

# Identification Competencies for Green Jobs in Tourism Skills at TVET: A Systematic Literature Review

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## ABSTRACT

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*Sustainable tourism is a concept aimed at addressing the negative impacts of the tourism industry on the environment, society, and culture. In this context, research on the identification of competencies for green jobs in the field of tourism is crucial for the development of a responsible and sustainable tourism industry. The objective of this study is to analyze the relationship between green competencies and green jobs, and to identify the competencies required for green jobs in the tourism sector. This research adopts the Systematic Literature Review (SLR) method following the PRISMA guidelines. A total of 520 articles were collected from Google Scholar, Scopus, and ScienceDirect, and after applying the predetermined criteria, 58 relevant articles were included for analysis. The findings of the study indicate that TVET plays a vital role in preparing the workforce for the transition towards sustainable tourism and there is a link between green competencies and green jobs in the tourism sector as seen from the fact that there is an increasing demand for green workers who must master green competencies, the implication is that it is important to implement green competency-based learning on TVET and this all needs support from the government, the tourism industry sector and the community.*

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## Introduction

Tourism is one of the most valuable commercial activities in the world, playing a crucial role in driving economic growth. However, as it has developed, it has been recognized that tourism also has a growing negative impact on the environment, being one of the industries that contribute significantly to global carbon dioxide emissions and greenhouse gases (Cai et al., 2023). Currently, the tourism and hospitality sector plays a crucial role in shaping a higher carbon footprint in Indonesia in the long term (Zhang & Zhang, 2019). Therefore, the World Trade Organization (WTO) has begun directing all countries worldwide to implement sustainable tourism practices that have

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an impact on environmental sustainability and implications for socio-economic improvement through the local community's wisdom (Rachmat, 2021). The existence of a concept in tourism that embodies sustainability, according to Larasati & Rahmawati (2017), Sustainable Tourism is tourism that can create a balanced and harmonious relationship among three elements of tourism: the quality of tourist experiences, the quality of tourism resources, and the quality of local community life. The concept of sustainable tourism was first developed in the 1990s as a response to the massive impacts of tourism activities and has become the model for current and future tourism development (Hunter, 1995; Choi & Sirakaya, 2005).

The concept of sustainability in the environmental aspect can be achieved by utilizing existing resources in the environment optimally, imposing limitations on the resources themselves, preserving the existence and conservation of natural heritage and biodiversity, and maintaining ecological processes in a tourist attraction (Tamrin et al., 2021). In recent years, tourism stakeholders, particularly academics, have highlighted the urgency of sustainable tourism development due to the increasing number of tourism destinations facing sustainability challenges. To reduce the harmful environmental impacts of tourism, various parties are striving to develop and implement sustainable tourism, and there are significant opportunities within the tourism sector (Grilli et al., 2021). One of the opportunities in sustainable tourism is the existence of green jobs, which are currently increasing in the tourism sector. An analysis conducted in Spain states that green jobs provide employment opportunities that can contribute to environmental sustainability through recycling, utilization of sustainable energy, waste management, and environmental training. With the presence of sustainable tourism, consideration can be given to the current and future conditions regarding the economic, social, and environmental impacts. Furthermore, education plays a role in implementing sustainable learning (Jourdan & Wertin, 2020).

The education and training system needs to embrace and integrate perspectives on potential opportunities and constraints for green jobs. There is evidence to suggest that TVET has played a key role in enhancing green development (Mustapha, 2016). Education, in implementing TVET learning for sustainable development in industries, should be able to address environmental sustainability challenges (Baumgarten & Kunz, 2016). The increasing importance of environmentally conscious skills in the tourism field is driven by the significant impact of tourism on the environment, and currently, "green" education and training face constraints due to factors such as slow responsiveness of educational and training institutions in seizing green job opportunities (Mustapha, 2016). New jobs and new skills are on the rise due to technological, demographic, and climate changes, resulting in new demands (Stanciulescu & Bulin, 2012). Green jobs require higher levels of cognitive and interpersonal skills compared to other jobs (Woods et al.,

2022). The willingness of workers to engage in green job practices is also driven by their own attitudes (Consoli et al., 2016).

Currently, there is a lack of indicators regarding the skills needed to facilitate the implementation of green and sustainable innovation mindset in the process of product and service development (Shamzzuzoha et al., 2022). Green jobs are becoming an economic resurgence and require adaptation to sustainable environmental conditions while considering recycling capabilities (Econie & Dougherty, 2019). The novelty of this research lies in the fact that the topic of green jobs is still relatively scarce when it comes to the concept of tourism. The topic of green jobs still requires further development with the aim of creating decent jobs that contribute to preserving and restoring environmental quality, thus emphasizing the importance of a workforce with a high environmental awareness. This importance extends not only to frontline tourism workers such as tour guides and custodial staff, but also to management professionals in the tourism field who plan and manage tourist destinations (Stanef-Puică et al., 2022).

This research encompasses the current understanding of the concept of green competencies in green jobs, with the aim of providing a comprehensive and up-to-date understanding of the competencies required in green jobs in the tourism sector. It further analyzes the relationship between green competencies and green jobs in the field of tourism, and identifies the green competencies needed in green jobs within the tourism sector. This will clarify the competencies that can be implemented in TVET (Technical and Vocational Education and Training) learning. The research reflects the latest understanding of competency identification, the framework used, previous research approaches, and relevant findings found in the scientific literature.

## **Method**

The research method used in this study is Systematic Literature Review (SLR). SLR is a systematic research approach to collect, evaluate, and analyze literature relevant to the established research topic. SLR is also used as a tool to identify knowledge gaps, frontier edges, and future directions of research collected in databases (Zema and Sulich, 2022). The main objective of this study is to identify the competencies required for green jobs in the tourism sector, particularly in the context of Technical and Vocational Education and Training (TVET). The first step in this research method is to conduct a literature search using databases such as Google Scholar, Scopus, and ScienceDirect. The search is performed using relevant keywords related to the research topic to identify relevant articles. Then, the articles found through the literature search are evaluated to meet the established inclusion criteria. Relevant articles that align with the research objectives are selected for further analysis. The following is Figure 1. Regarding the PRISMA Flow Diagram:

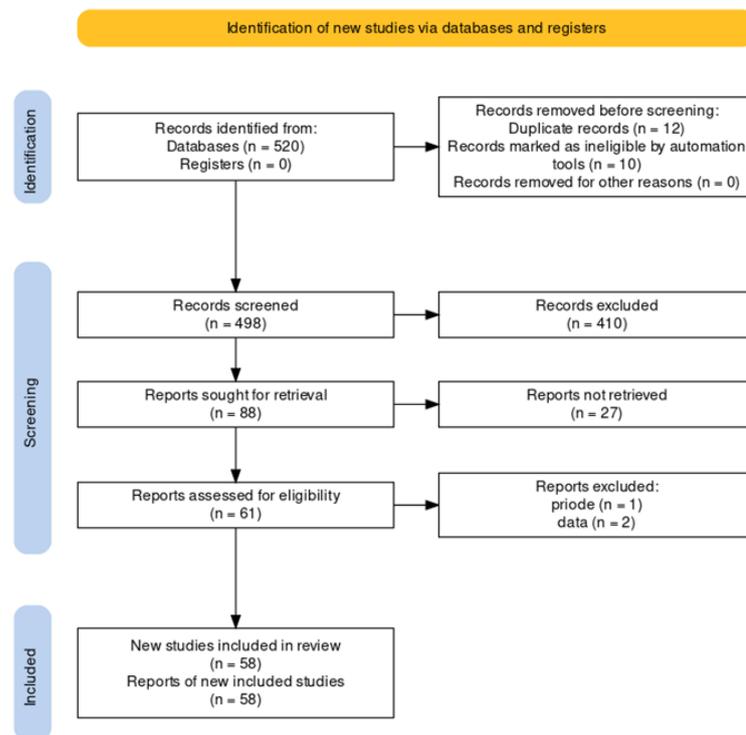


Fig 1: The PRISMA Flow Diagram

Figure 1. Explains Guadeline PRISMA Flow Diagram, this study follows the PRISMA guidelines and utilizes databases from Google Scholar, ScienceDirect, and Scopus, a total of 520 articles, including journals, proceedings, and book chapters, were obtained. The aim of this study is to analyze the competencies for green jobs in the tourism field. The first step involved defining the research problem and objectives, then determining the keywords and constructing a series of keywords related to green jobs based on the analysis of the literature background and the researcher's knowledge. Guided by the research topic, the researcher classified the keywords as follows:

Table 1 describes the keywords used by the researcher to conduct the article search for the SLR, and the guideline used is PRISMA as the technique or framework employed in the SLR research process, aiming to systematically gather, identify, and synthesize data information in the SLR research (Handayani, 2018; M.J. Page et al., 2021). The researcher applied the data collection steps within the PRISMA structure. The research objects were determined as scientific publications obtained from databases. These scientific publications were published within the last ten years (2013-2023), including journals, proceedings, and book chapters. The criteria set by the researcher were research areas that discussed the competencies for green jobs in the tourism field. The

literature selection was based on the established inclusion and exclusion criteria. The inclusion criteria consisted of: (1) literature discussing green jobs in the tourism field, (2) literature published in the English language, (3) literature published from 2010 to 2021, and (4) peer-reviewed literature. On the other hand, the exclusion criteria included: (1) literature not relevant to the research topic, (2) literature that did not meet the inclusion criteria, (3) literature not accessible online, and (4) literature in the form of books or official government documents.

Table 1. *Keyword SLR*

<b>Database</b>	<b>Keyword</b>	<b>Results (2013-2023) (3/10/2023)</b>
<b>Google Scholar</b>	<i>"Green jobs tourism" OR "Green TVET" OR "Ecotourism" OR "Green competencies "</i>	438
<b>ScienceDirect</b>	<i>"Green jobs tourism" OR "Green TVET" OR "Ecotourism" OR "Green competencies "</i>	66
<b>Scopus</b>	<i>"Green jobs tourism" OR "Green TVET" OR "Ecotourism" OR "Green competencies "</i>	16
<b>Total</b>		520

During the data extraction and quality assessment, the researcher obtained a total of 58 articles (N=58) to be used in addressing the research problem and subsequently analyzed to obtain findings regarding the identification of competencies for green jobs and the relationship between green competencies and green jobs in the tourism field. Next, a systematic analysis of the selected articles was conducted, where relevant information about the competencies required for green jobs in the tourism field was systematically extracted and analyzed. This involved mapping and grouping the competencies that emerged in the relevant literature. The analysis aimed to obtain a comprehensive understanding of the competencies needed in green jobs in the tourism sector.

The research findings were then presented in a systematic and comprehensive manner. This included the data used in the SLR, the compilation of the identified competency list, the analysis of the relationship between green competencies and green jobs and recommendations for implementing these competencies in TVET learning. The discussion of the research findings can serve as a reference for the development of education and training programs that align with the needs and demands of green jobs in the tourism sector. Through the systematic literature review method, the researcher successfully identified, evaluated, and synthesized literature relevant to the topic of green jobs in the tourism field. By using this method, the researcher could draw more accurate and reliable conclusions about green jobs in the tourism field, thereby contributing to the development of sustainable policies and practices in the tourism sector.

## Result and Discussion

The discussion of SLR and general grid analysis is presented with provisions regarding the topics of discussion regarding by Figure 2: 1) years of scientific articles, 2) types of scientific articles, 3) methods of scientific articles, 4) theory of scientific articles, 5) citations of scientific articles, and 6) findings of green jobs in the field tourism, 7) Analysis of linkages and competencies for the green jobs in tourism on TVET found in each publication. The figure 2 is a diagram of Publications Related to Green Jobs:

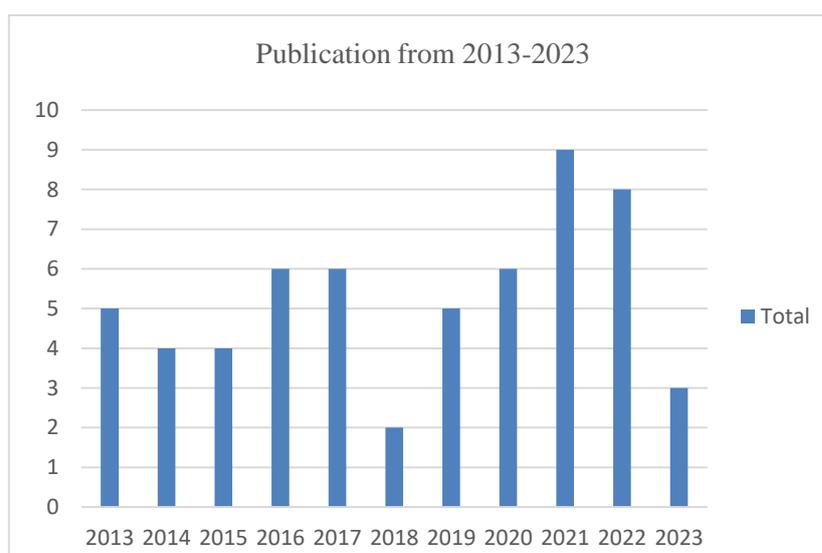


Fig 2: Diagram of the Development of Publications Related to Green Jobs

The research development on green jobs is continuously growing. From the data, it is observed that the highest growth occurred in 2021, which is consistent with the findings of the study conducted by Stanef-Puică et al. (2022). In the context of tourism industry development, the implementation of relevant competencies is crucial. Currently, several government policies have already embraced green economy activities in the tourism sector, requiring adaptation to these policies (Arnedo et al., 2021). A total of 58 publications were obtained within a 10-year timeframe, focusing on green jobs in the field of tourism. The highest number of publications was recorded in 2021 with 9 articles, followed by 8 articles in 2022, and the lowest number of publications was in 2018 with only 2 articles. The figure 3 is a picture of the types of research articles related to green jobs in the tourism sector:

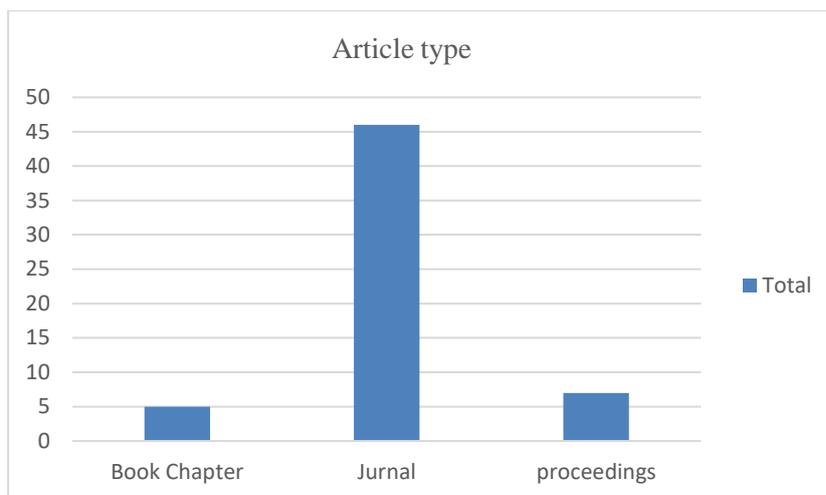


Fig 3: Types of Research Articles

The analysis of article types revealed that there were 46 journal articles, 5 book chapters, and 7 proceedings articles. This indicates that the majority of publications were in the form of journal articles, while book chapters and proceedings accounted for only 12 articles. It shows that research on green jobs is predominantly published in journal articles compared to other types of articles. Research published in journal articles often undergoes rigorous peer review processes, resulting in higher quality and more reliable research (Smith, J.D., & Johnson, 2022). On the other hand, research in the form of book chapters and proceedings tends to have a lower impact in the academic world, although they still contribute to the advancement of knowledge. The figure 4 is Research Methods in Articles:

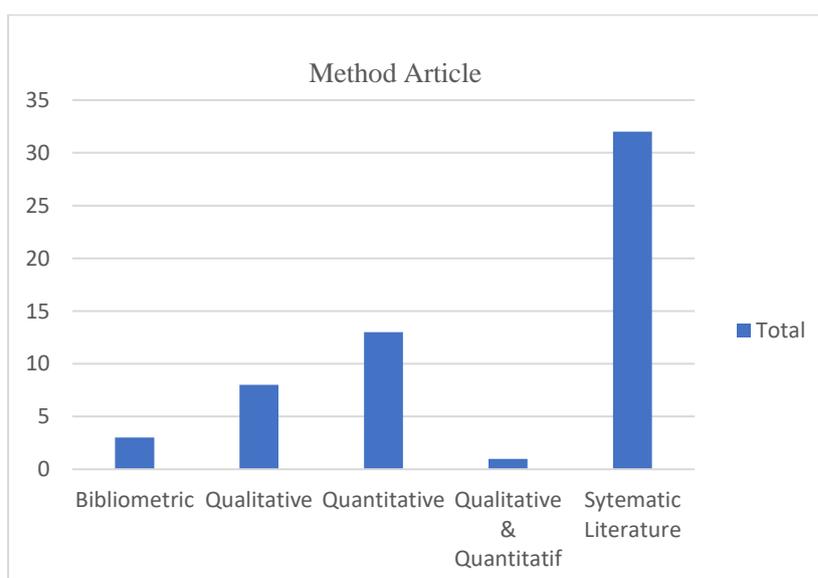


Fig 4: Research Methods in Articles

Figure 4 results of the analysis regarding the research methods used in the articles. It shows that 33 articles used the literature review method, 1 article used a mixed qualitative and quantitative research method, 13 articles used a quantitative research method, 8 articles used a qualitative research method, and 3 articles used a bibliometric research method. Therefore, the majority of articles primarily employed the literature review and quantitative research methods, with only 1 article utilizing a mixed method of quantitative and qualitative research. Based on these findings, it can be identified that the literature review and quantitative research methods are the most commonly used in research on green jobs. This is because green jobs research is closely related to data and statistics, making the quantitative research method capable of providing more accurate and reliable results. However, green jobs research also involves qualitative aspects such as perceptions, attitudes, and behaviors of individuals towards green jobs (Cabral & Dhar, 2021). Therefore, researchers may combine quantitative and qualitative research methods to obtain more comprehensive and in-depth data on the research topic. The figure 5 is an image of the theory used in the article literature:

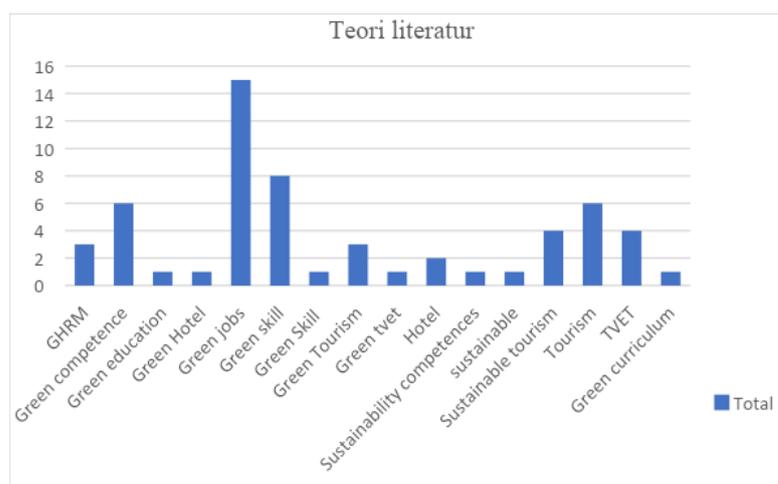


Fig 5: The Theory Used in The Article Literature

Figure 5 results of the analysis on literature theories, showing that the highest number of articles focused on the theory of green jobs, with 15 articles. Green skill theory was discussed in 8 articles, while tourism and green competencies were each addressed in 6 articles. TVET and sustainable tourism were covered in 4 articles each, GHRM and green tourism in 3 articles each, and hotel in 2 articles. The theories of green education, green hotel, green skill, green TVET, sustainability competences, sustainable, and green curriculum were each addressed in 1 article. The analysis of literature theories reveals that the majority of articles are related to green jobs and green skills. Green jobs refer to occupations associated with environmental sustainability and can encompass

various industries such as renewable energy, eco-friendly transportation, or waste management. On the other hand, green skills refer to the skills required to work in these fields, which aligns with the statement by Cuenco (2022). Other prominent themes that were extensively researched include tourism and green competencies. Tourism pertains to sustainable tourism that values and preserves the environment, culture, and local communities. Green competencies, on the other hand, refer to individuals' abilities to adopt and implement sustainable practices in their work. The figure 6 are the number of citations per country:

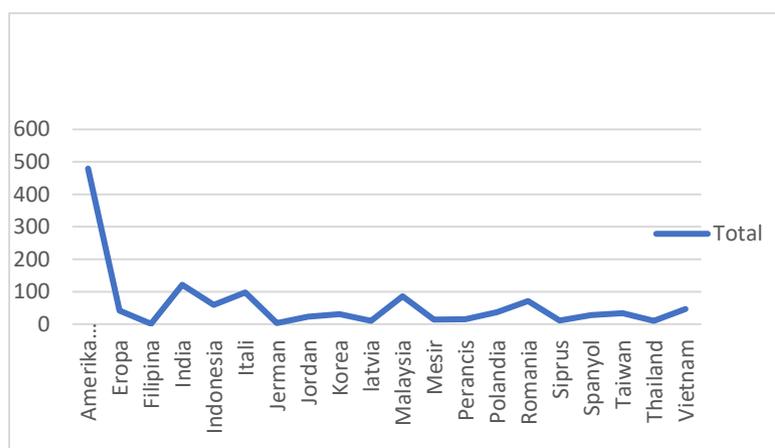


Fig 6: Citations for Each Country

Figure 6 is the result of an analysis of the number of citations for each country, showing that most of the articles cited came from the United States with 479 citations, articles originating from India with 121 citations, articles originating from Italy with 98 citations, articles originating from Malaysia with 86 citations, and articles originating from Indonesia with 59 citations. Then for articles with the lowest citations came from Cyprus with 11 citations, Thailand with 10 citations, Germany with 3 citations and the Philippines with 1 citation. The results of the analysis show that articles originating from the United States dominate in the number of citations, followed by India, Italy, Malaysia and Indonesia. This may indicate that articles originating from these countries have a significant contribution to research on the same topic. The difference in the number of citations between countries can be caused by various factors such as the number of researchers involved in the topic, the quality of the article, the reputation of the author's institution, and the language of publication. Researchers can see which countries are the main contributors to research on the same topic. The table 2 are the results of research journals on green jobs in the tourism sector:

Table 2. Research Journal of Green Jobs in Tourism

Year	Writer's name	Publication category	amount
2013	Wendy Griswold, Dambe, G., Lee, J. W., Brown M., Stanciulescu,	Journal Proceedings	5
2014	Gao, Y. L., & Mattila, A. S. Bowen-Ellzey, N. Deba, A. A., Alpopi,	Journal, Proceeding, Book Chapter	4
2015	Stacey, J., Mustapha, R. B. Omerzel, D. G. Pociovălișteanu, D. M.	Journal, Book Chapter	4
2016	Esposito, A., Diep, P. C., Esposito, A. S. Pavlova, M. Chen, C. H. Aqaba, J.	Journal, Book chapter	6
2017	I Chernyshev, Katunian, A., & Zirnele, L. Lamichhane, ,Kamis, A, Setiawan, Rahim,	Journal, Proceeding, Book chapter	6
2018	Araújo, N., Battaglia, M.,	Journal	2
2019	Cabral, C., Ramlia, S., Casalino, N., Ramli S., Jayaweera,	Journal	5
2020	Bianchi, G,, Benevene, P, A. Sulich a*, M. Rutkowska ĳ. Popĳawsk, Rasul M.S., Małgorzata, Dzhengiz, T,	Journal, Book chapter	6
2021	Cabral, C., Carlisle, S, Arnedo, E. G., Marneros, S., Sern L.C., Bagale, S Saifudin, A; Aima, M; Sutawidjaya, A; .Arshad, M., Misnevs, B	Journal, Proceedings	9
2022	Toubes, D. R. Darvishmotevali, Tănasie, A. V., Bohnenberger, K. Kuo, F. I., Fang, W. T., & LePage, B. A. Lewdanowski, M.; K dzieławski, G. Ismail, S; Suhairom, N; Musta'mal, AH; Shamzzuzoha, A., C	Journal, Proceedings	8
2023	Kozar, Ł. J.,Cai, G., Wang, J., Schönherr, S.,	Journal	3

The data presented in the table is the result of data collection from publish or perish with keywords focused on the typology of green jobs as an overview of the publication results of this topic before further analysis. It is noted that there were a large number of articles published on the topic "Green jobs" during the period 2013-2023 with the number increasing significantly in recent years; within 10 years (2013–2023). In this context, the analysis focuses on the publication of articles on green jobs in the tourism sector.

### Linkage of Green Competencies with Green Jobs

Green competencies include the ability to integrate sustainability principles into work activities, develop sustainable strategies and solutions, and promote environmental awareness among colleagues and clients (Cabral & Dhar, 2021). Green competencies are needed to support sustainability and a healthy environment. Green competencies include an understanding of environmental impacts, an understanding of green technology, skills in implementing green practices, and the ability to motivate and influence others to adopt environmentally friendly

practices (Misnevs et al., 2021). The table 3 describes the relationship between green competencies and green jobs:

**Table 3. Linkage between Green Competencies and Green Jobs:**

<b>Aspek</b>	<b>Green Competencies</b>	<b>Green Jobs</b>
<b>Definition</b>	Knowledge, attitudes and skills necessary to contribute to sustainable development and environmental practices.	Work that focuses on environmental practices and contributes to sustainable development.
<b>Focus</b>	Individual and personal competencies related to environmental practices.	Occupations and industries that have a positive impact on the environment.
<b>Objective</b>	Develop green skills relevant to environmental work and practices.	Creating jobs that are sustainable and environmentally friendly.
<b>linkages</b>	<i>Green competencies are the skills needed by individuals in carrying out green jobs.</i>	<i>Green jobs require individuals with green skills to implement environmental practices in the job.</i>
<b>example</b>	Awareness about sustainable tourism	Jobs in ecotourism

Table 3 discusses the relationship between green jobs and green competencies which are very important in understanding how specific skills and knowledge related to the environment can support sustainable jobs. The table above provides examples of general similarities and differences between green competencies and green jobs, along with figure 7 is a picture of the relationship between green competencies, green jobs and sustainable tourism:

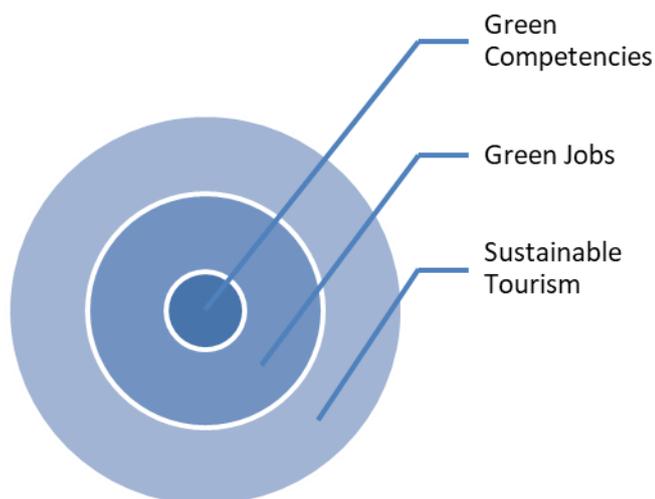


Fig 7:  
Linkage between *Green Competencies*, *Green Jobs* and *Sustainable Tourism*

Green competencies encompass specific skills, attitudes, and knowledge related to environmental practices and principles in the context of tourism. This involves understanding natural resource management, environmental impact reduction, nature conservation, and other

sustainable practices. Green competencies prepare the tourism workforce to integrate sustainable practices into tourism operations and provide environmentally-friendly experiences to tourists (Toubes & Araújo-Vila, 2022). Green jobs in the tourism sector are jobs that directly or indirectly contribute to the development of sustainable tourism. Green competencies and green jobs support the development of sustainable tourism and practices such as waste management, renewable energy usage, nature conservation, and overall sustainable tourism development, all of which require a workforce equipped with green competencies (Chernyshev, 2017).

Green competencies, green jobs, and sustainable tourism are interconnected and support the implementation of sustainable practices. Green competencies refer to specific skills, attitudes, and knowledge related to environmental practices in the tourism context. Another connection is in preparing the workforce to integrate sustainable practices into tourism activities. Green jobs are jobs that directly or indirectly contribute to the development of sustainable tourism, supporting the implementation of sustainable practices such as waste management, renewable energy usage, and nature conservation, which play a crucial role in promoting and advancing the principles of sustainable tourism.

### **Indicators of Green Competencies in the Tourism Field**

Indicators of green competencies in the tourism field refer to the skills, knowledge, attitudes, and principles required by individuals involved in the ecotourism industry to promote environmentally friendly practices, nature conservation, and awareness of sustainability (Stronza et al., 2022). These indicators help measure individuals' ability to effectively contribute to the development and implementation of sustainable tourism activities. The table 4 is an example table illustrating the indicators of green competencies in the tourism field:

Table 4. Indicators of Green Competencies in the Tourism Field

<b>Indicator</b>	<b>Description</b>
<b>Knowledge</b>	Understanding environmental regulations and policies
	Familiarity with sustainable tourism practices and principles
	Awareness of renewable energy sources and their benefits
	Knowledge of the importance of biodiversity conservation and ecological balance
<b>Skills</b>	Ability to assess environmental impacts
	Proficiency in waste management and recycling techniques
	Capability to promote eco-friendly transportation options
	Skills in sustainable resource management
<b>Attitudes</b>	Commitment to sustainable practices and ethical tourism
	Respect for local communities, cultures, and traditions
	Willingness to advocate for environmental protection
	Openness to collaboration in achieving sustainable tourism

Table 4. describes competency indicators for workers in the ecotourism sector who need to have a number of knowledge, skills, and attitude competencies that are important to carry out their duties properly (Stronza et al., 2022). Competence for green jobs in sustainable tourism includes the knowledge, skills and attitudes needed to work in a tourism sector that prioritizes environmentally friendly and sustainable practices (Atstaja & Dambe, 2013). Tourism workers competent in green jobs must understand environmental issues relevant to tourism, such as nature protection, resource conservation, waste management, and climate change mitigation, have knowledge of sustainable tourism practices, including sustainable destination development, tourism based community, use of renewable energy, environmentally friendly transportation, and management of national parks or conservation areas. Skills such as environmental management, environmental impact analysis, sustainable tourism planning, and effective communication with stakeholders are also very important. In addition, a positive attitude towards sustainable tourism, awareness of environmental vulnerability, and the ability to adapt to changes in the tourism industry are also part of the competencies for green jobs in tourism. The table 5 is the implementation of green jobs competencies based on SLR:

Table 5. Implementation Of Green Jobs Competencies

<b>Implementation Aspect</b>	<b>Explanation</b>
<b>Sustainable Curriculum</b>	Development of a curriculum that integrates the principles of sustainable tourism, including environmental issues, resource management, cultural preservation, and ethical tourism.
<b>Project-Based Teaching</b>	Utilizing project-based teaching approach to engage students in the development and implementation of sustainable solutions in the tourism sector.
<b>Field Work Practicum</b>	Providing opportunities for field work practicum in sustainable tourism industry to allow students to apply competencies in real-life settings and develop practical skills.
<b>Industry Collaboration</b>	Building partnerships with sustainable tourism industry to align the curriculum with the needs of the job market, and provide internship and employment opportunities for students.
<b>Competency Assessment</b>	Implementing a competency-based assessment system that includes theoretical examinations, practical skill assessments, and project evaluations to measure students' achievement in sustainable tourism field.

Tabel 5 result SLR about the implementation of competencies for green jobs in the field of sustainable tourism within TVET encompasses strategic steps that support the development of competent workforce prepared to tackle the challenges in sustainable tourism. By adopting these approaches, TVET plays a vital role in preparing a competent workforce with a broad understanding of environmental issues, relevant practical skills, and a positive attitude towards sustainability and environmental awareness.

## Conclusion

This study identifies the competencies required for green jobs in the tourism sector and analyzes the relationship between green competencies and green employment. The research findings indicate a strong correlation between the green competencies possessed by individuals and the available green job opportunities in the tourism sector. The identification of competencies for green jobs in the tourism sector involves various aspects, including knowledge and understanding of sustainability practices, skills in energy and waste management, the ability to develop and implement sustainable initiatives, and the capacity to communicate and work collaboratively in sustainability-oriented teams.

The connection between green competencies and green employment in the tourism sector is evident from the fact that there is an increasing demand for workers with green competencies. The growing awareness of environmental issues and sustainability in the tourism sector has prompted companies and tourism organizations to seek individuals with green abilities and competencies who can assist them in adopting sustainable practices and meeting the market demands for eco-friendly destinations. Green competencies also create opportunities for individuals to pursue sustainable careers and meet the evolving job market needs in the tourism sector. Individuals with green competencies can explore employment opportunities in the fields of renewable energy technology development and implementation, environmental management, waste management, sustainable tourism product and service development, as well as various nature conservation projects.

The implementation of competencies for green jobs in the tourism field through TVET (Technical and Vocational Education and Training) is crucial. Through the development of sustainable curricula, project-based teaching, practical field experiences, collaboration with the tourism industry, and competency assessments, TVET can shape a competent workforce that understands environmental issues, possesses relevant practical skills, and exhibits a positive attitude towards sustainability and environmental awareness. Thus, TVET plays a vital role in preparing the workforce to navigate the changes in the tourism sector towards sustainable tourism.

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