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MEASURING THE JUSTNESS OF THE EUROPEAN GREEN TRANSITION

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ABSTRACT
The ambitious goals of the green transition of the EU have set numerous challenges, including in the social sphere. The green transition is expected to affect the European households and businesses in various ways (job loss, energy and transport poverty, etc.) leading to a direct or indirect increase in their living costs and company expenses. Thus, research is needed on the policy measures that the EU is taking to tackle the negative social effects of the green transition and on the evaluation of their efficiency. The latest developments in the policy area concerning its social dimension are considered in this paper, as well as the approaches to the measurement of the justness of the green transition. The aim of this review scientific paper is to analyze main methodological approaches to green transition, and specifically to the justness of the green transition in the EU. The methodology of this study includes a desk research, based on analysis and synthesis, descriptive and comparative analysis and systematic approach. The key finding of the study is that despite the numerous policy papers, regulations and recommendations, there is no comprehensive methodology to measure the justness of the green transition in the EU and further research is needed regarding the precision of the indicators that need to be developed and for which statistical data will have to be collected. The author's contribution is insight into this understudied topic, which will have a strong impact on social Europe in the short term.

Keywords: *Green transition, Just transition, Just transition mechanism, European Union*

1. INTRODUCTION

In 2019 the European Commission published a Communication on a new European Green Deal, outlining the most ambitious climate change goals so far in the world. There is no doubt that the transition to a low-carbon, climate neutral economy and society in the European Union will be a complex and costly process. According to the European Commission's (2020) estimates the reaching the 2030 climate target will require additional annual investments of €360 billion on average, which will increase the relevant investments from an average of €683 billion per year in the last decade to around €1,040 billion per year. Approximately one third of the additional investment is expected to be necessary in the field of transport. However, the overall green transition requires a total rethinking of the current policies for energy, economy, industry, production and consumption, large-scale infrastructure, transport, food and agriculture, construction, taxation and social benefits, and even going further addressing environmental challenges beyond climate (biodiversity, chemicals, pollution to air, water and soils). This is why, more professional expertise and academic research is concentrated on the issue connected with the cost of the green transition.

The aim of the research paper is to summarize and analyze main methodological approaches to green transition, and specifically to the justness of the green transition in the EU.

The main research question of this study is to explore whether there is an appropriate methodology in place on EU level to measure the justness of the European green transition.

The research tasks of the paper are: 1/ To contribute to the understanding of the Just green transition and its EU mechanism; 2/ To summarize main methodological approaches to green transition and specifically to the measurement of its justness.

The methodology of this study includes a desk research, systematization, analysis and synthesis, and systematic approach. Processing of statistical data by Eurostat is also applied by the author to illustrate some of her statements.

The key finding of the study is that despite the numerous policy papers, regulations and recommendations, there is no comprehensive methodology to measure the justness of the green transition in the EU. For its development, further research is needed and precision of the indicators that need to be developed and for which statistical data will have to be collected.

2. LITERATURE REVIEW

The following literature review refers to the studies that concern the main aspects of the Just transition in general and the Just Transition Mechanism of the European Union in particular – its establishment and structure, and critical views of its efficiency.

2.1. JUST TRANSITION

McCauley and Heffron (2018) refer to the origin of the term "just transition", which dates back as early as the 1980s and was invented by the global trade unions. They introduce a new term - "restorative justice" - and argue that the just transition is the right place for such an engagement.

There is no universally acknowledged definition of the just transition. But the concept of just transition has become so ambiguous that a consolidation of academic literature concerning it is necessary to clarify the different conceptions and their inter-relationships (Wang and Lo, 2021).

On one hand, just transition principles have been increasingly integrated into national and international policy reports and agreements, but on the other hand, the lack of universal definition of just transition creates new challenges. Henrya et al. (2020) explain them with the heterogeneous points of view of the different stakeholders in the green transition. It means different things and connotations for the trade unions and workers, for the environmental and climate justice organizations, and for the business. The problem with the green transition is also much different by countries, regions and energy approaches. This is why, it is critically important to document processes, policies, and outcomes within and across organizations, as well as to build coalitions, share information and compare results locally, nationally, and globally (Henrya et al, 2020).

The International Labour Organization (2015) has issued guidelines for a just transition. It has highlighted that the "greening of economies in the context of sustainable development and poverty eradication will require a country-specific mix of macroeconomic, industrial, sectoral and labour policies that create an enabling environment for sustainable enterprises to prosper and create decent work opportunities by mobilizing and directing public and private investment towards environmentally sustainable activities" (p. 6). The aim of the approach suggested is to stimulate the creation of new jobs that are in high value added sectors, which stimulate the upgrading of jobs and skills, as well as to improve productivity in more labor-intensive industries.

The focus of the guidelines is on the need for cooperation between all kind of institutions and businesses on all levels (national, regional, international, global) for the effective integration of the three dimensions of sustainable development.

McCauley and Pettigrew (2022) try to interrelate the performance of the EU Member States in terms of green transition with their performance in terms of social rights. They link the two and analyze the relationship between indicators extracted from the European Green Deal (EGD) and indicators extracted from the scoreboard of the European Pillar of Social Rights (EPSR). Their correlation

analysis shows a clear relationship and a directly proportional trend between performance in EGD indicators and EPSR indicators in most EU members states. As a result, they identify some weakness in the European Green Deal's design and suggest some amendments to better integrate the green with the social goals of the EU.

2.2.JUST TRANSITION MECHANISM

The Just Transition Mechanism of the EU has been considered as a part of a wider turn in EU policy-making towards strengthening of its social dimension (Vesan et al., 2021). Kyriazi and Miró (2023) argue that the final design of the JTF "emerged through the synergistic and antagonistic interplay" between some of the member states (the Eastern bloc) and the EU institutions (especially the European Commission).

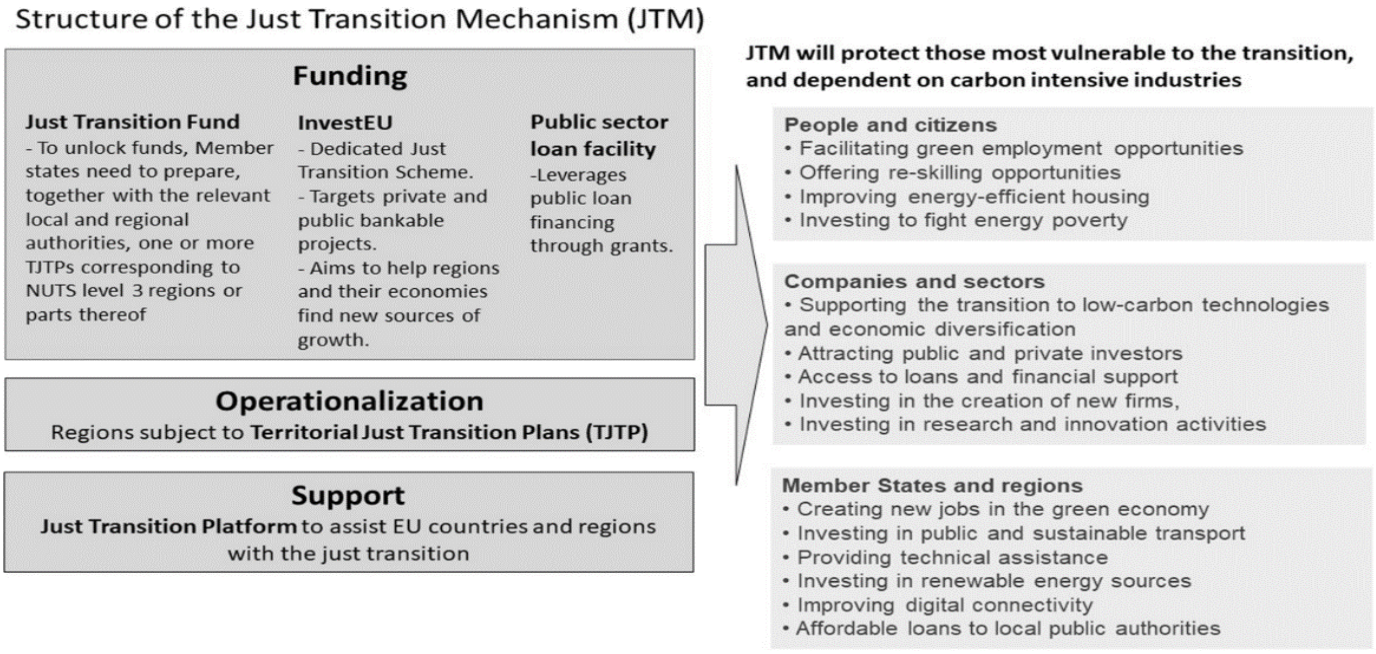
The plan of the European Commission is to have a Just Transition Mechanism, including a Just Transition Fund that "leaves no one behind" (European Commission, 2019). Its main goal will be to support the transition of regions and sectors dependent on fossil fuels or carbon-intensive processes, to provide access to re-skilling programs and new jobs to vulnerable workers, as well as to promote energy-efficient housing. In addition to that, it is said that the "need for a socially just transition must also be reflected in policies at EU and national level", through territorial plans. The JTM will be financed by the EU budget, the EIB group and other innovative financial sources.

The EU Just Transition Mechanism forecasts that some sectors will be declining while other will continue to exist but will have to transform. The first ones will be sectors with high greenhouse gas emission intensity levels or based on the production and use of fossil fuels (coal, lignite, peat and oil shale). The second type are sectors, for which there will be technological alternatives to carbon-intensive processes, so they will transform. The fund is expected to enhance the climate neutrality of the sectors and regions, and to avoid regional disparities growing (European Parliament, 2022).

To support a fair green transition, the Council of the EU adopted a devoted to the topic regulation that states that: "In order to be successful, the transition has to be fair and inclusive to be socially acceptable for all" (Council of the European Union, 2021). This Regulation establishes the Just Transition Fund to provide support to the people, economies, and environment of territories facing serious socio-economic challenges deriving from the transition process towards the Union's 2030 targets and a climate-neutral economy of the Union by 2050.

The Just Transition Mechanism has been graphically depicted in Figure 1.

Figure 1. Structure of the Just Transition Mechanism and its targets



Source: Sarkki, S., Ludvig, A., Nijnik, M. (2022)

The social aspects of the European green transition were also in the core of the high-level discussion during the event devoted to the fifth anniversary of the European Pillar of Social Rights, where the participants emphasized that the need for commitments to social rights should be an integral part of the green transition. These social aspects should be more deeply integrated in the environmental, fiscal and economic policies of the EU (European Commission, 2022).

The efficiency and expected outcomes of the functioning of the Just Transition Fund in the scientific literature has come to be controversial. The lack or insufficient inclusion of social justice considerations have led to academic research that present very critical views of the European Green Deal. Concerns are related not only to the limited financial allocations of the instruments, but also to governance issues.

The European Parliament presented a comprehensive study that focus on the drawbacks of the European Commission's proposal on the Just Transition Fund, and as a consequence it has given numerous suggestions. Among the recommendations it made were the following: engaging with local stakeholders before and all throughout the transition, using NUTS3-level data instead of NUTS2-level data regarding the fossil-fuel regions in the EU, including targeted labour and welfare policies, ensuring that regions put in place both social support policies and economic policies, requiring the member states to give clear and long-term fossil fuel phase-out goals, and others (European Parliament, 2020).

Sarkki et al. (2022) identify and discuss four paradoxes arising from the EU's Just Transition Fund and the aim "to leave no one behind". They are related to governance scales, offsetting exclusion, equity illusion, and eligibility criteria. Their general advice to policy makers is to incorporate the objective to reach the furthest behind first explicitly into the agendas and practices for advancing fair green transitions, because "otherwise the attempts to leave no one behind will marginalize the weak even further" (Sarkki et al, 2022, p. 777).

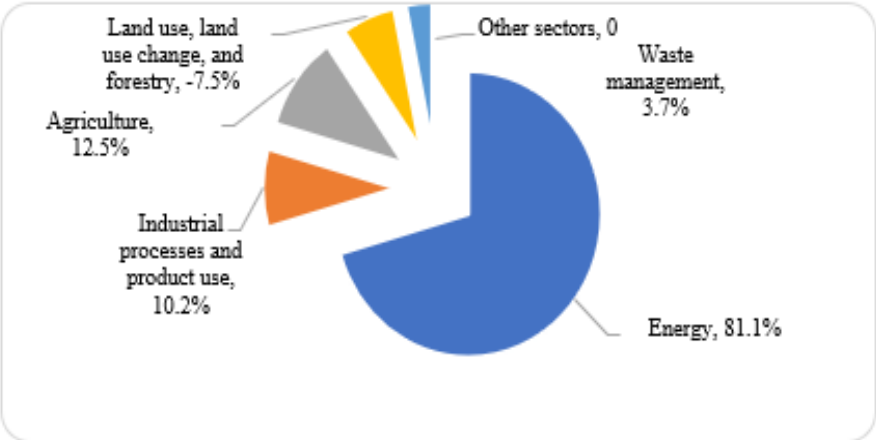
3.METHODOLOGY

The methodology of this study includes a desk research, systematization, analysis and synthesis, and systematic approach. This paper represents a review scientific paper that systematizes some approaches to green transition assessment, looking particularly in the approaches to assessment of the justness of the green transition in the EU, which seem to be insufficient and inefficient. In the first part of the paper some statistical data are presented, which has been processed by the author through statistical data by Eurostat.

4.ASSESSING THE IMPACT OF GREEN TRANSITION

The Eurostat data shows that in 2020 the main source of greenhouse gases (GHG) in the EU was the energy sector – over 81 %. The second biggest share was due to the agricultural sector (12,5 %) and the third was the industry – 10,2 % (Figure 2).

Figure 2. Distribution of Greenhouse gases in the EU in 2020 by sectors

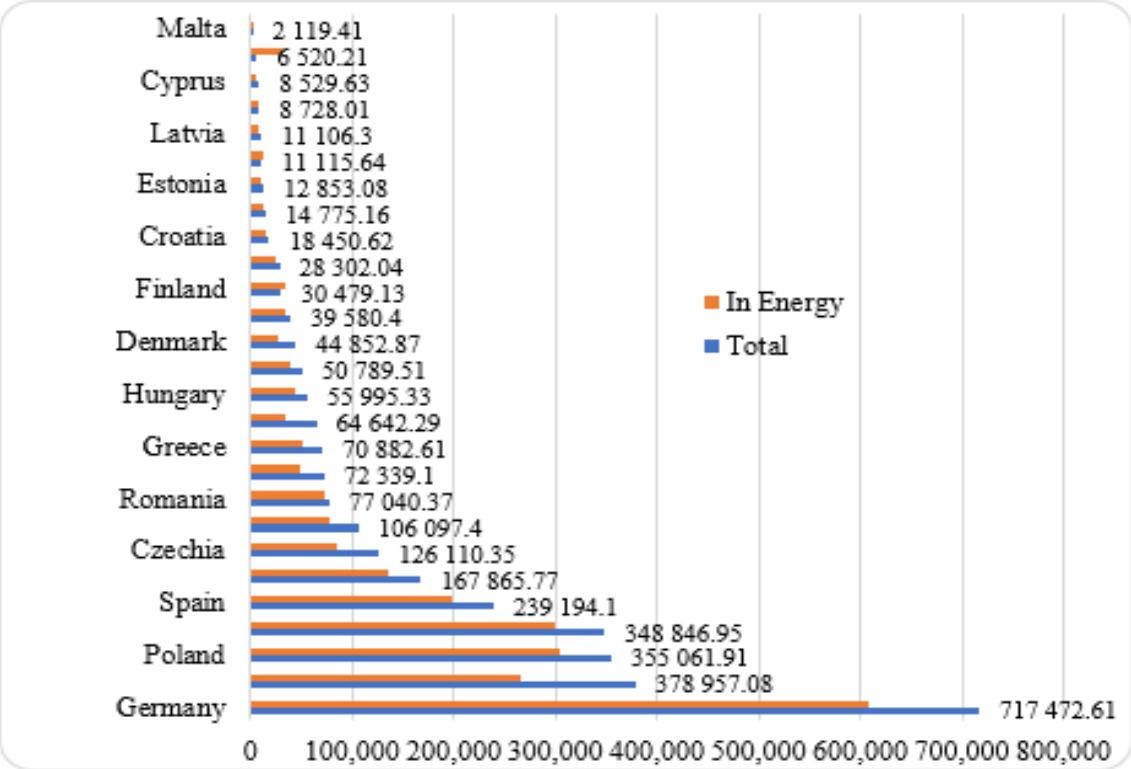


Source: The author based on Eurostat data (Eurostat, 2023a)

Thus, 4/5 of the greenhouse emissions in the European Union in 2020 came from the energy sector. The use of land and forestry sector accounts for 7,5% of the GHS. A big drop in the greenhouse emissions in this sector is evident in the last decade in almost all EU member states except for the Netherlands, Ireland and Czechia (Eurostat, 2023).

As it concerns greenhouse gas emissions by country, in 2020 Germany had the biggest share, followed by France and Poland. The lowest share of GHG had Malta (Fig. 3).

Figure 3. Greenhouse gas emissions, by EU country, in 2020, Total and in Energy, thousand tonnes



Source: The author based on Eurostat data (Eurostat, 2023a)

One comparatively common approach to measure the social cost of the GHG is the concept of so called “Social cost of Carbon”.

The social cost of carbon is the cost of the damages created by one extra ton of carbon dioxide emissions. It is usually calculated through integrated assessment models, which capture the pathway through which an extra ton of emissions leads to a change in atmospheric concentrations, which in turn leads to changes in average global surface temperature and precipitation. This then leads to biophysical impacts on agriculture and sea level, ultimately leading to damages to the economy and human welfare.

With models, researchers first simulate what the path of climate change would be in the absence of a policy change. Then, they augment the model to record how much damage and climate change increases as a result of an extra ton of emissions. The difference in damage is the social cost of carbon (Stanford, 2023).

The social cost of carbon dioxide (SC-CO2) measures the monetized value of the damages to society caused by an incremental metric tonne of CO2 emissions and is a key metric informing climate policy. Used by governments and other decision-makers in benefit-cost analysis for over a decade, SC-CO2 estimates draw on climate science, economics, demography and other disciplines (Rennert et al, 2022).

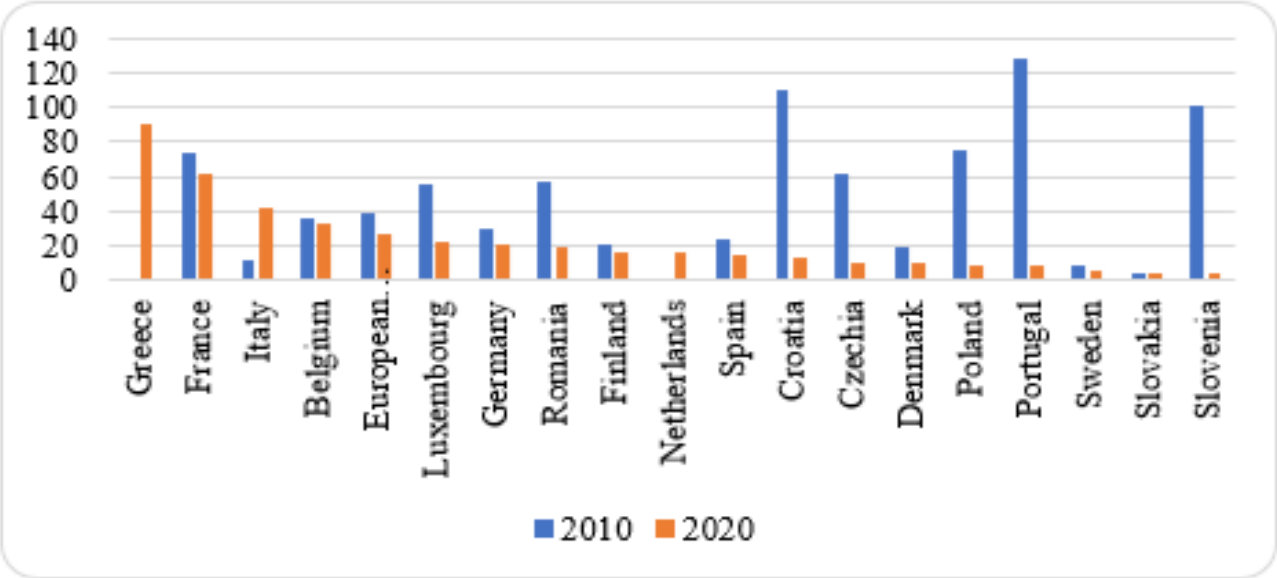
The concept of SCC is applied in decision making in the spheres of project appraisal (project cost-benefit analysis), regulatory impact assessment (policy cost-benefit analysis), setting of economic instrument (input to the setting of taxes, charges, or subsidies) and inn long-term (sustainability) objectives or targets, particularly climate policy (Watkiss, 2020). It is also a very important indicator

in countries like the US and Canada, in which it underpins climate regulations (in the EU the Carbon emissions pricing and a carbon tax are applied).

Kornek et al. (2021) state that the social cost of carbon is a central metric for optimal carbon prices and develop an optimal taxation model of the social cost of carbon that accounts for inequality between and within countries. They prove that climate and distributional policy cannot be separated, because if only one country does not compensate low-income households for disproportionate damages, the social cost of carbon tends to increase globally.

In the case of the European Union, in addition to measuring the volume of greenhouse gas emissions, Eurostat is processing information used to calculate an overall indicator that measures the economic costs incurred by the EU member states as a consequence of climate events (Fig. 4).

Figure 4. Climate related economic losses in the EU and certain member states*, 2010 and 2020, Euro per inhabitant, Annual value



*Only EU member states for which data is available for both years

Source: The author based on Eurostat data (Eurostat, 2023b)

Eurostat definition: The indicator measures the economic losses from weather and climate-related events, including meteorological events (storms), hydrological events (floods, mass movements) and climatological events (heatwaves, cold waves, droughts, forest fires).

The data are based on annual data and a smoothed time-series based on 30-year averages. The indicator is based on data from CATDAT of RiskLayer (Eurostat, 2023c).

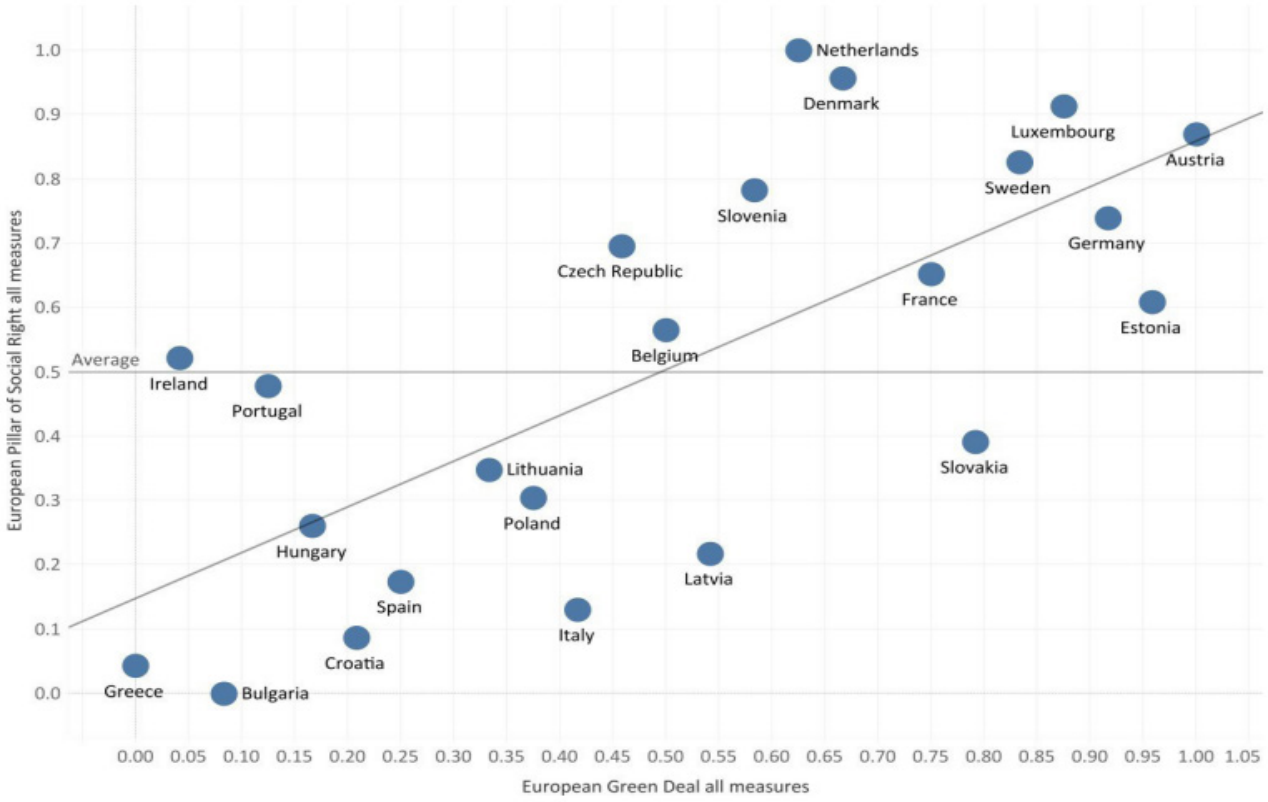
It can be seen that some member states have recorded a record-high drop in their climate related economic losses in the last decade – Portugal, Croatia, Slovenia, Poland and Czechia. This is the opposite for France, Belgium and Finland, and in 2020 Italy there is even an increase in climate related economic losses.

A lot of scientific studies explore the issue with income inequality in the EU, for example on the basis of the Gini coefficient (Kolluru, M., Semenenko, T., 2021) and even suggest some measures for managing it, for example through increased access to educational and training opportunities for disadvantaged groups, and through bigger investment in infrastructure and public services in disadvantaged areas (Dluhopolskyi, O. Zhukovska, A., 2023). However, referring social to environmental indicators is not so easy.

Applying the model of McCauley and Pettigrew (2022) mentioned above, the results they reached in their empirical study are worth mentioning. By linking indicators, which they extract from the European Green Deal and the European Pillar of Social Rights scoreboard, they prove a clear relationship

and a similar directly proportional trend between performance in EGD indicators and EPSR indicators in most EU member states (Fig. 5).

Figure 5. Rank percentile scores of EU member states for the three European Pillar of Social Rights themes vs Eight European Green Deal Action Areas



Source: "Can Europe lead a Just Transition?" by McCauley, D., Pettigrew, K. (2022)

High scores indicate high performance and vice versa. The top performers are Austria, Germany, Sweden and Luxembourg, while the consistently underperforming nations are Greece, Bulgaria, Croatia, Spain and Hungary. Ireland and Portugal are performing better in terms of social rights than in the area of the Green Deal. Slovakia and Estonia have higher achievements in the area of the Green Deal than in terms of social rights.

As it concerns employment, the European Commission has made some calculations regarding the possible loss of jobs due to the green transition. It is diving the jobs into 3 groups: 'green', 'white' and 'brown'. The Green jobs (including tasks aiming at reducing the impact of economic activity on the environment) will increase ad will require more skills, the brown jobs (in sectors like mining, manufacturing and agriculture) will decrease, disappear, or transfer into green ones, and white jobs (at present neutral in their environmental impact) will face only moderate changes related to the overall greening. As a whole, only slight effects are expected on the EU employment because most jobs in the EU are from the white type. The electricity production, transport, manufacturing, agriculture and mining sectors together account for around 90% of all CO2 emissions in the EU, but for less than 25% of the employment. On the opposite side, construction, wholesale, retail and other services together employ more than 75% of the workforce, while generating less than 12% of CO2 emissions. Thus, the total employment effects are expected to be small, but the impact of the green transition could be more significant depending on the sector, job and task levels (Vandeplas et al., 2022).

5. MEASURING THE JUSTNESS OF THE GREEN TRANSITION

Measuring the justness of the green transition seem to be a very difficult and still unclear task.

The most comprehensive framework concerning the green transition on EU level so far is that of the European Commission called Transitions Performance Index (TPI). It is a scoreboard that monitors and ranks countries based on 4 dimensions:

- economic (education, wealth, labour productivity and research and development intensity, industrial base)
- social (health life, work and inclusion, free or non-remunerated time, equality)
- environmental (greenhouse gas emissions reduction, biodiversity, material use, energy productivity)
- governance (fundamental rights, security, transparency, sound public finances).

This model resembles the different kinds of PEST analysis – PEST (economic, technical, political and social factors), STEEP - including environmental factors or STEER, which considers sociocultural, technological, economic, ecological, and regulatory factors, but does not include political factors. However, here the question is how to monitor performance concerning the green transition and get clear indicators that can be measured and compared.

A big advantage of the proposed database is that includes data for third countries as well, which allows international comparisons. The scoreboard shows that in 2011 the EU had a progress rate in the green transition of 4.9%, which was above the world average (4.3%). Since 2011 all EU member states have improved their indicators, except for Hungary. However, even among the top performers, there remains a place for improvement, as no member states is a leader in all four dimensions. The index also concludes that the environmental transition is much different than other transitions and that most countries have not yet set it as a priority (European Commission, 2023).

However, the Transitions Performance Index cannot measure neither the social cost of the green transition, nor whether it is just enough. This is why, a special field of research is needed as to analyze and develop comprehensive approach to just transition.

Heyen et al. (2021) assess the existing European-level indicators in the socio-environmental sphere on their suitability to serve as Just Transition indicators. They conclude that effective and socially acceptable transformation governance should strengthen synergies between environmental and social justice objectives, and avoid conflicts, i.e., short-term economic hardships and social inequalities caused by transformations. They take into consideration three broad socio-environmental issues - Environmental benefits, pollution & risks, Consumption- and social-participation opportunities for vulnerable groups, and Employment & regional cohesion (as affected by environmental policies and green transition).

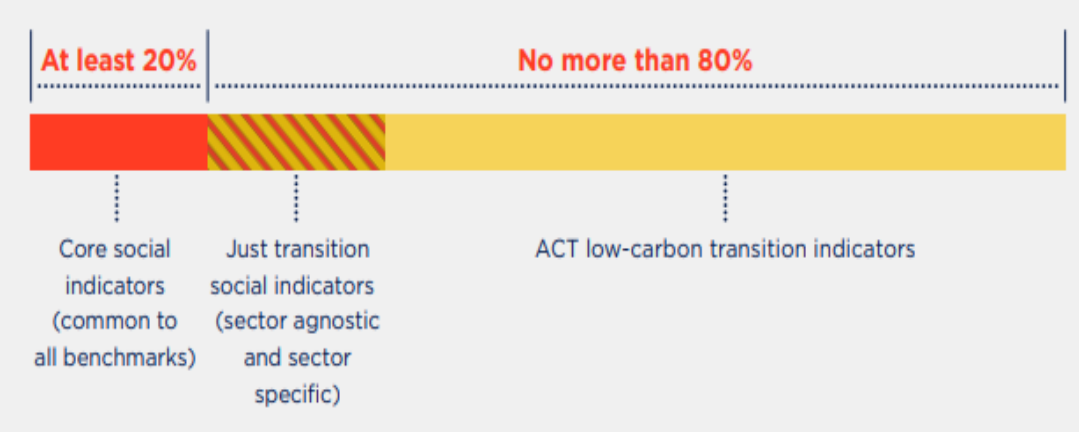
Their paper presents a range of existing European indicators and concludes that the monitoring of the just transition requires a combination of indicators from different areas, some of which could be further adapted to the green transition. For example, the authors make valuable recommendations for improvement of the methodology, as the inclusion of an indicator for public expenditure on (EU) money spent in support of consumers, workers and regions affected by the green transition (which may also include spending on research and innovation, skill developments and infrastructure for the green transition). Another suggestion is the grouping of “carbon-intensive regions” (based on the Just Transition Fund criteria) and measuring the development over time of one or several of the established regional wealth / cohesion indicators for this group of regions. A third suggestion is the introduction of new questions in the EU SILC survey that will allow the disaggregation by different criteria, for example by access to green space, proximity to waste facilities and hazardous sites, personal effects related to extreme weather events, ability to keep home adequately cool in summer, and others (Heyen et al., 2021).

As it concerns the social cost of the green transition, which will be borne by the business, some organizations and researchers have been trying to measure it.

The World Benchmarking Alliance (WBA) intends to assess 450 companies by 2023 on their contribution to a just transition by assessing their alignment with the goals of the Paris Agreement alongside their approach to addressing the social challenges of a low-carbon transition. These companies are in the automotive manufacturing, electric utilities, oil and gas, transport, real estate, cement, metals and mining, and heavy machinery sectors The WBA just transition assessments will evaluate the contributions of globally influential companies in high-emitting sectors to a just transition. These assessments can become a unique and critical accountability mechanism of a decarbonisation and energy transformation that leaves no one behind (The World Benchmarking Alliance, 2021).

WBA plans to develop a set of sector-agnostic just transition indicators along with sector-specific indicators, as required for each industry benchmarked (see Figure 5). WBA's just transition assessments will combine the low-carbon transition assessment and the social assessments:

Figure 6. Just transition assessment approach of the World Benchmarking Alliance



Source: World Benchmarking Alliance, 2021

The "Leave-No-One-Behind (LNOB) Index" by the Sustainable Development Solutions Network (SDSN) is another attempt to measure the justness of the green transition. It is composed of indicators in four dimensions: extreme poverty and material deprivation; income inequality; access to and quality of services and gender inequality. However, similarly to the TPI, the LNOB index measures the social and environmental issues separately from each other. It is considered that since the environmental policy is not an important factor in these indicators, they are not sufficient to monitor environmental policy or transition effects (Heyen et al., 2021).

In general, the Sustainable Development Solutions Network is rather critical of the EU's policy for green transition in its 2021 Sustainable Development Report, stating that despite the European Commission's leadership on the SDGs before and after their adoption, the European Green Deal contributes directly to only 12 out of 17 SDGs and many social dimensions of the SDGs are not fully reflected in the Green Deal, and that Eurostat in its annual SDG report tracks progress towards quantified targets for only 15 of the 102 indicators, which cover mainly climate change, energy consumption and education. The SDSN recommends to the EU an integrated approach to the SDGs that encompasses three broad areas: internal priorities; diplomacy and development cooperation; and negative international spillovers. (SDSN, 2021).

6.CONCLUSION

As a result of the analysis, it became evident that despite the numerous policy papers, regulations and recommendations, there is not a comprehensive methodology to measure the justness of the green transition in the EU. For its development, further research is needed and precision of the indicators that need to be developed and for which data will have to be collected. Research has a crucial role to support the path towards a just green transition, which protects communities, territories and specific social groups. Moreover, the transition needs to be just so that it can contribute to achieving to the sustainable development goals. The aim of just green transition needs to be embraced by all stakeholders (states, business, workers, communities) on all levels (international, national and

regional) in order good results to be achieved. Thus, further comprehensive study on the justness of the green transition in the EU needs to be elaborated and represents a significant niche of scientific research.

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