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Green Jobs and Environmental Transition

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Abstract

The concepts of the green labour market and green jobs can pertain to employment within a limited range of industries that offer environmental services. Nonetheless, it is more beneficial for policymakers to address the wider issue of how policies aimed at mitigating environmental externalities impact employment. Much of the literature focuses on direct job creation and only superficially addresses indirect job creation. The potential negative effects of green growth policies on labour productivity and employment costs are generally ignored. The methodology of the paper was a PRISMA systematic literature review (Preferred Reporting Items for Systematic reviews and Meta Analyses). In the future, more attention should also be paid to how labour markets function in different types of economies, especially in disadvantaged peripheral areas. Employment policy in Hungary is based on the jobs paradigm, i.e. the focus is on classical wage labour and job creation. Global trends suggest that there is likely to be a permanent imbalance between the number of wage jobs and the working-age population soon. For this reason, a sustainable and green labour market will become increasingly important in the future.

Keywords: sustainable labour market; green jobs

1. Introduction

In 1980, a significant technological revolution took place worldwide, with the spread of ICT tools significantly transforming the external environment of businesses. The new tools and machines provided much more flexibility for economic organizations, greatly easing work processes. Technological advancement is crucial but not always sufficient for enhancing the performance capabilities of economic organizations and companies. In developing countries, where fewer businesses operate and technological advancement has not yielded remarkable results, poverty remains prevalent. Technological progress is a measure of a country's economic development. Nowadays, the question arises of how much mechanization affects the demand for human labour in the job market. (Lipták – Musinszki, 2021)

Over the past three decades, structural transformation has been observed: manufacturing production and employment have decreased, while services, financial activities, construction production, and employment have increased. This period can be characterized as a time of rapid economic growth and job creation. However, this boom has favoured high-income groups more than middle and low-income groups. The impact of globalization can also be seen in the redistribution of employment towards the service (tertiary) and ITC (quaternary) sectors. As a result of sectoral rearrangements, it was expected that the service sector would be able to solve the issue of unemployment and provide job opportunities, but this has not been fully realized. The sectoral changes have also altered the demand for both the quantity and quality of the workforce.

The research questions of this study are: How does the technological transition affect sustainable labour markets? What is the role of green jobs in labour markets?

2. Literature Review

The impact of globalization is also evident in the relocation of production. Nowadays, we increasingly need to talk about activity relocation or outsourcing (outsourcing or offshore outsourcing). The reasons for relocation include reducing transaction costs, wage differences, cheap labour, and, in some cases, a shortage of specialists. As a result, jobs in the outsourcing country disappear, leading to a territorial redistribution of employment. Regarding the future effects of outsourcing, Sennett argues that we may witness the disintegration of the traditional economic institutional system. He envisions a new economy characterized by high technology, global finance, and a new type of service sector. According to Sennett, future workplaces will resemble railway stations rather than livable villages, where people stay for a short time before moving on. Comparing the population and employment sizes in countries worldwide illustrates that employment cannot keep up with population growth (the population is growing 1.7 times faster than the employed workforce) (Sennett, 2000).

The European Commission outlined the key pillars of a knowledge-based economy and environmental protection in the European Green Deal (EGD) program. The transition to a green economy is a long process, with its steps becoming increasingly noticeable now (Stanef-Puică et al. 2022). Numerous public investments have begun, and renewable resources are becoming more prevalent in everyday life. The future goal is to create a fair society where sustainability, environmental protection, and conscious resource management are natural (Mélypataki et al, 2024). The most important element of the green economy's competitiveness is reducing emissions and thus creating a more livable environment. The funding for the EGD has been increased in response to the Covid-19 crisis, addressing both the climate and pandemic challenges. (Helm, 2020)

The European Commission monitors the progress made under the EGD framework and the impact on jobs. These effects partly depend on the specific tasks performed by individuals working in green jobs. A process of labour market restructuring has already begun, driven by technological advancements, which is redirecting the workforce towards greener tasks (e.g., recycling, upgrading buildings). Increasing investments in the green economy and the growth in employment within this sector, as well as the creation of new jobs to replace those lost in polluting industries, are also key objectives of the program (Vona, 2021).

Defining green jobs is a complex task, as there is no consensus in the literature yet. According to the working definition of green jobs adopted by the International Labour Organization (ILO) in its "Resource Guide on Green Jobs," a job is considered green if it helps reduce negative environmental impacts, contributing to environmentally, economically, and socially

sustainable businesses and economies. More specifically, green jobs are those that reduce energy and resource consumption, limit greenhouse gas emissions, minimise waste and pollution, and help protect and restore ecosystems (ILO, 2021). Green jobs significantly reduce greenhouse gas emissions, thereby protecting the environment and aiding the transition to a green economy (Olekanma et al., 2024).

Green jobs are those that help reduce the environmental impact of businesses and economic sectors to levels that are sustainable. This definition encompasses work across agriculture, industry, services, and administration that contributes to preserving or restoring environmental quality while also meeting decent work standards, such as fair wages, safe working conditions, workers' rights, social dialogue, and social protection. Due to its broad and inclusive nature, this means that any job has the potential to become greener. As the transition to a green economy continues, what is considered a green job today may change in the future. The interpretation of green jobs also differs by country (Chen et al., 2020).

Green jobs refer to roles within businesses that involve producing goods or offering services that help protect the environment or conserve natural resources. They also include positions where employees are responsible for making production processes more eco-friendly or using fewer natural resources. The concept of green jobs has only become a focus of economic research in the past fifteen years, with significant reports emerging in academic journals since around 2004 (Novello & Carlock, 2019).

In the spatial structure of Hungary, out of 3,155 settlements, 1,100 are small villages, meaning their population is below 500 people. In these settlements, job opportunities are limited, and the residents, often with relatively low educational attainment or no qualifications, try to find work. The number of available jobs in these settlements is finite, with the local government often being the only employer. The issue of a dwindling and aging population could be partially addressed by the green labour market, as the proximity to nature in these small villages, along with the protection of existing resources and the use of sustainable environmental resources, would greatly aid in the creation of green jobs.

The proportion of green jobs in Hungary has shown significant growth in recent years. According to OECD data, over the past 10 years, 23% of workers have been employed in occupations related to the green transition in some way. Green jobs include those that do not directly reduce emissions but provide essential services for green technologies. Enhancing energy efficiency and installing renewable energy sources, such as solar panels and heat pumps, play a significant role in employment. The demand for such specialists is increasing, especially in the field of energy-efficient buildings and smart systems in Hungary. For a just transition, retraining and adult education are also important. The EU aims to retrain and further train 120 million adults annually and increase the learning participation rate of low-skilled adults. The growth of green jobs in Hungary is a positive trend but retraining programs and ensuring a well-trained workforce remain crucial for the success of the transition.

3. Methodology

The methodology of the study was a PRISMA systematic literature review (Preferred Reporting Items for Systematic reviews and Meta Analyses) in addition to the classic literature review. The systematic literature review is a popular methodology for gaining a deeper understanding of the topic of green jobs. Many researchers have used this method in recent years (Karakul, 2016; Riswano & Widiaty, 2023; Sihombing & Suastini, 2023; Mathieu, 2024). The author collected papers from Google Scholar database since 2014. The search criteria were as follows: the title of the studies must contain the term: green jobs, and the publication date

must be no older than 2014. Google Scholar founded 22 studies that matched the search criteria. Subsequently, the author removed the duplicates from the articles, then discarded the non-English and non-downloadable studies. In addition to the studies considered important by the author, and the 15 remaining studies resulting from the systematic literature review were processed together in this article. Figure 1 shows the steps of the systematic literature review.

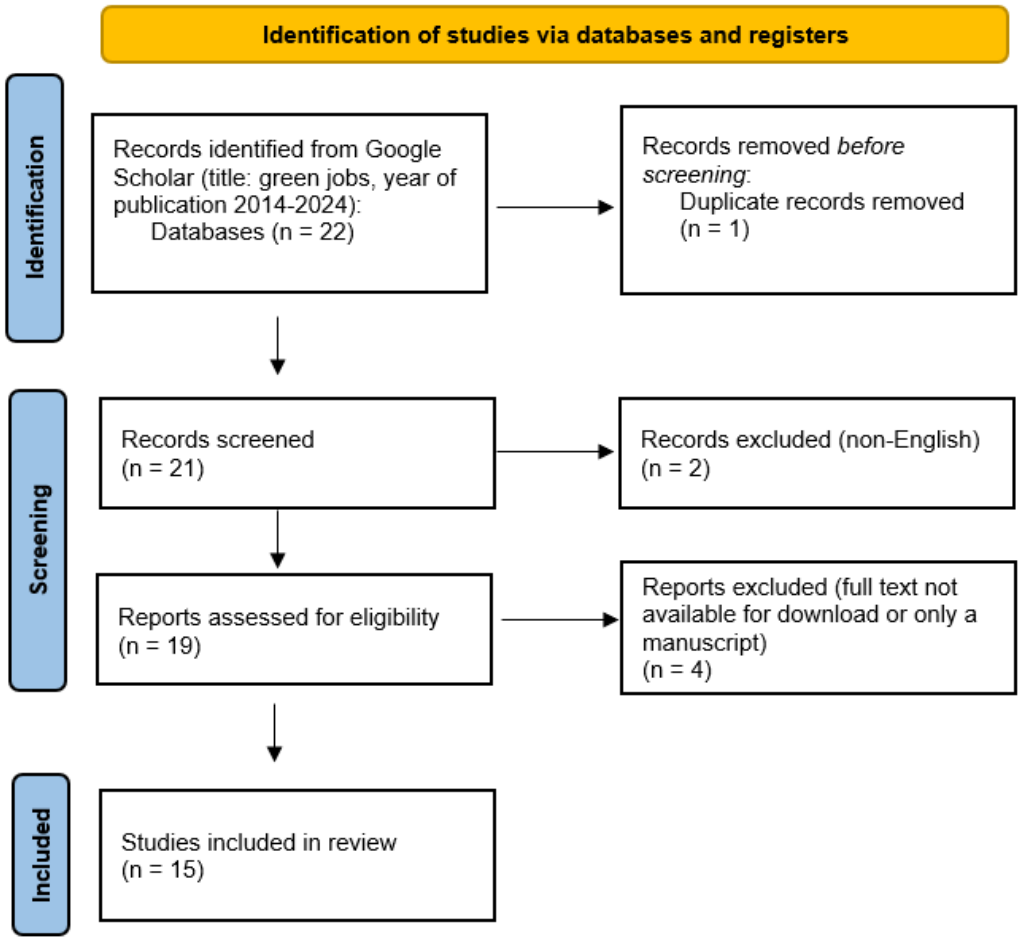

Figure 1. PRISMA flow diagram for new systematic reviews which included searches of databases and registers only
Source: Own compilation based on Page et al. 2021

4. Discussion and Results

Many researchers are interested in the question of what makes the economy green (Allan et al., 2014; Pollitt et al., 2014; Froy et al., 2022; Scholz & Fink, 2022). Defining green jobs is challenging, as a concrete definition is still lacking, but various approaches can be found in the literature (Fernández-Macías & Bisello, 2021; Stanef-Puică et al., 2022). One perspective is that green jobs are created through the labour market effects of environmental policies. Another approach suggests that the level of pollution generated during production indicates which jobs are considered green and which are not (Burger et al., 2019). Some researchers believe that green jobs are those that contribute to the preservation and restoration of the environment, even in traditional sectors such as agriculture or construction (Araújo et al., 2018). According to Kozar and Sulich (2023) the transition to a green economy is a worldwide process, whose impact is felt by most countries.

The output definition is based on the harmful environmental impacts that a product or service may have. This is the preferred approach in most lists of green products or activities. The process-based approach highlights the job-destructive impact of environmental policies (i.e., the impact on polluting sectors and companies) rather than the job-creating impact, which refers to the impact on sectors developing environmentally friendly technologies and products (Chen et al., 2020).

The number of green jobs is also influenced by the competencies of the workers. Employees who possess skills and knowledge useful for the green economy will be more productive in green jobs compared to colleagues without such competencies. This higher productivity is reflected in wages as well. The literature currently does not provide a clear definition of green competencies, and various approaches can be found. The question arises as to how green skills can be precisely defined. According to the very general methodology introduced by Vona (2021), the idea is to explore comparative advantages through a task-based approach, identifying the skills or production factors that are better suited for specific tasks, and creating production functions based on this.

Green jobs contribute to environmental protection and sustainable development. These jobs can be found across various industries, including energy, agriculture, and construction. Green jobs place a strong emphasis on environmental protection and reducing environmental impact (Oral et al., 2012). Furthermore, many green jobs are related to renewable energy sources and improving energy efficiency. In recent years, attention has increasingly turned towards the energy sector regarding green jobs, as the renewable energy sector creates more jobs than the fossil fuel-based sector (Kozar & Sulich, 2023).

Olekanma and his co-authors (2024) analysed the literature related to carbon footprint reduction initiatives and green jobs in small and medium-sized enterprises using the PRISMA model and concluded that there are significant gaps in scholarly articles on this topic. They analysed total 70 papers and created three clusters according to the keywords. A further research question was formulated as to how green workplaces cultivate green innovation and strategies in the SME literature (Olekanma et al., 2024).

The development and application of green technologies, such as electric vehicles, recycling techniques, and sustainable agricultural practices, are also important aspects of green jobs. Green jobs can help stimulate economic growth by creating new industries and business opportunities. The creation of new jobs also improves a country's labour market. The most crucial areas for development are the training and retraining of workers to ensure they are suitable for green labour market tasks. The proliferation of green jobs requires a supportive regulatory environment and political backing. (Jakob et al., 2015)

In the short term, the green shift leads to job losses in sectors directly affected, while new jobs are created in substitute industries. During this period, structural unemployment may arise in countries, which is usually short-term and disappears after the economic structure undergoes transformation. The transition to a green economy is still ongoing and is at different stages of development in various countries. The number of green jobs is also influenced by changes in the environment and climate. In the long term, innovation and the application of new technologies will create further growth opportunities. (Babiker & Eckaus, 2006).

To promote the transition to a green economy, experts have developed a variety of policy tools. The green economy must be established in parallel with markets, including the supply, demand, and the necessary infrastructure for environmentally friendly products. For this purpose, various market-based instruments are recommended. The goal of these market-based tools is to price emissions and the use of natural resources, as well as to increase these prices, thus

incentivizing environmental protection. It is also essential to develop regulations and incentive measures that generate demand for eco-friendly products and services. These are typically complemented by supply-side tools, such as measures supporting technology and investments, which are part of a comprehensive industrial and innovation policy. Another important aspect of promoting the green economy is sustainable infrastructure policy. Public infrastructure development leads to long-term decisions that significantly impact the development of economic structures, and the technologies associated with them. Effective green economy policy requires an evolving set of tools to adapt to changing market and technological developments (Vitale et al., 2024). The active mobility policy is important by green jobs. Active mobility reduces greenhouse gas emissions as citizens prefer to walk or cycle to work rather than using cars or buses (Scotini et al., 2017).

Apostel and Barslund (2024) presented the possibilities of measuring green employment in their study. They pointed out that discrepancies in estimates can be attributed to conceptual shortcomings and suggested that two main directions are conceivable. According to their conclusion, green jobs require technical skills and higher qualifications, are predominantly occupied by men, and have a stable position in the labor market.

The labour market does not exist in isolation but within a complex system. László and Sipos (2022) outline the dimensions of a sustainable labour market. In addition to the external environmental conditions (such as the economy, society, and education), the internal conditions (such as the actors, market relationships, legal requirements for operations, and the number and quality of jobs) also jointly affect both the current and future labour markets. From the perspective of a sustainable labour market, it is not only important to analyse the current labour market situation but also to formulate a strategy looking toward the future. As a result of globalization, the demand for secure forms of employment has increased in contrast to uncertainty, and we could even say that typical employment is being replaced by atypical employment. In some countries, atypical employment has already become the norm. The number of years spent working by employees in employment is increasing, and the retirement age is continuously being extended. The "tax" on employment (wage burdens, withdrawal of social benefits, etc.) is generally quite high, which questions the reasonableness of employment. This all means that both those employed at the minimum wage and the unemployed living on various benefits have incomes that fall below the minimum level required for the reproduction of the workforce (Peters, 2014).

5. Conclusion

Due to the international debate surrounding the green economy and green growth, various ideas exist on how to measure the employment impacts of the green economy or the number of green jobs. The term "green jobs" refers to those positions that are created in connection with the expansion of the green economy within definable environmental sectors, aimed at improving environmental impacts or ensuring compliance with environmental regulations in traditional sectors (e.g., environmental management). Accordingly, green jobs refer to the sectoral interpretation of the green economy and the jobs within it. Beyond the delineation and identification of employment in environmental technologies and services, one can also consider the macroeconomic employment effects triggered by environmental policy in promoting the green economy and related structural changes. In the international debate, these employment effects are sometimes referred to as green jobs.

The transition to a green economy is accompanied by an economic structural shift, which also affects labour markets. Labour markets must be designed to be dynamic and efficient in order to enable the realization of this structural change. In addition, a number of specific challenges

for employment policy related to the transition to a green economy have been identified. One important challenge is the development and adjustment of education and training programs to meet the skill requirements of green sectors. Another challenge in implementing green economy strategies is how to manage shrinking sectors and the resulting job losses. This includes, for example, mediation and retraining offers for affected workers, as well as the establishment of public employment services.

European employment policy is based on the paradigm of jobs, with a focus on classic wage labour and the expansion of the number of jobs. Based on global trends, a lasting imbalance between wage labour-type jobs and the working-age population is expected in the near future. For this reason, a sustainable and green labour market will become increasingly important. As the concept of sustainable development suggests, environmental resources should be used in the present so that they are also accessible to future generations. I believe this concept can be extended to the labour market as well, as jobs must be created and employment goals set in the present to ensure that a sufficient quantity and quality of jobs will be available for future generations. For green jobs, it is important to focus on the competency development of future workers, which is why strong competency-based education in the present is of particular significance.

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