set about the main trends over the last decade (between 2013 and 2023) on global and macro-regional scales as well as at country level ([Legatum Institute Foundation, 2023](#)). The LePI is comprised of three domains, which are Inclusive Societies, Open Economies and Empowered People. These domains consist of 12 pillars, 67 elements and 300 (raw) indicators. On a global scale, there is an improvement in the Investment Environment, the Enterprise Conditions, the Living Condition, the Health, the Social Capital, the Infrastructure and Market Access, and the Education since 2013. In the Safety and Security and the Natural Environment pillars, the overall global scores are mostly the same as 10 years ago however, the trends were different. The Personal Freedom, the Governance and the Economic Quality scores have deteriorated. Although the situation in the lowest-scored countries has improved in terms of health, education and (basic) living conditions, these countries diverged from the middle and top countries in the last 10 years. The main reason behind this divergence is that the 'fundamental weaknesses in the global economy impact the least prosperous countries the most' (*Ibid*, p. 16).

As for Europe, the 2023 Legatum Prosperity Index Report, alongside with other official classifications, divides the continent into two macro-regions: Western Europe and Eastern Europe. Western Europe is the most prosperous region in the world regarding the overall LePI score. Among the Western European countries, four Nordic countries are the global leaders in 2023, namely Denmark, Sweden, Norway and Finland. In the region, all the aggregate pillar scores have improved in the last 10 years apart from three pillars; the Safety and Security, the Personal Freedom and the Social Capital scores are slightly lower than in 2013. Eastern Europe is the fourth-ranked region globally out of the eight macro-regions. Nine pillars improved since 2013; among them, the increase of the Social Capital score is the most remarkable. On the other hand, the Personal Freedom pillar deteriorated significantly. One can presume that the improvement of the Social Capital and the deterioration of the Personal Freedom are somehow interrelated; worsening trust in public authorities may involve strengthening social bonds among the citizens and non-governmental organizations. However, proving empirically this presumption is out of the scope of the current study.

In terms of subjective wellbeing, the World Values Survey found that, between 1981–2014, there was a general global rise of both life satisfaction and happiness although, in a couple of countries these scores

¹ The official abbreviation for the Legatum Prosperity Index is LPI. However, the Living Planet Index has the same acronym therefore, in order to distinguish the two, I abbreviate the former one as LePI and the latter one as LiPI.

decreased. At the aggregate level of 12 countries, from which data is completely available, the mean happiness level rose until the mid 2000's, then it slightly shrank. The mean life satisfaction level rose until 1990 and then declined until 1995 to rise again in the next ten years. From 2005 to the early 2010s, it slightly shrank similarly to the mean happiness level (Inglehart, 2018; p. 156). According to the latest United Nations' Human Development Report (UNDP, 2022), concerns about uncertainty steadily increased since 2012, which might be related to the earlier mentioned systemic issues.

Empirical research found that there is no direct relationship between economic growth and wellbeing *over time* in spite of the fact that economic growth increases, with diminishing marginal utility, the level of wellbeing *at a given time*. This phenomenon is also known as the Easterlin Paradox (Halman *et al.*, 2022). Inglehart (2018) found that democratization and social liberalization, as further factors that determine the sense of free choice besides economic development, are becoming more important than income as the living standard increases. The findings of the European Social Survey (2015) confirm that social welfare state regime matters in Europe; general satisfaction in the Nordic countries, for example, was significantly higher than in the Southern or Transition (i.e. Central and Eastern European) countries at the beginning of the 2010s. Similarly, Carrasco-Campos and coauthors (2017) illustrate by correlation analyses, examining the Better Life Index components of the OECD in 13 European countries, that some socio-economic conditions (e.g. household income, long-term unemployment rate, etc.) may result in life satisfaction scores with high variances. The Scandinavian countries are generally above, while some other countries (mainly the ones with weak social policy) are below the regression lines. Based on the European Values Study data from 1999–2000 for 33 European countries, an earlier analysis by Fahey and Smyth (2004) concluded that life satisfaction was not only lower in the poorer societies but also more unequal. Besides that, social inequalities had greater impact on life satisfaction there than in the richer countries.

However, the World Happiness Report 2023 finds convergence between Western and Eastern Europe by the early 2020s in terms of life evaluation (Helliwell *et al.*, 2023). This finding resonates with an earlier study by Guriev and Melnikov (2018). The authors find that the transition happiness gap between post-socialist Eastern Europe and wealthier Western Europe has nearly closed by 2016, which is partly due to the 'happiness recovery' in the former block, especially among the middle-income young and educated individuals, and the decrease in life satisfaction in the latter group of countries.

Subjective assessment of one's financial situation is also a relevant wellbeing component. Findings by Želinský and coauthors (2022) show that subjective income poverty rates decreased in most of the European Union countries over the 2010s based on the European Union Statistics on Income and Living Conditions (EU-SILC 2004–2019 household survey microdata).

Indicators on the state of nature show a far less optimistic picture than most of the development policy indicators. The Living Planet Index (LiPI), for example, shows a 69% decline globally in the relative abundance of the monitored wild species population between 1970 and 2018 (Westveer, 2022). Although the rate of decline slowed down from 2010, the decreasing trends in biodiversity continue. In Europe and Central Asia, the decline (18%) is more moderate than in the other regions of the world. Wildlife conservation efforts can help to mitigate the deterioration of nature. Nevertheless, the ongoing overall environmental degradation, despite the increasing awareness and policy efforts to mitigate that, is also confirmed by the 2019 IPBES report on biodiversity and ecosystem services (Butchart *et al.*, 2019).

The biggest development challenge at the outset of the 21st century is the decoupling of socio-economic performance from the environmental degradation. Examining the OECD countries between 1990 and 2015, Chu and Tran (2022) conclude that environmental policies and regulation can be the most effective and efficient when they are adjusted to the specific local conditions of each country.

In this study, I use the Happy Planet Index (HPI) and its sub-indicators to track the development of 39 European countries over the 2010s in terms of three domains, which are 1) formal socio-economic welfare, 2) subjective wellbeing, and 3) sustainability. Next section will provide a detailed description about the variables and methodology.

3. Data and methodology

The paper employs descriptive statistics and quantitative analysis using the following variables:

- 1) the Happy Planet Index
- 2) life expectancy
- 3) wellbeing
- 4) the Ecological Footprint
- 5) geographical classification (as a categorical independent variable)
- 6) GDP per capita (as an independent control variable)

The rationale for selecting the Happy Planet Index dataset is twofold. The index is comprised of a mere three sub-indicators, which are comparatively straightforward to evaluate in relation to one another. On the other hand, the HPI sub-indicators can be employed as proxies for wellbeing and sustainability. Life expectancy at birth represents an objective component of the wellbeing dimension, whereas survey-based wellbeing scores represent the subjective element of life satisfaction. The consumption-based Ecological Footprint provides a reliable picture on the actual environmental responsibility of countries.

The Happy Planet Index was developed by New Economics Foundation (NEF) until 2019. Since that year, Wellbeing Economy Alliance (WEALL) is responsible for producing and publishing HPI data. Country scores for the HPI are expressed on a 100-point scale.

The HPI consists of three sub-indicators according to the following formula²³:

$$\text{life expectancy} \times \text{experienced wellbeing} / \text{Ecological Footprint}$$

Life expectancy is the average number of years an infant born in a given country is expected to live. This variable is commonly used as a proxy of formal socio-economic welfare. Country data originate from the UN Human Development Report. Data on wellbeing, which is the subjective element of the HPI, come from a representative survey of the Gallup World Poll, and expressed on a 10-point scale. In this context, wellbeing indicates overall life satisfaction, not the current level of happiness. Data on the Ecological Footprint (EF) are produced by the Global Footprint Network's National Footprint and Biocapacity Accounts and expressed in global hectares. For the reason mentioned in the Introduction, the EF is an adequate proxy of sustainability at individual and societal level.

The 39 European countries, which are analyzed in this study, are divided into two groups: Central and Eastern European (CEE) and Western European (WE) countries (see Table 1). (Later, the Western European countries are further divided). Armenia, Azerbaijan, Georgia, Russia and Turkey are out of the scope of the current study because they are partly Asian countries. Cyprus and Malta are classified into the CEE countries despite that they are sometimes considered as Mediterranean or Western countries in the literature. However, as we will see below, their wellbeing and EF scores are more similar to the CEE countries than to the WE countries. The rationale for employing the geographical classification as a categorical variable is that the interrelation between wellbeing and sustainability may vary among countries at different levels of formal economic development.

² Full HPI dataset, including the sub-indicators, is available at <https://happyplanetindex.org/hpi/>.

³ For detailed information about the calculation methodology, see the Happy Planet Index Methodology Paper (2021).

Table 1
Classification of CEE and WE countries.

Central and Eastern European countries	Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Moldova, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Ukraine
Western European countries	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom

Source: own editing

Gross Domestic Product (GDP) is the most commonly used indicator of the size of market economies. Despite recent criticism of its adequacy, GDP per capita remains the most common benchmark indicator for economic policy decisions. For this reason, it is employed as a control variable in the regression analyses presented in Section 5. The data on GDP per capita is derived from the World Bank Databank and is expressed in 2017 international dollars based on purchasing power parity.

The next section shows, using descriptive statistics, how the HPI and its sub-indicators changed over the 2010s among the 39 CEE and WE countries. Then, I will analyze the correlations of the wellbeing scores and the size of the Ecological Footprint per capita with the application of linear regression modelling in the cross-section of three years: 2011, 2015 and 2019.

4. Ways of wellbeing and sustainability in the countries of Europe over the 2010s

The maps in Fig. 1 illustrates the HPI scores and its sub-indicators among the European countries in the early, mid and late 2010s. (Cyprus and Iceland are not shown in Fig. 1 for technical reasons; these two countries are geographically remote from the continent therefore, they are not placed on the maps.)

The overall HPI scores show only a weak overlap with the geographical and formal welfare-state classification (i.e. Eastern European, Mediterranean, Scandinavian and Western European countries), especially at the middle of the decade. In terms of life expectancy, the order of countries had not changed, while the expected lifetime had steadily increased everywhere. On the other hand, wellbeing scores and the EF show different pictures, when comparing the countries, in the intersection of the three points. It is worth looking at how the scores and values of these sub-indicators (i.e. wellbeing and the EF) had changed within each country.

Because of the fact that the life expectancy increased everywhere at a roughly similar rate, this variable is not examined separately below. Nevertheless, it is worth mentioning that the life expectancy was the highest in some of the Mediterranean and Scandinavian countries, which implies two important correlates: 1) the role of the favorable climate in case of the Southern European countries, and 2) the relevance of the formal welfare state systems in case of the Nordic countries. This fact confirms that formal economic wealth and income correlate with objective wellbeing indicators, such as the life expectancy, only to a certain point and beyond that point, other factors became more important than money. Empirical evidence proves that, among the developed societies, more economic growth does not imply longer life (Walby, 2009).

First, let us look at the wellbeing scores in the CEE countries (Fig. 2). The most common trend was the solid but uneven increase in subjective wellbeing over the 2010s. Out of the 21 CEE countries, 10 followed this path, namely Bosnia and Herzegovina, Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Malta, Poland, Romania and Serbia. Lithuania and Slovakia had flatter curves than the former countries, although they also increased. The yearly wellbeing scores in Slovenia decreased in the

first part of the decade, and then solidly increased in the second part. Overall, the wellbeing in Belarus and Croatia has also increased but the curves are zigzagged. Moldova, Montenegro and North Macedonia had similar wellbeing scores at the beginning and end of the last decade, with slightly different trend-lines. In Albania, Cyprus and Ukraine, the wellbeing scores were lower at the end than at the beginning of the decade. In each of these three countries, the trend-lines solidly shrank first, and then rose to a certain extent. In the case of Ukraine, the deteriorating scores from 2013 might be related to the almost war-like situation with Russia and the territorial losses (i.e. the loss of Crimea and some eastern areas) at that time. Regarding the overall scores among the CEE countries, wellbeing was the highest in the Czech Republic, followed by Slovenia.

The WE countries had higher wellbeing scores than the CEE countries overall (see Fig. 3), apart from the Mediterranean countries. Greece and Portugal had the lowest scores in this group, although both countries improved in wellbeing by the end of the 2010s. The low scores of Greece at the beginning of the decade might be due to the financial and economic crisis that started in 2008 and strongly affected the country's economy. Italy and Spain had similar wellbeing scores as most of the CEE countries, while France, Germany, Ireland and the United Kingdom had slightly higher scores. Besides, the subjective wellbeing in France was lower at the end than at the beginning of the decade. The wellbeing scores slightly decreased also in Austria, Belgium, the Netherlands and Norway; however, these countries still had high scores. The rest of the countries, namely Denmark, Finland, Iceland, Luxembourg, Sweden and Switzerland, had similarly and solidly high scores in wellbeing.

Next, let us look at how the average (per capita) Ecological Footprint changed over the 2010s in the CEE countries (Fig. 4). In 11 countries, it was larger at end of the decade than at the beginning; however, the trends were not the same everywhere in these countries. Bulgaria, Hungary, Montenegro and Romania had similar EF scores trends; stagnation or slight decrease in the beginning of the decade were followed by a moderate but steady increase until 2019. The average size of the EF per capita was around 4 global hectares in these countries. The trend-line in Moldova is very similar but the EF was smaller there; it was about the half of the size of the previous four countries. On the other hand, the three Baltic states (Estonia, Latvia and Lithuania) and Malta also had similar trends, but their EF per capita was larger than the other CEE countries, between 6–8 global hectares at the end of the decade. Estonians had the biggest EF among the CEE countries, with almost 8 global hectares in 2019. The EF increased in Bosnia-Herzegovina and Poland too by 2019, compared to 2011, in spite of the decreasing trends in the first half the decade. A downward trend in the first part of the decade, followed by a growth in the second part, was also the case in Slovenia, although the EF had not surpassed the initial 5.1 global hectares. Albania, North Macedonia, Serbia and Ukraine showed steadily decreasing trends. Among them, Albania had the steepest slope and, by 2019, its EF per capita was the smallest in Europe, even smaller than in Moldova. Overall, the average EF decreased in Belarus, Croatia, Cyprus, the Czech Republic and Slovakia too in spite of some interim increases.

In general, the WE countries had larger EF per capita than the CEE countries, apart from a couple of exceptions. The average size of the EF in the four Mediterranean countries (Greece, Italy, Portugal and Spain), as well as in France, Germany, Ireland, Switzerland and the UK, was similar or slightly larger than in most of the CEE countries. Among the Mediterranean countries, Greeks and Italians experienced a decrease in their EF at the beginning of the 2010s, then they remained more-or-less constant. In contrast, the EF per capita in Portugal increased in the second part of the decade, while Spain returned to the initial size of its average EF. France, Germany, Switzerland and the UK solidly decreased the average size of their EF. The slope of curve of the latter two is steeper than the former two, and similar to the trend-lines of Norway and Sweden. However, the two Nordic countries had larger EF per capita. The Netherlands had the steepest slope over the whole period; this

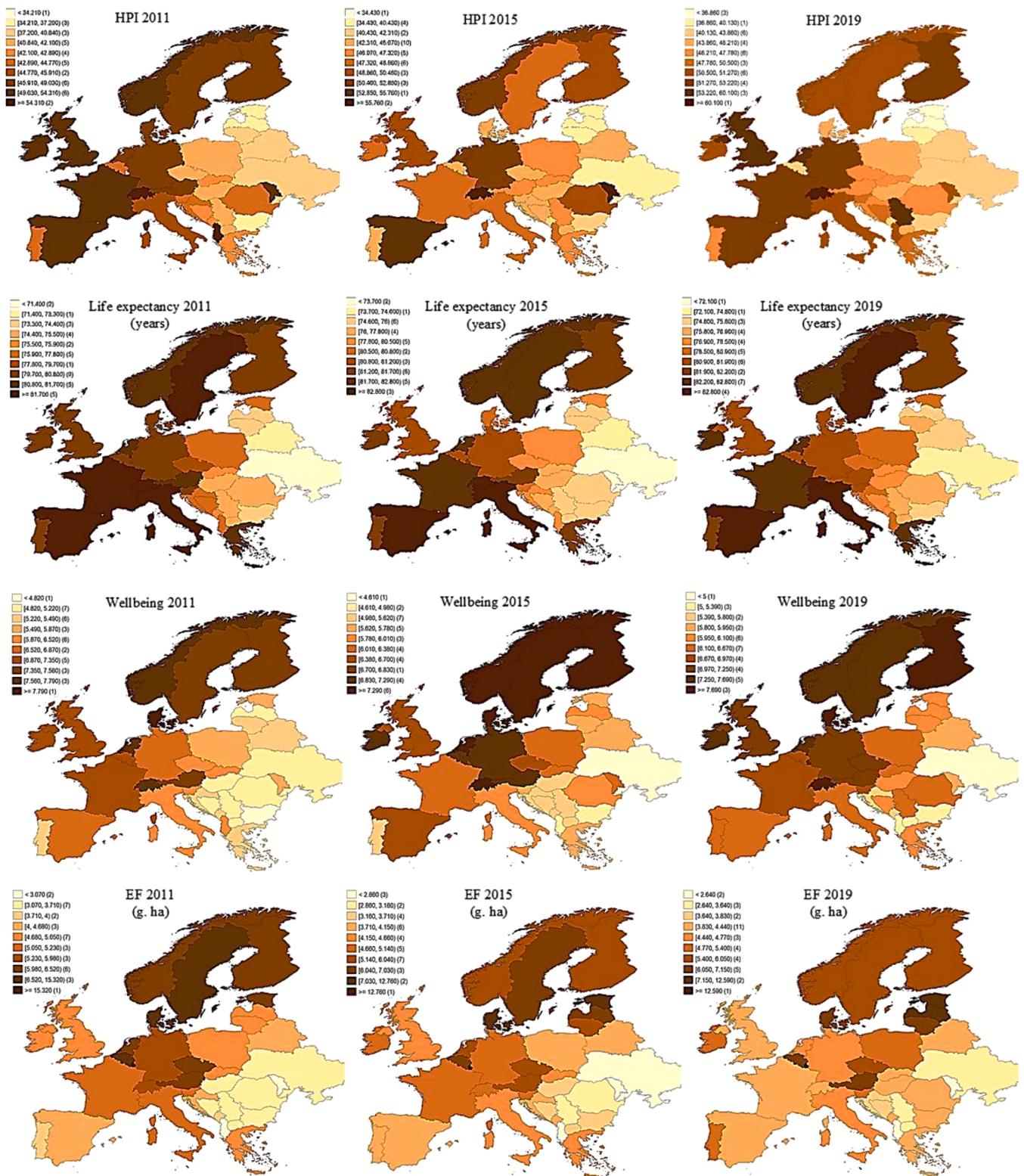


Fig. 1. HPI and its sub-components in Europe in 2011, 2015 and 2019.
Source: own editing based on the HPI dataset.

country saw a significant decrease to the average size of its EF from 6,1 to 4,6 global hectares. Irish people, on the other hand, slightly but steadily increased their EF. Luxembourg is an outlier; the size of its EF per capita was the biggest, later the second biggest after Qatar, in the world. Although the country significantly decreased its EF per capita at the beginning of the decade, from 15,3 to 12,6 global hectares, it

remained still extremely big, not only in Europe but on a global scale too. The average size of the EF in Austria, Belgium, Denmark and Finland remained mostly constant and relatively large. For Iceland, the time series is incomplete. Nevertheless, its EF per capita was relatively large as well.

(Fig. 5)

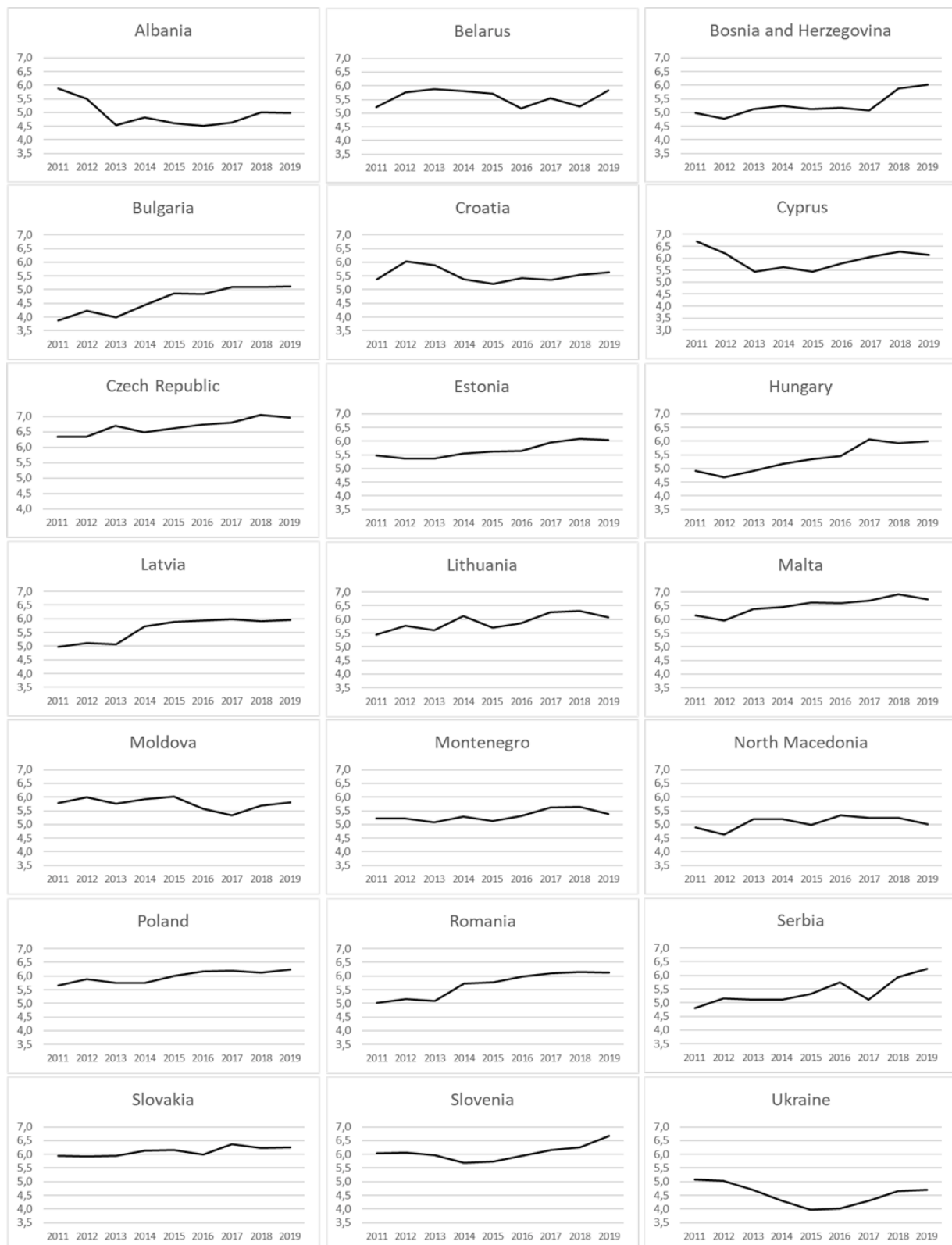


Fig. 2. Wellbeing scores in the CEE countries between 2011–2019.
Source: own editing based on the HPI dataset.

After examining the trends of wellbeing and the EF per capita in the European countries over the 2010s, it is worth analyzing how these trends correlate with the formal welfare policy classification of the countries. Next section will provide the results and findings of that

analysis.

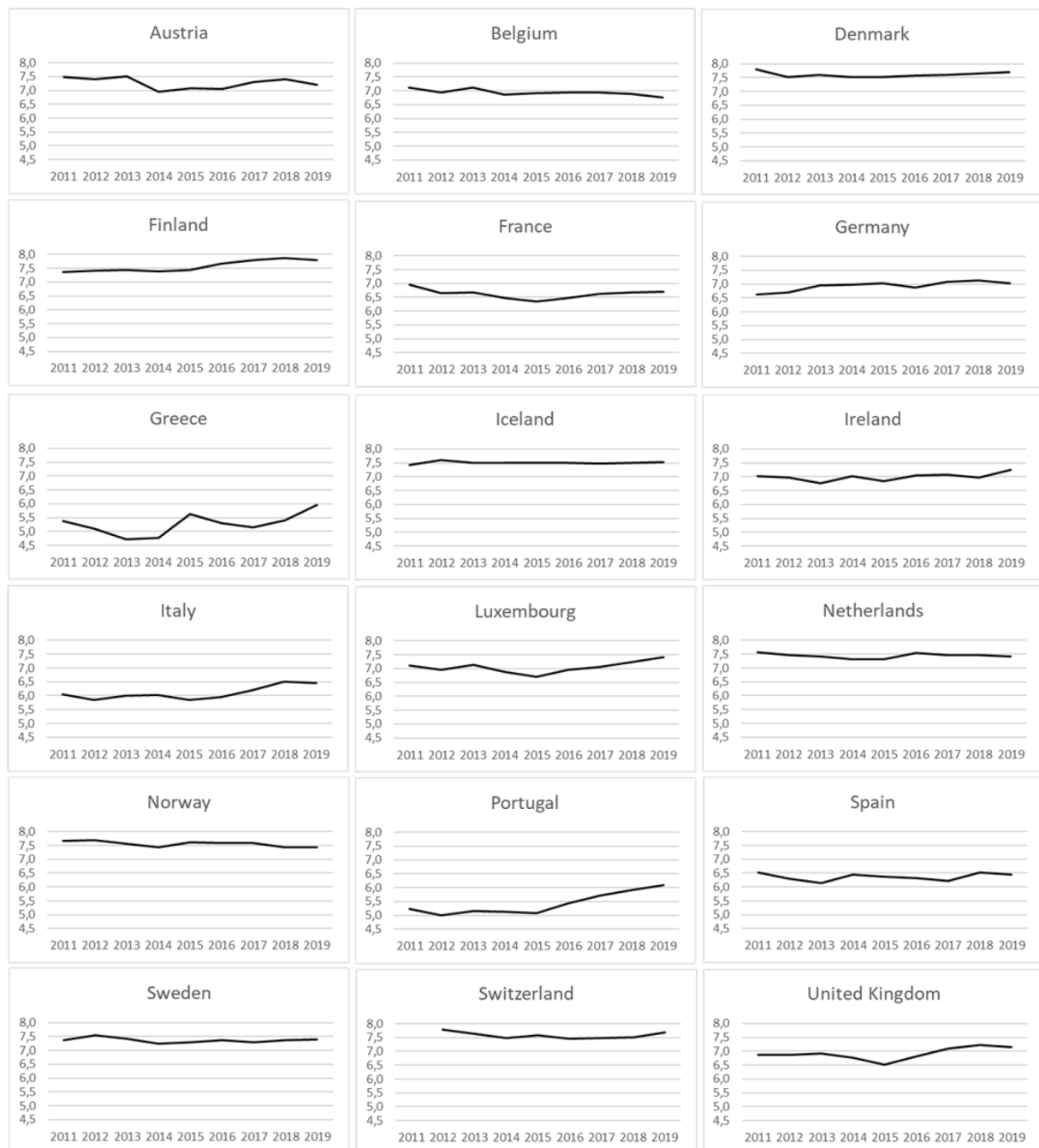


Fig. 3. Wellbeing scores in the WE countries between 2011–2019.
Source: own editing based on the HPI dataset.

5. Correlates of wellbeing and sustainability among the European countries

This section examines how the wellbeing scores and the size of EF per capita correlated with the formal classification of the European countries according to their geographical position *and* welfare systems at the beginning, middle and end of the 2010s. For this reason the WE countries are further classified, distinguishing the Mediterranean countries (Greece, Italy, Spain, Portugal), the Scandinavian countries (Denmark, Finland, Iceland, Norway, Sweden), and the rest of the WE countries (Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, Switzerland, the UK). CEE countries are not divided into further groups. Based on this classification, I create categorical dummy

variables.

The above classification is literature-based. Beside the classical distinction of the Scandinavian social-democratic models (Esping-Andersen, 1990), it is argued in the literature that Mediterranean (Arts and Gelissen, 2002) and post-communist Central and Eastern European countries (Aidukaite, 2011) represent separate models as well in consideration of their welfare systems. Although Cyprus and Malta are rather Mediterranean than CEE countries based on their geographical position and modern political history, I continue to include these two countries in this category because their indicator scores are closer to the CEE countries.

The correlates of wellbeing and the EF per capita (as dependent variables) are examined in the cross-section of the years of 2011, 2015

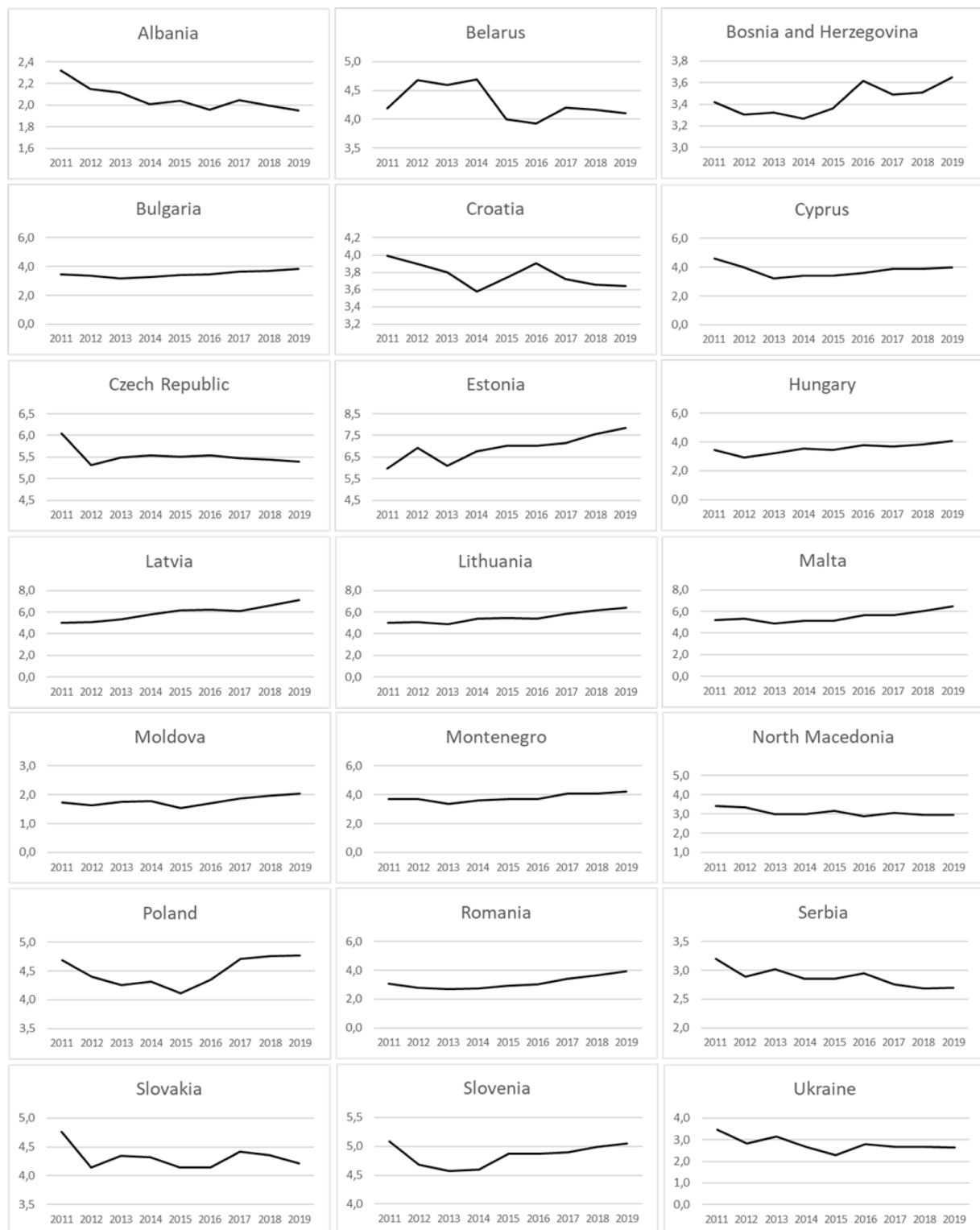


Fig. 4. The EF per capita in the CEE countries between 2011–2019.

Source: own editing based on the HPI dataset.

and 2019. I apply two variants of regression modelling for each year; one (M1) with only the categorical independent variables, and another one (M2) where GDP per capita of a given year is introduced as a control variable. The seven WE countries, mentioned above, are the reference category with which I compare the CEE, Mediterranean and Scandinavian countries. The first model version (M1) facilitates a net comparison between WE and the other country groups, whereas the second model

version (M2) allows for a more nuanced analysis by enabling the comparison of these groups in proportion to the group mean GDP per capita.

First, let us look at the results of the wellbeing regressions (Table 2). At the beginning, middle and end of the decade, the average wellbeing in the CEE and the Mediterranean countries was significantly lower than in the WE countries, although the gap constantly decreased. There was no significant difference between the Scandinavian and the WE countries

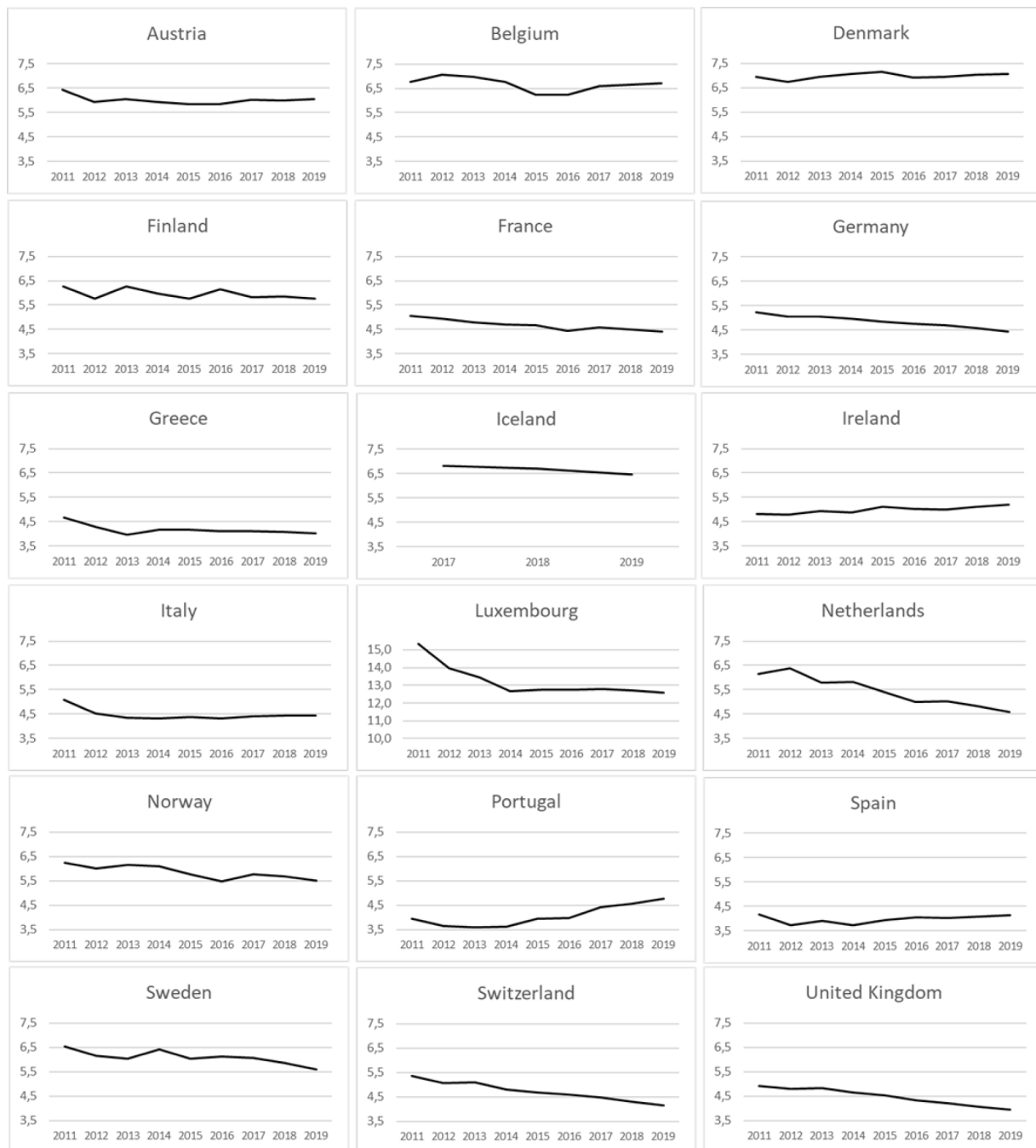


Fig. 5. The EF per capita in the WE countries between 2011–2019.
Source: own editing based on the HPI dataset.

according to the uncontrolled regression models. However, when the models are controlled for GDP per capita, the Scandinavian countries showed significantly higher wellbeing scores than the WE countries in 2015 and 2019. On the other hand, the significant difference between the Mediterranean and the WE countries disappeared in 2019 in proportion to GDP per capita. As a control variable, GDP per capita was significant in each year. Overall, these results of the wellbeing regressions confirm that geographical location and/or welfare systems matter beyond the level of formal economic development. In terms of wellbeing, and in proportion to GDP per capita, the WE countries did not do better than the Mediterranean countries by the end of the decade, while they did worse than the Scandinavian countries. Moreover, the wellbeing gap, controlled for GDP per capita, between the CEE and WE

countries narrowed and became less significant by 2019, which resonates with other empirical findings about the closing transition happiness gap (Guriev and Melnikov, 2018; Helliwell et al., 2023).

When the EF per capita is used as the outcome variable (Table 3), only the CEE countries had significantly smaller size than the WE countries had in 2011, 2015 and 2019. However, and interestingly, in proportion to GDP per capita, this is also the only group which had significantly bigger EF. Although one may find this result contradictory, it underpins two theoretical theses: 1) the economies of the CEE countries in the 2010s depended more on the traditional (i.e. more polluting) industrial sectors and/or consumption habits than the other European countries, and 2) the Mediterranean, Scandinavian and WE countries had reached the level of formal economic growth where further pollution

Table 2

Regression on wellbeing scores in 2011, 2015 and 2019 among the European countries.

Wellbeing	2011		2015		2019	
	M1	M2	M1	M2	M1	M2
CEE	-1,74,589*** (0,21,696)	-1,150,443** (0,32,945)	-1,408,788** (0,21,476)	-0,8,127,248* (0,32,318)	-1,280,924*** (0,19,137)	-0,5,778,817* (0,2516)
Mediterranean	-1,372,594*** (0,32,724)	-1,006,517** (0,34,714)	-1,191,416** (0,32,392)	-0,7,691,212* (0,35,318)	-0,9,432,772*** (0,28,865)	-0,423,445 (0,28,489)
Scandinavian	0,3,568,699 (0,30,375)	0,4,593,734 (0,29)	0,546,206 (0,30,066)	0,669,664* (0,28,752)	0,3,883,161 (0,26,792)	0,550,603* (0,23,394)
WE	—	—	—	—	—	—
GDP per cap.	—	0,0000169* (7,33e-06)	—	0,0000163* (6,90e-06)	—	0,000019** (5,16e-06)
constant	7,164,437*** (0,18,152)	6,196,245*** (0,45,332)	6,924,349*** (0,17,968)	5,940,898*** (0,44,927)	7,180,902*** (0,16,012)	5,954,483*** (0,3599)
model	R ² : 0,75	R ² : 0,78	R ² : 0,7	R ² : 0,74	R ² : 0,69	R ² : 0,78
parameters	adj. R ² : 0,72	adj. R ² : 0,75	adj. R ² : 0,67	adj. R ² : 0,71	adj. R ² : 0,66	adj. R ² : 0,75
	F stat.: 34,17	F stat.: 30,12	F stat.: 26,63	F stat.: 23,98	F stat.: 25,43	F stat.: 29,33
	Prob.: 0,00	Prob.: 0,00	Prob.: 0,00	Prob.: 0,00	Prob.: 0,00	Prob.: 0,00

* p ≤ 0,05

** p < 0,01

*** p < 0,001

Source: own editing

Table 3

Regression on the size of the EF in 2011, 2015 and 2019 among the European countries.

Ecological Footprint	2011		2015		2019	
	M1	M2	M1	M2	M1	M2
CEE	-2,590,715** (0, 73,074)	2,160,696** (0,56,204)	-2,098,513** (0,65,907)	1,735,126* (0,64,486)	-1,448,986* (0,71,273)	2,243,309** (0,72,874)
Mediterranean	-2,198,267 (1,10,219)	0,7,228,757 (0,59,177)	-1,914,837 (0,99,408)	0,8,011,946 (0,70,467)	-1,433,491 (1075)	1,296,608 (0,82,515)
Scandinavian	-0,1,808,768 (1,10,219)	0,505,601 (0,52,994)	0,159,144 (0,99,408)	0,9,187,705 (0,61,585)	0,2,899,928 (0,99,782)	1,142,305 (0,6776)
WE	—	—	—	—	—	—
GDP per cap.	—	0,0001349*** (0,00001)	—	0,0001048*** (0,00001)	—	0,0000998*** (0,00001)
constant	6,675,889*** (0,61,138)	-1,04988 (0,77,375)	6,018466*** (0,55,142)	-0,3,066,962 (0,89,651)	5,785,216*** (0,59,631)	-0,6,557,919 (1,04241)
model parameters	R ² : 0,32	R ² : 0,85	R ² : 0,29	R ² : 0,74	R ² : 0,16	R ² : 0,64
	adj. R ² : 0,26	adj. R ² : 0,83	adj. R ² : 0,23	adj. R ² : 0,71	adj. R ² : 0,1	adj. R ² : 0,6
	F stat.: 5,24	F stat.: 46,31	F stat.: 4,7	F stat.: 23,92	F stat.: 2,27	F stat.: 15,01
	Prob.: 0,00	Prob.: 0,00	Prob.: 0,01	Prob.: 0,00	Prob.: 0,1	Prob.: 0,00

* p ≤ 0,05

** p < 0,01

*** p < 0,001

Note: Iceland is not included in the regression models for 2011 and 2015 because of missing data for these years.

Source: own editing

is easily avoidable. These findings are partially consistent with the results reported by [Chu and coauthors \(2022, 2023\)](#) regarding the existence of the Environmental Kuznets Curve. This suggests that nations with higher levels of economic development may be better positioned to address environmental issues. Yet, the findings do not necessarily mean that the non-CEE countries have sustainable economies; people in these countries actually have big EF in general. However, their EFs do not grow as much as they did in the past before reaching their current level of formal economic development and wealth. Some of the developed countries managed to reduce their EF per capita to a certain extent, although it still remained high compared to the less developed countries.

The regression analyses above provide us with the most accurate information if we consider the two (uncontrolled and controlled) model variants together; the formal economic wealth, proxied with GDP per capita, can significantly modify the correlations. However, it is worth considering the uncontrolled model results too for the reason that the geographical location and the affiliation to a certain type of welfare system can explain, in some cases, the correlations in themselves as well.

6. Conclusion

This study examined the main trends and correlations of wellbeing and sustainability in 39 European countries over the 2010s. It is important to highlight that the findings of this examination pertain only to a given period, which is a decade characterized by an economic boom in terms of conventional growth indicators, with relatively stable social and political conditions in most of the countries. Yet, systemic socio-economic issues and environmental concerns were also prevalent this period.

The main motivation behind this study was to undertake an empirical and quantitative testing of the correlation (or its absence) between the formal macroeconomic performance, subjective wellbeing and environmental impact. The first domain is expressed in terms of GDP per capita while the latter dimensions are proxied with the Happy Planet Index sub-indicators, namely with wellbeing scores, based on representative surveys, and the average (consumption-based) Ecological Footprint. As a categorical variable, the geographical classification of the European countries were also involved into the analysis.

Summarizing the results of the research, these are the main findings:

- 1) While life expectancy (in line with the formal economic growth) increased steadily over the period in each country, the level of wellbeing and the size of the EF per capita evolved differently in different countries.
- 2) Wellbeing scores of the CEE and Mediterranean countries were significantly lower than those of the WE countries at the beginning, middle and end of the decade, both uncontrolled and controlled for GDP per capita. However, the difference steadily decreased, which is partly due to the decreasing average wellbeing scores in the WE countries by the mid of the decade. Besides, the significant wellbeing difference between the Mediterranean and WE countries disappeared in 2019 in proportion to GDP per capita.
- 3) Wellbeing scores became significantly higher in the Scandinavian countries than in the WE countries in the middle and the end of the decade if the regression is controlled for GDP per capita.
- 4) Uncontrolled for the formal economic performance, the CEE countries had significantly lower EF per capita than the WE countries in 2011, 2015 and 2019. However, in proportion to GDP per capita, the former countries had significantly higher EF than the latter ones in each examined year.

Overall, the results show diverse patterns of wellbeing and sustainability-related processes in the European countries in spite of the more-or-less uniform economic growth over the 2010s. This diversity in terms of wellbeing and ecological sustainability can only partially be explained by the geographical (and/or formal welfare-state) classification of the European countries.

In light of the aforementioned findings, the main development policy challenge for the non-CEE countries is to reduce their consumption-based EF while maintaining the level of wellbeing observed prior to the pandemic. The reinforcement of the infrastructure of social policies and public services may facilitate the achievement of this objective, as evidenced by the experience of the Scandinavian states. Conversely, CEE countries must identify a path to development that encompasses both conventional economic indicators and social wellbeing, while simultaneously decoupling their EF from economic growth. This decoupling must occur at a rate that is not commensurate with the historical trajectory of WE countries. EU financial supports may provide useful resources for this objective, not only for the Eastern member states, but also for the transitional partner countries that are not within the European Union.

The first years of the new decade brought breakpoints to the processes, first with the global lockdowns related to the COVID-19 pandemic, then with the energy crisis related to the Russian-Ukrainian war. We cannot know therefore how the processes of the 2010s would have further evolved by themselves. Future research should consider continuation of this study by examining the changes in the early 2020s. It is expected that all the necessary statistical data will be available in the near future, thus allowing the research to be continued.

Data availability

Data used for the empirical analysis are retrieved from two external data sources:

- 1) Abdallah, S., Abrar, R., Marks, N., 2021. The Happy Planet Index 2021 Data File. Accessed from www.happyplanetindex.org
- 2) Data on GDP per capita originate from the World Bank Databank: <https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.PCAP.PP.CD&country=>

Ethics statement

This study does not involve any ethical-related concerns by nature.

CRedit authorship contribution statement

Csaba Lakócai: Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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