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Socio-Economic Transformation Through Green Job Development: Strengthening Sustainable Livelihoods in Regions

Wan Mariatul Kifti^{*1}

¹Management Doctoral Study Program, Universitas Muhammadiyah Sumatera Utara, Medan 20226, Indonesia

*Corresponding Author: 2530030007@umsu.ac.id

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ABSTRACT

Resource-dependent regions face interconnected challenges related to economic vulnerability, environmental degradation, climate change, and unequal access to livelihood resources. In this context, green job development offers a potential pathway for achieving socio-economic transformation while supporting environmental sustainability. This study examines how green jobs contribute to socio-economic transformation and resilient livelihoods in resource-dependent regions. A Systematic Literature Review (SLR) guided by the PRISMA framework was conducted using literature retrieved from Scopus, Web of Science, and Google Scholar. The review covered peer-reviewed journal articles and selected institutional reports published between 2012 and 2025. From 138 initially identified records, 20 studies met the inclusion and quality assessment criteria and were included in the final synthesis. The findings indicate that green jobs contribute to socio-economic transformation through human capital development, livelihood diversification, social inclusion, and expanded green economic opportunities. They also generate measurable environmental benefits through emission reduction, improved resource efficiency, sustainable production practices, and ecosystem restoration. However, these outcomes depend heavily on institutional capacity, access to green financing, green skills development, and coherent, inclusive policy frameworks. The study highlights that green jobs should be positioned not merely as employment opportunities but as an integrated instrument to strengthen livelihood resilience and advance environmental sustainability. The findings provide policy implications for governments and development institutions to align green skills development, financing mechanisms, labor policies, and environmental governance in resource-dependent regions.

Keywords: Green Jobs, Green Skills, Resource-Dependent Regions, Sustainable Livelihoods & Socio-Economic Transformation

1. Introduction

In many developing countries, including Indonesia, poverty remains one of the biggest development challenges. Although many efforts have accelerated economic growth in recent decades, the fair distribution of development outcomes has not yet been fully achieved. According to Statistics Indonesia (BPS), 8.57 percent of the population, or more than 24.06 million people, lived in poverty as of September 2024 (Badan Pusat Statistik, 2025). This number is lower than the 25.22 million people living in poverty in March 2024, which was 9.03 percent (BPS) (Badan Pusat Statistik, 2024).

Indonesia's economy is growing quickly, but regional disparities remain, and the country has not ensured that everyone gets a fair share of welfare (World Bank, 2023). Many poor people live in rural and remote areas, showing that economic growth has not been inclusive and has not done enough to spread the benefits of development. For example, Indonesia still faces an ongoing conflict between rapid economic growth and environmental protection. This is because Southeast Asian countries still face structural problems that make it hard to integrate environmental sustainability into their development plans. When countries use green-economy ideas in development, the results are likely to be better. This approach can speed up progress while reducing environmental damage (Callaghan et al., 2021).

Communities that depend on natural resources face growing challenges from climate change, rising prices, and environmental degradation, all of which undermine their ability to make a living. These conditions make people more socially and economically vulnerable. To fix this, the economy needs to diversify, and the quality of jobs available to local people needs to improve. When ecological pressures or market instability happen, people who depend on extractive industries like forestry and traditional farming are more likely to see their welfare decline.

In this context, green jobs are a strategic tool for lasting social and economic change. Green jobs offer well-paying work that helps protect and restore the environment. This method fits with the sustainable livelihoods framework, which stresses the need to improve household adaptive capacity in the face of different shocks (Natarajan et al., 2022). The International Labor Organization has said that green jobs are an important way to promote development that considers social, economic, and environmental factors. This is because they create good jobs, support efforts to reduce carbon emissions, improve energy efficiency, and encourage sustainable production, which can improve community welfare over the long term (International Labor Organization (ILO), 2021; International Labor Organization (ILO), 2023).

Adding green jobs to this framework could improve people's skills, create new income opportunities, and build social networks that strengthen communities. Locally, this includes vocational training programs based on job-market needs, environmental skills certification, and incentive programs for small, medium, and micro businesses to adopt low-carbon methods. Examples include installing rooftop renewable energy systems, using organic farming methods, and adopting circular waste management.

The growth of green economy practices also encourages new ideas and smarter resource use. Renewable energy, circular waste management, sustainable agriculture, energy-efficiency improvements for small and medium-sized businesses, and community-based ecotourism are examples of how economic opportunities can be created without adding more stress on the environment. Digital technologies, like apps that let you check the quality of the soil, online platforms that let you sell organic farm products, and digital payment systems that make it easier to get microfinance, like electronic wallets, mobile banking, and QRIS (Quick Response Code Indonesian Standard), can help people in remote areas get more access to important services and be more included in the market (Khilukha, 2024)

Still, these opportunities come with major challenges. Limited access to green financing, poor technical infrastructure, a lack of skilled workers, and weak institutions could all make it harder to adopt environmentally friendly practices. So, coordinated policy actions are needed, such as offering green microfinance programs, making it easier for environmentally friendly businesses to get licenses, funding research and the creation of suitable technologies, and creating ways for communities, women's groups, and small, medium, and micro businesses to take part in decision-making. It is also important to help local institutions improve how they run training programs, monitor the environment, and build green value chains.

Ultimately, the changes green jobs bring should be seen as a long-term process that needs constant evaluation and improvement. We need to create monitoring systems based on indicators of welfare, ecological resilience, and economic sustainability so we can promptly evaluate and improve interventions. With an inclusive policy framework, investment in human resources, and the right use of technology and financing, green jobs can make livelihoods in natural-resource-dependent areas more resilient, fair, and sustainable (Barbier & Burgess, 2020).

Despite the growing literature on green jobs, green transitions, and sustainable livelihoods, it remains fragmented across socio-economic and environmental dimensions. Previous studies have primarily examined employment creation, poverty reduction, skills development, or environmental performance separately. Consequently, few studies have examined how green job development simultaneously contributes to livelihood resilience, socio-economic transformation, and measurable environmental sustainability outcomes, particularly in resource-dependent regions.

This gap is important because communities in resource-dependent regions are highly exposed to commodity price fluctuations, environmental degradation, climate-related risks, and limited economic diversification. Green jobs may offer an integrated pathway to address these challenges by strengthening human capital, diversifying livelihood opportunities, promoting social inclusion, and supporting low-carbon, resource-efficient economic activities. However, realizing these benefits depends on institutional capacity, access to green financing, skills development, and inclusive governance.

Therefore, this study aims to systematically examine how green job development facilitates socio-economic transformation and strengthens sustainable livelihood resilience in resource-dependent regions. Specifically, the study analyzes how green jobs contribute to livelihood capital development, economic diversification, social inclusion, and measurable environmental outcomes, including emission reduction, resource efficiency, and ecosystem restoration. The study also identifies the institutional and policy conditions needed to maximize these benefits and proposes policy implications to advance inclusive, environmentally sustainable green transitions.

1.1 The Growth of Green Jobs and Changes in Society and the Economy

For social and economic change to occur in resource-dependent areas, production systems must become more resource-efficient and low-carbon. In this context, green jobs are not just a way to create more jobs; they also put environmental goals into action in the job market.

Empirical evidence shows that green growth policies, alongside environmental regulation, foster innovation and employment without harming economic performance (Bowen & Kuralbayeva, 2015; Jacob et al., 2015). Moreover, climate mitigation policies can redirect labor toward low-carbon sectors rather than causing net employment losses (Montt et al., 2018). This sectoral shift is directly linked to a drop in carbon-intensive activities.

Hepburn et al. (2020) show that green fiscal recovery investments, especially in renewable energy, building efficiency retrofits, and ecosystem restoration, create more jobs in the short term and help lower emissions in the long term. These findings suggest that green jobs are integrated into policy instruments that yield quantifiable environmental results, such as reduced greenhouse gas emissions and enhanced energy efficiency.

At the regional level, Kardiansyah et al. (2024) provide empirical evidence that green investment is associated with poverty alleviation through sustainable development pathways. Widiyati et al. (2025) and Mariska (2024) also stress the importance of preparing workers for green jobs to ensure that renewable energy use, environmentally friendly farming, and eco-industrial practices lead to stable job opportunities.

The OECD (2025) says that green skills are directly related to operational skills in renewable energy systems, sustainable land management, and circular production models. These skills help make resources more efficient, reduce waste, and measurably control emissions. Teo et al. (2025) also show that community-based forest management under social forestry schemes helps restore ecosystems while diversifying income.

Taken together, the reviewed literature indicates that green jobs operate through interconnected economic, social, and environmental mechanisms. Economically, they support job creation, income diversification, and poverty reduction. At the social level, they strengthen human capital through green skills development and encourage collaboration among communities, governments, and businesses. At the environmental level, green employment is associated with lower emissions, improved resource efficiency, sustainable production, and

ecosystem restoration. These interconnected effects suggest that green jobs' contribution should be assessed beyond employment indicators alone. Instead, green jobs should be understood as part of a broader socio-economic and environmental transition in which livelihood resilience and ecological sustainability reinforce one another.

1.2 Sustainable Livelihoods, Institutional Capacity, and Good Environmental Results

The Sustainable Livelihoods Framework provides an analytical lens for assessing how green jobs enhance adaptive capacity while promoting environmental sustainability. Modern interpretations of the framework emphasize institutional governance and climate adaptation as key factors shaping livelihood resilience (Natarajan et al., 2022). Livelihood sustainability depends not only on asset accumulation but also on communities' ability to navigate institutional constraints and structural inequalities (Manlosa, 2022; Morse, 2025). In this sense, green jobs increase human capital by teaching new skills, increase financial capital by providing more ways to earn income, and protect natural capital by using low-carbon production systems.

Research on environmental governance shows that participatory resource management benefits both ecosystem health and community well-being (Shang et al., 2021). Country-level studies show that green growth strategies must also address poverty traps and weak institutions to have positive environmental effects for everyone (Sánchez-triana, 2021). The reviewed studies show that effective green job strategies must combine climate change goals with labor market policies, fund vocational green-skills training, provide institutional support for small and medium-sized businesses that use eco-friendly practices, and support community-based natural resource management systems. Consequently, green jobs should be seen as integral to a comprehensive governance ecosystem that links quantifiable environmental performance metrics, such as emission reduction, resource efficiency, and ecosystem restoration, with broader socio-economic resilience.

2. Methods

This study employed a Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The approach was selected to provide a systematic, transparent, and reproducible process for identifying, screening, assessing, and synthesizing relevant studies on green job development, socio-economic transformation, and sustainable livelihoods in resource-dependent regions.

2.1. Literature Search Strategy

The literature search used three academic databases: Scopus, Web of Science, and Google Scholar. The search strategy combined keywords related to the study's main concepts, including "green jobs," "green economy," "sustainable livelihoods," "climate transition," "green skills," and "resource efficiency." Boolean operators combined the keywords and broadened or narrowed the search according to the research focus. The review included peer-reviewed journal articles and selected institutional reports published between 2012 and 2025. This period captures the development of contemporary research and policy discussions on green employment, sustainable livelihoods, and the transition to low-carbon, resource-efficient economies.

2.2. Inclusion and Exclusion Criteria

Studies were included when they: (1) addressed green jobs, green economy, or sustainable livelihoods; (2) examined socio-economic or environmental outcomes relevant to the research objectives; (3) were published between 2012 and 2025; and (4) provided sufficient conceptual or empirical information for thematic analysis. Studies were excluded when they were outside the research scope, did not provide relevant analytical contributions, or lacked sufficient information to support the synthesis.

2.3. Study Selection and Data Analysis

The study selection process followed the four stages of the PRISMA framework: identification, screening, eligibility, and inclusion. The study team initially identified 138 records. The team removed duplicate records, then screened titles and abstracts against the inclusion criteria. We then assessed potentially relevant studies by reviewing full texts. After eligibility and quality assessment, we retained 20 studies for the final synthesis. We analyzed the selected studies using thematic synthesis. Relevant findings were extracted and categorized into three major analytical themes: (1) socio-economic transformation and livelihood diversification, (2)

livelihood resilience and institutional capacity, and (3) environmental sustainability outcomes. Cross-cutting evidence on emission reduction, resource efficiency, ecosystem restoration, green skills development, and inclusive governance was then synthesized to identify recurring relationships and policy implications.

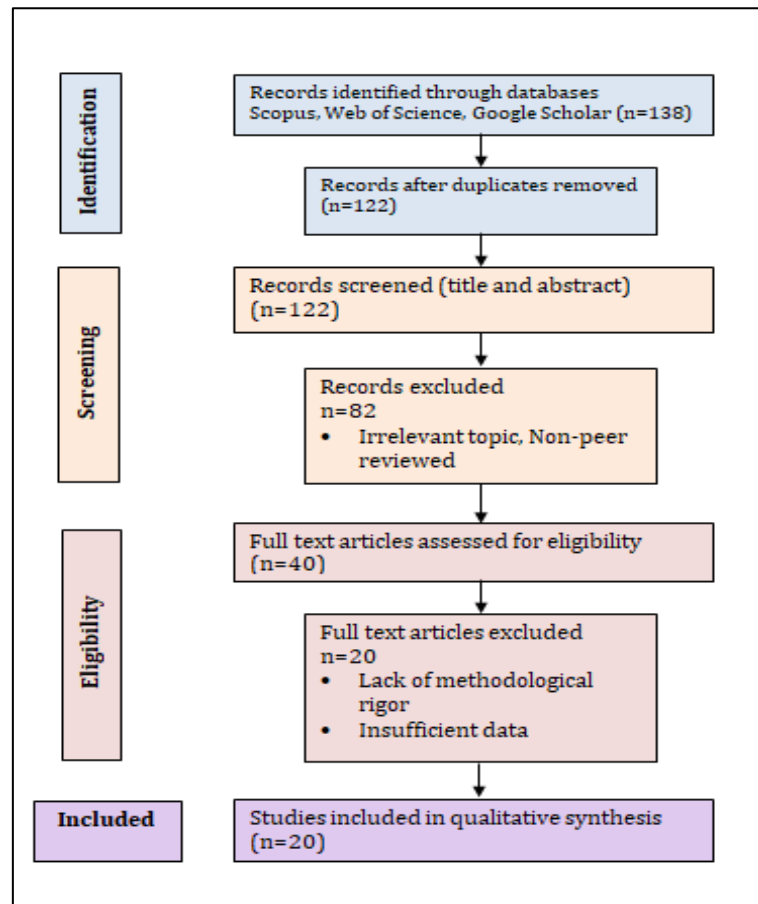


Figure 1. PRISMA Flow Diagram of Study Selection

3. Result and Discussion

3.1 Green Jobs as Drivers for Social and Economic Transformation

The reviewed studies show that green jobs structurally drive social and economic change, especially in areas that rely on natural resources. Green jobs enhance human, social, natural, physical, and financial capital simultaneously, producing multidimensional effects rather than simply offering employment.

Green jobs help people diversify their income by moving workers from low-value extractive jobs to higher-value sectors like renewable energy, energy efficiency, and sustainable agriculture. This shift stabilizes income, reduces vulnerability to commodity price swings, and helps the economy remain strong over the long term. Empirical evidence indicates that green investment and employment growth are positively correlated with poverty alleviation and more stable household incomes. Developing green skills such as managing renewable energy, processing waste, and using agroecological practices strengthens human capital and makes it easier for people to find formal, decent work. Collaborative governance among public institutions, private entities, and local communities builds social capital and increases participation in sustainable economic activities.

The most important environmental benefit of green jobs is their measurable impact on the environment. As more people work in renewable energy, fossil fuel-based systems can be replaced, which cuts carbon emissions. Sustainable farming methods use fewer chemicals, improve soil health, and strengthen ecosystems. Ecosystem rehabilitation, water conservation, and waste reduction activities help restore the environment and use resources more efficiently. These results show that green jobs can support the economy by creating new

opportunities and protecting the environment. The evidence indicates that green jobs accelerate social and economic transformation when supported by institutional capacity, skill development, and coherent policy. Their effects go beyond job creation; they also stabilize people's lives and encourage low-carbon development paths.

3.2 Challenges and Opportunities in Natural Resource Dependent Regions

Regions that rely heavily on natural resources face structural problems, such as economic vulnerability to commodity price swings, environmental degradation, and a lack of economic diversity. Intensive extraction diminishes natural capital, undermines ecosystem services, and limits conventional livelihoods, including agriculture, fisheries, and forestry.

The degradation of natural capital heightens socio-economic vulnerability, especially in governance systems marked by unequal access to land, resources, and decision-making processes. This makes adaptation harder and limits the growth of human and financial capital. However, the review shows strong potential for green job growth in these areas. Green investments, sector-specific skills training, and institutional reform can help shift many natural resources into sustainable sectors. Renewable energy deployment, agroecological transformation, ecosystem restoration programs, and green MSME development are all good ways to start diversifying. Micro, small, and medium-sized businesses are crucial to creating more green jobs in the area. MSMEs can use green financing, certification programs, and technical support to switch to low-carbon production methods (Bradley et al., 2025), adopt eco-design principles, and join new green value chains. These changes create new jobs in installation, maintenance, sustainable production, and environmental services.

Effective implementation requires integrated policy frameworks. Multi-tiered interventions should strengthen livelihood capitals, streamline green business regulations, promote low-carbon technologies, and enhance vocational training aligned with local environmental capabilities. To ensure everyone has equal access to green economic opportunities, inclusive governance mechanisms should include communities, women, indigenous groups, and local businesses. The results show that increasing green jobs in natural-resource-dependent areas can reduce environmental stress and stabilize the economy, as long as policies are clear, measurable, and supported by inter-institutional coordination.

3.3 Discussion

The synthesis of the twenty selected studies indicates that green job development is more than an employment strategy; it can serve as a structural mechanism linking socio-economic transformation with environmental sustainability. Across the reviewed literature, green employment in renewable energy, sustainable agriculture, and eco-innovation is associated with economic diversification, improved livelihood opportunities, and better environmental outcomes, including emission reduction, energy efficiency, and sustainable resource management. These findings suggest that green jobs can generate simultaneous economic and environmental benefits when embedded in sustainable production systems.

Green jobs are particularly relevant to resource-dependent regions, where livelihoods often depend on commodity prices, face environmental degradation, and have limited economic alternatives. Employment opportunities in renewable energy, sustainable agriculture, ecosystem restoration, and green MSMEs can diversify local income sources while strengthening community resilience. However, the reviewed studies also indicate that these benefits are not automatic. Their effectiveness depends on institutional capacity, access to green financing, appropriate skills, and policy frameworks that enable local communities to participate in emerging green economic activities.

These findings highlight the importance of integrating green employment policies with vocational education, environmental governance, and regional economic planning. Green skills development matters because the transition to low-carbon economic activities requires workers with new technical and managerial competencies. At the same time, public investment should prioritize sectors that can generate both employment and measurable environmental benefits. Stronger coordination among labor, economic, environmental, and regional development institutions is therefore necessary to ensure that green transition policies reinforce one another rather than operate independently.

In Indonesia, the transition to a green economy offers an opportunity to reduce dependence on extractive activities while improving livelihoods, particularly in rural and resource-dependent areas. Developing renewable energy, sustainable agriculture, ecosystem restoration, and green MSMEs can support both economic diversification and environmental improvement. Nevertheless, implementation should consider differences in regional economic structures, workforce capabilities, institutional capacity, and environmental priorities. Context-specific strategies are therefore more appropriate than a uniform approach.

Overall, the evidence reviewed shows that green jobs can link economic diversification, livelihood resilience, social inclusion, and environmental sustainability. Their transformative potential is strongest when supported by green skills, adequate financing, effective institutions, inclusive governance, and measurable environmental targets. Green jobs should therefore be positioned as an integral part of regional socio-economic transformation and the broader transition toward resilient, environmentally sustainable development.

4. Conclusion

This study demonstrates that green jobs can function as an integrated mechanism for socio-economic transformation and environmental sustainability in resource-dependent regions. Based on the systematic review of 20 selected studies, green job development contributes to livelihood resilience by strengthening human capital, diversifying income opportunities, promoting social inclusion, and supporting sustainable economic activities. At the same time, green employment can generate measurable environmental benefits through emission reduction, improved resource efficiency, sustainable production, and ecosystem restoration.

However, the benefits of green jobs depend on enabling institutional and policy environments. Green skills development, access to green financing, institutional capacity, inclusive governance, and policy coherence are essential to ensure that local communities and small businesses can access green employment opportunities. The study contributes to the literature by integrating socio-economic and environmental dimensions within a single analytical perspective. Rather than treating green jobs solely as an employment or labor-market issue, the findings position green job development as a strategic component of livelihood resilience and sustainable regional development.

From a policy perspective, governments and development institutions should strengthen green skills ecosystems, expand financing for green MSMEs, align vocational education with emerging green sectors, and establish inclusive governance mechanisms. Monitoring systems should also integrate socio-economic and environmental indicators to assess whether green job programs produce equitable, measurable sustainability outcomes. Future research should examine these relationships through empirical, longitudinal studies at the regional and community levels.

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6. Conflict of Interest

The authors declare no conflict of interest

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