



## Green Economy Development and Employment Absorption Potential in Indonesia

Article

Abstract

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This study analyzes the relationship between green economy development and employment absorption potential in Indonesia through a library research approach drawing on academic sources, international reports, and government publications. The findings indicate that the green economy offers significant opportunities for the creation of green jobs in sectors such as renewable energy, sustainable agriculture, waste management, and circular industries. However, these opportunities still face challenges, including skills gaps, limited green skills training, and suboptimal cross-sectoral policy integration. The study emphasizes that the success of the green transition requires a comprehensive regulatory framework, investment in workforce capacity development, and consistent multisectoral coordination. Therefore, the green economy can serve as a strategic instrument to reduce structural unemployment, improve job quality, and support inclusive and sustainable development in Indonesia.

**Keywords:** Green Economy, Structural Unemployment, Green Workforce, Sustainable Development.

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### INTRODUCTION

The transformation toward a green economy has become one of Indonesia's key development priorities amid increasing environmental pressures, the growing demand for clean energy, and the challenge of structural unemployment. The green economy is seen as capable of delivering economic growth while ensuring environmental sustainability through increased investment in renewable energy, resource efficiency, and the implementation of a circular economy. Several national studies emphasize that green sectors have significant potential to create new employment opportunities, particularly in renewable energy, waste management, sustainable

agriculture, and environmentally friendly industries, which can serve as solutions to high unemployment rates in various regions. This condition indicates that Indonesia has substantial opportunities to leverage the green economy as an instrument for inclusive development, provided it is supported by workforce readiness, integrated regulations, and consistent cross-sectoral coordination.

This study is motivated by three main issues: the uneven readiness of the workforce to fill green jobs due to skills gaps and limited access to training; the lack of integration in green economy policies, resulting in inconsistent implementation of green job development across regions; and the limited number of comprehensive studies linking the potential of the green economy to employment absorption from a macroeconomic perspective, particularly in relation to structural unemployment. Therefore, this study aims to analyze the relationship between green economy development and employment absorption potential in Indonesia by identifying green job opportunities, evaluating workforce readiness in meeting green skills demands, and examining macroeconomic implications and policy needs to ensure that the green transition proceeds inclusively and effectively. The findings are expected to strengthen academic contributions while also providing recommendations for the government and stakeholders in formulating sustainable and equitable green economy policies.

Previous studies on the green economy in Indonesia have generally focused on renewable energy potential, green job creation, as well as regulatory challenges and workforce readiness. Green investment has been shown to generate a significant increase in employment through an investment scenario equivalent to 2% of total national investment<sup>1</sup>. The interrelationship between new and renewable energy, economic growth, and the creation of green jobs<sup>2</sup>, Structural weaknesses in green job regulations that remain sporadic and insufficiently integrated<sup>3</sup>. Nevertheless, most of these studies examine sectoral aspects in isolation and have not comprehensively analyzed the relationship between the green economy, workforce readiness, and macroeconomic implications. The novelty of this study lies in its integrative approach that links green job potential, workforce skills challenges, and macro-level policy implications for reducing structural unemployment. Accordingly, this research offers a new contribution through a holistic analysis that fills the literature gap related to cross-sectoral coordination and regulatory needs in Indonesia's green economic transition.

## RESEARCH METHODS

This study employs a qualitative method using a library research approach, which involves processing and analyzing secondary data from various relevant scholarly sources to examine the

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<sup>1</sup> Rafika Dewi and Ahmad Ma'ruf, "Analisis Penciptaan Green Jobs (Pekerjaan Hijau) Di Indonesia Menggunakan Model Skenario Investasi Hijau," *Journal of Economics Research and Social Sciences* 1, no. 1 (2017): 53–64, <https://doi.org/https://doi.org/10.18196/jerss.v1i1.9059>.

<sup>2</sup> Nur Khairunnisa, Imam Supriyadi, and Budi Santoso, "ENERGI BARU TERBARUKAN ( EBT ) DAN PERTUMBUHAN EKONOMI : ANALISIS KAUSAL TERHADAP SUBSTITUSI ENERGI , LAPANGAN KERJA New Renewable Energy ( NRE ) And Economic Growth : A Causal Analysis Of Energy Substitution , Green Employment , And Contribution To GDP." *CITIZEN: Jurnal Ilmiah Multidisiplin Indonesia* 5, no. 6 (2025): 1581–86, <https://doi.org/10.53866/jimi.v5i6.1045>.

<sup>3</sup> Muhamad Azami Nasri and Bening Kalimasada Aura Keindahan, "Tinjauan Regulasi Dan Kebijakan Dalam Pengembangan Green Jobs Di Indonesia," *Jurnal Ilmu Kesejahteraan Sosial* 25, no. 2 (2024): 133–52, <https://doi.org/https://doi.org/10.7454/jurnalkessos.v25i2.1054>.

relationship between green economy development and employment absorption potential in Indonesia. The data are obtained from reputable national and international journals, reports from multilateral institutions such as the ILO and UN-PAGE, as well as official government publications related to the green economy, green jobs, and renewable energy policies. The literature review is conducted through a process of identifying, selecting, and synthesizing academic findings to map empirical conditions, challenges, and the potential impact of the green economy on national employment. This approach follows a thematic analysis model that emphasizes conceptual interpretation and cross-source synthesis, as commonly applied in public policy and labor economics research. The library research approach is also considered appropriate for evaluating macroeconomic policies and the dynamics of the green transition, as much of the relevant data are available in official publications.

## ANALYSIS AND DISCUSSION

### The Potential of Green Jobs and Employment Absorption

Indonesia's transition toward a green economy, through the development of renewable energy and other sustainable sectors, offers tangible opportunities for the creation of "green jobs." According to the ILO/PAGE Indonesia report, the transition from fossil-based energy sources to renewable energy can generate "substantial employment changes" in which "job growth in renewable energy, energy efficiency and grid augmentation activities" can replace jobs in carbon-intensive sectors.<sup>4</sup> As a direct quotation from the report: "Although the transition may impose a risk of jobs loss in certain sectors, when managed well, a transition into a greener economy opens opportunities for creating more green jobs." This implies that, if implemented with well-designed policies and transition plans, the shift toward clean energy not only reduces emissions but also holds substantial potential to expand employment opportunities, particularly in the development and maintenance of renewable energy infrastructure, energy efficiency, and other environmentally supportive sectors. The allocation of green investment equivalent to 2% of national investment can generate thousands of new jobs in the energy sector and millions of jobs in the agricultural and forestry sectors, demonstrating that the green economy is not merely an environmental slogan but possesses significant capacity to absorb labor in primary and green sectors<sup>5</sup>.

Moreover, the focus on the green economy is not limited to the energy sector. In the food and beverage industry, in-depth analysis by PAGE indicates that the adoption of circular economy principles creates demand for new skills and green jobs, ranging from sustainable production and waste processing to distribution, thereby significantly broadening the green jobs base in Indonesia<sup>6</sup>.

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<sup>4</sup> International Labour Organization (ILO), "Green Jobs and Just Transition Policy Readiness Assessment in the Energy Sector in Indonesia," Geneva: ILO, 2023, <https://www.ilo.org/publications/green-jobs-and-just-transition-readiness-assessment-energy-sector-indonesia>.

<sup>5</sup> Dewi and Ma'ruf, "Analisis Penciptaan Green Jobs (Pekerjaan Hijau) Di Indonesia Menggunakan Model Skenario Investasi Hijau."

<sup>6</sup> Lailly Prihatiningtyas, "Circular Economy in the Food and Beverage Industry for a Green Recovery – PAGE Indonesia," UN-PAGE Indonesia, 2023,

This indicates that the potential for green jobs extends beyond the energy sector to encompass agriculture, manufacturing, waste management, and environmental services, thereby expanding the green employment base and enabling the absorption of workers from more diverse backgrounds. These opportunities are highly relevant for addressing structural unemployment, particularly in regions with abundant natural resources and large labor forces, while also promoting more balanced economic distribution.

At the macro level, the expansion of green jobs through diversification of green sectors has the potential to strengthen national economic resilience, as a more environmentally friendly economic structure tends to be more stable and adaptive to changes in global markets. The transition toward a low-carbon economy can create new employment opportunities while reducing economic vulnerability to fossil fuel price volatility, as well as enhancing labor productivity through clean technology innovation. The expansion of green sectors not only increases employment absorption capacity but also drives industrial transformation toward greater resource efficiency and higher value added. Investment in renewable energy and energy efficiency generates larger employment multipliers than fossil fuel sectors, thereby directly contributing to economic growth and societal welfare<sup>7</sup>. This positions the green economy as a mechanism of structural transformation that is not only relevant for environmental sustainability but also for economic stability and societal welfare.

### Challenges and Readiness of the Green Workforce

Despite its promising prospects, Indonesia's transition toward a green economy faces several tangible challenges, particularly in terms of human resource readiness and policy infrastructure. The ILO/PAGE report reveals that although policies related to green jobs have begun to be developed, many aspects such as regulations, coordination among ministries and agencies, skills training, and worker protection remain insufficiently prepared at both national and subnational levels<sup>8</sup>. This situation creates the risk that the potential of green jobs will not be optimally realized if the transition is not well managed.

Skills gaps have become a critical issue. A recent media-based study highlights that the general public particularly those without technical or vocational education backgrounds often lack access to green skills training, preventing their direct absorption into the green labor market<sup>9</sup>. Urban surveys further indicate that despite high awareness of and preference for environmentally friendly jobs, many respondents still lack the necessary technical competencies and soft skills, such as stress management, interpersonal abilities, and adaptability to new technologies, to work in sustainable

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[https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-jakarta/documents/publication/wcms\\_906280.pdf](https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-jakarta/documents/publication/wcms_906280.pdf).

<sup>7</sup> Herman Fland Dakhi, Alexandra Hukom, and Dicky Perwira Ompusunggu, "Green Economy: Opportunities and Challenges for the Renewable Energy Sector in Indonesia," *Jurnal Inovasi Ekonomi*, no. 2024 (2025): 1–7, <https://doi.org/https://doi.org/10.22219/jiko.v10i01.40224>.

<sup>8</sup> (ILO), "Green Jobs and Just Transition Policy Readiness Assessment in the Energy Sector in Indonesia."

<sup>9</sup> Yanita Petriella, "Menerka Masa Depan Pekerjaan Hijau RI Seiring Ambisi Transisi Energi," *Bisnis.com*, 2025, [https://hijau.bisnis.com/read/20250915/651/1911250/menerka-masa-depan-pekerjaan-hijau-ri-seiring-ambisi-transisi-energi#goog\\_rewarded](https://hijau.bisnis.com/read/20250915/651/1911250/menerka-masa-depan-pekerjaan-hijau-ri-seiring-ambisi-transisi-energi#goog_rewarded).

sectors<sup>10</sup>. In addition, the mapping of green skills and the provision of systematic vocational training remain uneven across regions, causing workers in remote areas or with lower educational attainment to lag behind in accessing green jobs.

Beyond human resource factors, there are structural and regulatory challenges. The transition to renewable energy and a green economy requires substantial investment, clear regulations, and supportive fiscal policies and incentives for investors. However, several legal and policy analyses indicate that regulations supporting green jobs in Indonesia remain sporadic, lack standardization, and are insufficiently integrated at the national level<sup>11</sup>. Without systematic and inclusive training strategies, there is a risk that green jobs will become exclusive and accessible only to individuals who already possess specialized skills or higher education. This could exacerbate labor market inequalities during the transition period.

### Macroeconomic Implications and Policy Recommendations

If properly developed, the green economy and green jobs can become key pillars of long-term national economic development. From a macroeconomic perspective, economic diversification through green sectors can enhance stability, reduce volatility arising from dependence on fossil energy or commodities, and support inclusive and sustainable economic growth<sup>12</sup>. The success of the transition to a green economy and the development of green jobs can strengthen the resilience of the national economic structure. The ILO/PAGE report emphasizes that, to achieve energy transition targets and net-zero emissions, the green economy must be an integral part of national development planning, ensuring that energy and economic sector transformations align with employment policies and social justice<sup>13</sup>. This indicates that green jobs are not merely an environmental or employment issue, but a component of a long-term development strategy that simultaneously encompasses economic, social, and environmental dimensions<sup>14</sup>.

In response to these challenges, comprehensive policies are critically needed. This includes a national roadmap for green jobs, green investment regulations, incentives for sustainable industries, and training programs to equip the workforce with “green skills.” The importance of regulating green jobs not merely as a conceptual idea but as a concrete policy instrument through the involvement of both state and non-state actors in bottom-up and top-down approaches is emphasized to ensure that policies are inclusive and adaptive<sup>15</sup>. Moreover, policies must be designed

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<sup>10</sup> Jakaria et al., “Greening City : Opportunities And Challenges in Workforce Development for A Sustainable Economy,” *J-Naker: Jurnal Ketenagakerjaan* 20, no. 1 (2025): 4–17, <https://doi.org/10.47198/naker.v20i1.457>.

<sup>11</sup> Nasri and Keindahan, “Tinjauan Regulasi Dan Kebijakan Dalam Pengembangan Green Jobs Di Indonesia.”

<sup>12</sup> Alya P Rany et al., “Tantangan Indonesia Dalam Mewujudkan Pertumbuhan Ekonomi Yang Kuat Dan Pembangunan Ekonomi Berkelanjutan Melalui Indonesia Green Growth Program Oleh BAPPENAS,” *Jiep* 20, no. 1 (2020): 63–73.

<sup>13</sup> (ILO), “Green Jobs and Just Transition Policy Readiness Assessment in the Energy Sector in Indonesia.”

<sup>14</sup> Khairunnisa, Supriyadi, and Santoso, “ENERGI BARU TERBARUKAN ( EBT ) DAN PERTUMBUHAN EKONOMI : ANALISIS KAUSAL TERHADAP SUBSTITUSI ENERGI , LAPANGAN KERJA New Renewable Energy ( NRE ) And Economic Growth : A Causal Analysis Of Energy Substitution , Green Employment , And Contribution To GDP.”

<sup>15</sup> Nasri and Keindahan, “Tinjauan Regulasi Dan Kebijakan Dalam Pengembangan Green Jobs Di Indonesia.”

so that the transition addresses not only environmental objectives but also social justice and equitable access to decent employment for all segments of society. Recent media coverage indicates that such roadmaps have been proposed and discussed; however, their implementation still needs to be strengthened at the regional level and within the private sector to ensure that the transition is truly inclusive<sup>16</sup>.

Without cross-sectoral commitment and consistent implementation, green jobs may remain a niche and fail to become a broad solution to national structural unemployment. Therefore, the implementation of green policies must be accompanied by robust monitoring and evaluation systems, multi-stakeholder engagement (government, private sector, education institutions, and communities), and a strong emphasis on decent work<sup>17</sup>. If all these elements are implemented consistently, Indonesia's green economy has the potential to become an effective instrument for reducing structural unemployment, improving job quality, and supporting sustainable development and social justice. However, without strong policy commitment and coordination, the risk of a partial transition remains high, where environmental changes occur but social and economic benefits are not equitably realized.

## CONCLUSION

The research findings indicate that the green economy has significant potential as a key driver of new job creation in Indonesia, particularly through the development of renewable energy, energy efficiency, sustainable agriculture, and waste management. These opportunities can directly contribute to reducing structural unemployment and improving job quality if addressed through green investment, clean technology innovation, and the implementation of a circular economy in industry. However, this potential cannot be fully realized without adequate human resource readiness, including adaptability, mastery of green skills, and equitable access to environmentally oriented training. In addition, the readiness of the industrial sector and the government to provide a supportive regulatory framework is also a critical factor.

Overall, this study emphasizes that the success of the green economic transformation is highly dependent on cross-sectoral commitment and coordination, as well as consistent policy implementation. The government needs to formulate a national roadmap for green job development, strengthen the integration of energy, environmental, and labor regulations, and develop vocational training schemes that effectively address green skills requirements. Collaboration among the government, private sector, educational institutions, and communities is a fundamental prerequisite for ensuring that the socio-economic benefits of the green economy are realized inclusively. With a structured and sustainable approach, the green transition can become an effective strategy for strengthening economic resilience, reducing labor market inequality, and achieving sustainable national development.

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<sup>16</sup> Anita Widya Puspa, "Tangkap Peluang Green Jobs, Pemerintah Diminta Susun Strategi Jitu," *Bisnis.com*, 2025, [https://hijau.bisnis.com/read/20250606/651/1882892/tangkap-peluang-green-jobs-pemerintah-diminta-susun-strategi-jitu?utm\\_source=chatgpt.com](https://hijau.bisnis.com/read/20250606/651/1882892/tangkap-peluang-green-jobs-pemerintah-diminta-susun-strategi-jitu?utm_source=chatgpt.com).

<sup>17</sup> Azizah Arfah, Handar Subhandi Bakhtiar, and Atik Winanti, "Implementasi Kebijakan Ekonomi Hijau Dalam Mendukung Pembangunan Nasional Berkelanjutan Secara Inklusif," *Intellektika : Jurnal Ilmiah Mahasiswa* 3, no. 4 (2025): 11–30, <https://doi.org/10.59841/intellektika.v3i4.2818>.

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