



Promoting eco-tourism for the green economic recovery in ASEAN

Hanzhi Zhang¹ · Qiang Liang² · Yu Li³ · Pengpeng Gao³

Received: 6 December 2022 / Accepted: 14 February 2023 / Published online: 22 March 2023
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Abstract

The green economic recovery in post-COVID-19 is a controversial issue among scholars. The primary purpose of this paper is to evaluate the impacts of the tourism sustainable development index (as a proxy of ecotourism) on the inclusive green economic growth of ASEAN (The Association of Southeast Asian Nations) member states throughout 2000–2021 through employing the system-GMM (Generalized Method of Moments) dynamic panel data approach. The findings confirmed that the tourism sustainable development index has a positive and linear relationship with the green economic growth index, confirming the existence of the TLEG (The Tourism-led Economic Growth) hypothesis. The coefficient of the official exchange rate is positive and statistically significant, whereas the good governance index positively affects green economic growth in ASEAN economies. The primary practical policies are developing the green financing market, coherent ecotourism action plans, supporting small and medium enterprises (SMEs) in the ecotourism industry, and establishing a regional ecotourism value chain.

Keywords Sustainable tourism · Green economic growth · TLEG hypothesis · ASEAN · Panel data

✉ Qiang Liang
liangqiang1983@126.com

✉ Pengpeng Gao
pp19942456526@163.com

Hanzhi Zhang
20112032@zyufl.edu.cn

Yu Li
novizo@163.com

¹ Teaching Affair Department, Zhejiang Yuexiu University, Shaoxing, China

² School of Science, Tianjin University of Commerce, Tianjin, China

³ School of Economics, Tianjin University of Commerce, Tianjin, China

JEL Classification L83 · O47 · C23

1 Introduction

The emergence of the coronavirus at the end of 2019 and becoming a global pandemic in 2020, like an ax, dealt a solid blow to the trunk of the world economy in such a way that the economy of the countries of the world entered a phase of the severe recession. According to the World Bank, the economic recession caused by the Corona disease was very deep, and the world had not experienced such a recession since the Second World War (World Bank, 2020). One of the most important economic sectors affected by the corona disease has been the tourism industry. The tourism industry has experienced many problems due to urban quarantine, increased death due to disease, and the suspension of international travel. Abbas et al. (2021) expressed that the tourism industry placed among the most damaged global industries by COVID-19. Skare et al. (2021) declared that due to the physical distance and social distance and the government's decision to reduce the fluidity of tourism through geographical borders (to prevent the arrival of new versions of Covid-19), covid-19 has a profound negative effect on the activities of the tourist sector in the countries.

By carrying out vaccination, controlling corona disease, and adapting the economies to this disease, many international institutions have predicted the recovery of the economic growth of the countries of the world in a time called the "post-corona era." The International Monetary Fund (2021) reported that the global economy's rising was about 6% in 2021 after COVID's initial situation; however, the global economy will experience a 4.4% growth rate in 2020. This hope of economic growth recovery means that the ominous shadow of the Corona pandemic on the world's economic markets and the social interactions of the world's people will fade. Therefore, it is expected that the various economic sectors that have experienced countless losses from the policies to control corona disease will gradually be able to return to activity tracking even with more capacity.

Many experts (e.g., Taghizadeh-Hesary et al., 2022; Zakari et al., 2022; Zhao and Rasoulinezhad, 2023) believe that the restoration of post-corona economic growth can be done by considering environmental issues and the foundations of resuming the economic activities of countries in the post-corona era can be environmentally friendly and according to the goals of sustainable development. This opinion is discussed under the discourse of "recovery of green economic growth." Recovery of green economic growth refers to the return of the train of economic growth of countries to the rail of production and prosperity but in terms of environmental protocols and efforts to develop the consumption of green energy instead of fossil fuels. Rasoulinezhad (2020), Zhang and Dilanchiev (2022), and Rasoulinezhad and Taghizadeh-Hesary (2022) express that green economic recovery is an essential policy of countries to go toward sustainable development goals. The policy can develop green industry, agriculture, and power generation under the dominant fossil fuels. Goenka et al. (2021) and Afzal et al. (2022) argue that despite all the adverse effects, Covid-19 gave the world economy a

unique opportunity to pay more attention to environmental issues in the form of green economic recovery in the post-corona era.

Studying green economic growth and ecotourism for ASEAN member states is essential owing to the following aspects: i. The tourism industry plays a vital role in ASEAN economies. Since the establishment of ASEAN, the Committee on trade and tourism was made in 1977. Due to the negative consequences of the COVID-19, ASEAN member states have tried to recover the tourism industry through different policies and plans such as the Post-COVID-19 Recovery Plan for ASEAN Tourism, ii. ASEAN member states are among the economies that are keen to develop ecotourism. According to the ASEAN Tourism Strategic Plan 2016–2025, the countries are committed to following sustainable tourism activities.

Furthermore, ASEAN has defined unique, sustainable tourism standards to meet member states' efforts consistently. In addition, ASEAN sustainable tourism awards are another encouraging policy to attract SMEs and individuals to participate in ecotourism, iii. Green economic recovery is a crucial issue among ASEAN economies during the COVID pandemic. Han et al. (2022) and Najam et al. (2022) express that ASEAN member states have all the requirements to promote green economic recovery after controlling the pandemic.

The paper seeks to contribute to earlier studies through the following aspects: First, the paper considers the hypotheses of TLEG (The Tourism-led Economic Growth) and EDTG (Economic-driven tourism growth) for the case of sustainable tourism and green economic growth. Using these two well-known hypotheses makes the experimental model to be constructed based on correct and logical theoretical foundations. Second, two new indexes of tourism sustainable development index and inclusive green economic growth are calculated for ASEAN member states. These two indicators have been calculated and analyzed as variables in the econometric model for the first time in this article. Third, the panel data approach is employed to find the sign and magnitude of the impact of ecotourism on the green economic growth of the examined ASEAN member states.

The major findings confirmed that the tourism sustainable development index has a positive and linear relationship with the green economic growth index, confirming the existence of the TLEG (The Tourism-led Economic Growth) hypothesis. The coefficient of the official exchange rate is positive and statistically significant, whereas the good governance index positively affects green economic growth in ASEAN economies. The primary practical policies are developing the green financing market, coherent ecotourism action plans, supporting small and medium enterprises (SMEs) in the ecotourism industry, and establishing a regional ecotourism value chain.

The research structure in continue is as follows: A summary of earlier studies is discussed in Sect. 2. Section 3 provides data and model specifications. Next Section represents empirical estimations, robustness checks and a brief discussion. Section 5 expresses concluding remarks, practical policies and recommendations to further research

2 Literature review

New earlier studies have expanded the discourse of eco-tourism and green economic growth. It is a common belief that countries can promote their domestic product through environmental concerns. Thus green economic growth can be accessible to all countries. Activating the pillars of green economic growth is more crucial for the post-COVID era, recovery of economic markets and enterprises activities after a deep economic recession. Bai et al. (2022) expressed that economies should prioritize green economy recovery due to its positive role in promoting environmental sustainability. Zhao et al. (2022) emphasized the issue of financial power to make green GDP growth. With sufficient capital, countries can make efficient plans to reach green economic recovery post-COVID-19. Blazquez et al. (2021) studied the government stimulation policies to promote green economic recovery. They concluded that massive stimulus fiscal packages are essential to construct the requirements of green GDP growth. Cheng et al. (2021) focused on China and mentioned that green economic growth needs policy revisions to become a country's prioritized and efficient macro plan. In another study, Capasso et al. (2019) argued that green growth needs non-routine solutions to be activated by all economic sectors. Zhao and Rasoulinezhad (2023) argued that in the post-COVID era, the green economic growth recovery needs optimization of other economic sectors and resources.

Ecotourism is one of the major principles of reaching green economic recovery in the post-COVID era. Despite the deep recession of the tourism industry during the pandemic, the industry has the potential to flourish and empower in the post-COVID era through advancing environmental issues. Xu et al. (2022) employed content analysis of articles from 2003 to 2021 to find out the critical success factors of sustainable tourism. They found that ecotourism needs transparent regulations and the government's fiscal and financial support. Khanra et al. (2021) conducted a bibliometric analysis of sustainable tourism. They concluded that ecotourism could positively impact a country's socioeconomic variables and mitigate environmental pollution mid-and long-term. Shasha et al. (2020) expressed that sustainable tourism needs a series of prerequisites, the most important of which is the government's support for green tourism, the creation of ecotourism culture, and the development of national parks.

Regarding ecotourism and green economic growth recovery, two popular hypotheses of EDTG (Economic- driven tourism growth) and TLEG (Tourism-led economic growth) can be addressed. Scarlett (2021) studied the characteristics of tourism recovery after COVID-19 in 46 countries. The concluding remarks highlighted the presence of TLEG, meaning that the tourism industry can lead to increased economic growth. Perles-Ribes et al. (2017) focused on Spain and tried to study the existence of the TLEG hypothesis there. The findings revealed that tourism is the major influencing factor in promoting economic growth. Gugushili et al. (2017) evaluated the tourism-economic growth linkage in Kazbegi, Georgia. They found out that the tourism sector's growth positively impacts economic flourishing through foreign exchange revenue and labor force mobilization.

Antnakaki et al. (2015) tried to find the linkages between tourism and European economic growth. The findings confirmed the existence of TLEG, meaning that tourism provides enormous economic advantages.

Based on the review of previous studies, we understand that the issue of green economic growth and ecotourism is one of the critical issues of the countries of the world, especially in the post-corona era. In addition, the two hypotheses, TLEG and EDTG, have yet to be used to investigate the relationship between ecotourism and green economic growth. Therefore, this article tries to solve the existing literature gap by examining the relationship between ecotourism and green economic development in ASEAN countries based on two hypotheses, EDTG and TLEG.

3 Theoretical background

Recovery of green economic growth needs various drivers. The tourism industry, one of the most injured economic sectors during the Corona era (Sigala, 2020; Fotiadis et al., 2021), can appear as a strong lever in advancing the goals of revitalizing green economic growth. Of course, it should be pointed out that the activities mentioned in the field of tourism must be in line with environmental issues, which create a different terminology called "ecotourism" or "green tourism." Sorensen and Grindsted (2021) discuss sustainable tourism as a new concept to promote the green tourism industry, leading to achieving sustainable development goals faster and easier. Ma et al. (2021) express that green tourism can protect the environment and helps countries to use the potential of the tourism industry in order to enhance greening economic mechanisms. It is possible to consider such a model for ecotourism, which results in the three social, economic, and environmental aspects being in a stable interaction, which will be the factor in improving the level of the green economy. Figure 1 shows the pattern of ecotourism–green economic growth:

Theoretically, two famous hypotheses (i.e., EDTG and TLEG) can be used to explain the relationship between green tourism and green economic growth. The EDTG hypothesis declares that economic growth causes tourism to flourish in a country due to its power to enhance infrastructure and ensure economic stability. At the same time, TLEG means that tourism growth can lead to GDP growth in a destination owing to its job creation and national currency appreciation capability. These

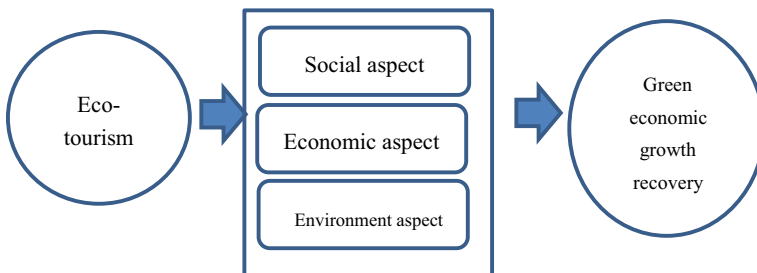


Fig. 1 Green tourism – green economic growth relationship's pattern. Source: Authors

two hypotheses can be generalized to analyze the relationship between ecotourism and green economic growth. Therefore, if the green economic growth in a country is a result of the growth of ecotourism in that country, the TLEG hypothesis can be confirmed. In contrast, if ecotourism in a country develops from the place of green economic growth, the hypothesis EDTG will be confirmed.

4 Model and data description

In this study, the annual data for 2000–2021 for ASEAN member states, including Singapore, Malaysia, Thailand, the Philippines, Indonesia, Laos, Cambodia, Vietnam, Brunei, and Myanmar, are employed to measure the impacts of eco-tourism on green economic growth. Based on the theoretical framework, the dependent variable in this research is the inclusive green growth index proposed by Jha et al. (2018), which is an appropriate proxy for green economic growth. The employed index comprises GDP growth, social equality, and environmental sustainability. The primary explanatory variable is the tourism sustainable development index (TSDI index) including ten variables and was calculated for ASEAN countries by the authors based on the published methodology (<https://www.tourism-sdi.org/wp-content/uploads/2021/02/Methodology-TSDI.pdf>). Other selected independent variables are the good governance index (The index is calculated annually by the World Bank based on six dimensions of governance comprising voice and accountability, political stability and absence of violence/terrorism, government effectiveness, regulatory quality, the rule of law, and control of corruption), official exchange rate, net inflows of foreign direct investment and globalization index. The primary information of variables are reported in Table 1 as follows:

Based on the literature, it is predicted that ecotourism will play a positive role in the green economic growth of ASEAN countries. Besides generating foreign exchange income for these countries, ecotourism makes it possible to protect more natural resources and tourist attractions (Ali et al., 2021). Besides, the discussion of using green energies and increasing energy efficiency in hotels and tourist accommodations will also be strengthened in ecotourism. It is also predicted that the sign

Table 1 Information of variables. Source: Authors

Variable	Symbol	Unit	Source
Inclusive green growth index	IGEG	–	Calculated based on Jha et al. (2018)
Tourism sustainable development index	TSDI	–	Calculated based on www.tourism-sdi.org
Good governance index	GGI	–	Worldwide Governance Indicators, World Bank
Official exchange rate	OEXCH	LCU per US \$	World Bank database
Net inflows of foreign direct investment	FDI	BoP, current US \$	World Bank database
Globalization index	GLOB	–	KOF Swiss Economic Institute

of the effective coefficient of good governance, foreign direct investment, and globalization on the green economic growth of ASEAN countries will also be positive. By using their capacities, these variables can have an indirect effect on strengthening green economic growth drivers in different countries.

Regarding the exchange rate, the sign of the impact coefficient is ambiguous. On the one hand, the decrease in the value of the national currency will mean attracting more tourists (cheap tourism services for foreigners) and developing ecotourism and, therefore, green economic growth. On the other hand, increasing the value of the national currency means cheaper imports of green technologies in ecotourism from abroad. Therefore, in both cases, there will be a possibility of a positive effect of the exchange rate on green economic growth.

In order to estimate the coefficients of explanatory variables, the system-GMM dynamic panel technique (Blundell and Bond, 1998) is conducted. This estimation model has advantages in solving the problems of omitted variable bias, heterogeneity, and endogeneity (Bai and Li, 2021). Furthermore, Sargan (1958)'s test of the over-identifying restrictions is employed to clarify that various instruments do not influence the restrictions. The basic econometric equation for the dependent variable of green economic growth can be considered as Eq. 1:

$$GY_{it} = \alpha_0 + \alpha_1 GY_{i,t-1} + \alpha_2 ETOU_{it} + \alpha_3 X_{it} + \mu_i + T_i + \varepsilon_{it} \quad (1)$$

In the above equation, GY represents green economic growth at time t in country i . $ETOU$ shows ecotourism as the primary explanatory variable, while X denotes all control variables (i.e. good governance index, globalization index, FDI, and official exchange rate). In addition, μ_i , T_i and ε_{it} are unobserved fixed effects of country-specific, the time period effect, and residual term, respectively.

In order to improve the econometric equation, the quadratic form of eco-tourism is added to capture the non-linear impact of the Tourism sustainable development index on the green economic growth of ASEAN member countries. Hence, Eq. 1 improved to Eq. 2 as follows:

$$GY_{it} = \alpha_0 + \alpha_1 GY_{i,t-1} + \alpha_2 ETOU_{it} + \alpha_3 ETOU_{it}^2 + \alpha_4 X_{it} + \mu_i + T_i + \varepsilon_{it} \quad (2)$$

Furthermore, the panel co-integration estimation of FMOLS is conducted as a robustness check. In addition, a dummy variable of COVID-19 is added to the empirical model and the linear and non-linear models are re-estimated to check the signs of coefficients of explanatory variables. These two-robustness check strategies are conducted to ensure the validation of empirical findings.

5 Empirical results and discussion

In this Section, the estimations of coefficients through two linear and non-linear approaches are carried out. In the first step, the slope heterogeneity (normal distribution check) and cross-sectional dependency (CD) test are employed. The results of these preliminary tests, reported in Table 2, confirm the normal distribution and the absence of cross-sectional dependency in the panel of the examined country.

Table 2 Slope heterogeneity and CD tests. Source: Authors

CD test		
Variable	Statistic	P-value
IGEG	0.293	0.385
TSDI	16.49	0.119
GGI	1.163	0.644
OEXCH	− 0.39	0.581
FDI	0.004	0.713
GLOB	4.583	0.103
Slope heterogeneity test		
Statistic	$\Delta = 13.92^*$	$\Delta_{adjusted} = 14.33^{**}$

*and **show significance at 5% and 10% levels, respectively

Since the absence of cross-sectional dependency is accepted, the first generation of panel unit root test, namely ADF (Augmented Dickey-Fuller), can be carried out. The results are listed in Table 3 and revealed that the series became stationary after the first difference (I (1)).

The panel co-integration test is employed to explore whether there is a long-term relationship among variables. Table 4 reports the results of panel Kao's co-integration test as follows:

Table 4 confirms the existence of a long-term relationship among variables.

Before doing the estimations, the Arellano and Bond (1991) test of autocorrelation and the Sargan test are employed to ensure the reliability of chosen variables and model. The estimation results by the system-GMM are reported in Table 5 as follows:

According to the obtained results, the coefficient of ecotourism is positive and statistically significant. With an increase of 1% in the sustainable tourism

Table 3 Panel unit root test. Source: Authors

Variable	Statistic	p-value
IGEG	− 0.193	0.154
D(IGEG)	− 5.492	0.008
TSDI	− 1.009	0.554
D (TSDI)	− 6.194	0.039
GGI	− 0.015	0.132
D (GGI)	− 5.493	0.010
OEXCH	− 0.870	0.293
D (EXCH)	− 7.599	0.018
FDI	− 1.940	0.447
D (FDI)	− 4.331	0.051
GLOB	− 0.084	0.112
D (GLOB)	− 3.455	0.015

Table 4 Panel Kao co-integration test. Source: Authors

-	Statistic	<i>p</i> -value
ADF	− 5.193	< 0.001
Residual variance	0.004	
Heteroscedasticity and autocorrelation consistent, HAC variance	0.004	

Table 5 The System-GMM dynamic panel estimation results, Source: Authors

Explanatory variable	Coefficient	<i>P</i> -value
TSDI	0.483	0.024
Squared TSDI	0.103	0.110
GGI	0.293	0.063
OEXCH	0.084	0.034
FDI	− 0.392	0.004
GLOB	0.114	0.294
Observations: 220		
AR (1) prob.: 0.00		
AR (2) prob.: 0.532		
Sargan prob.: 0.004		
Hansen test: 0.354		
Instrument number: 34		

TSDI, GGI, OEXCH, FDI and GLOB represent tourism sustainable development index, good governance index, official exchange rate, FDI inflow, and globalization index, respectively

development index, the economic growth of ASEAN countries will increase by 0.48%. This finding is in line with earlier studies like Sorensen and Grindsted (2021), Ma et al. (2021), Khanra et al. (2021), Scarlett (2021), and Xu et al. (2022), who emphasized the positive role of ecotourism for both macroeconomic variables and environmental protection. The greening of the tourism industry in ASEAN countries, which have extraordinary capacities to attract tourists and are in a favorable position in terms of natural resources, can attract a lot of foreign exchange income while preserving the environment and creating sustainable economic growth in these countries. Regarding the squared ecotourism variable, the coefficient is not statistically significant. In other words, there is a non-linear relationship between ecotourism and green economic growth in ASEAN countries. Therefore, the presence of the inverted U hypothesis in the relationship between these two variables is rejected. This finding shows that the positive effect of ecotourism on green economic growth is always favorable, and over time, the sign of the effect does not change.

Moreover, the good governance index positively affects green economic growth in ASEAN economies. The improvement of the good governance index means the reduction of administrative bureaucracies, the transparency of the law, and

greater civil freedom, all of which will increase the level of sustainable economic growth in ASEAN countries. This finding is in line with Feng et al. (2022) and Ofori et al. (2022), who confirmed the positive relationship between governance performance and green economic recovery. However, it contrasts with Omri and Mabrouk (2020), who declared that good governance could not lonely improve sustainable development goals and needs private participation and enhancement of sustainable culture in the society. The coefficient of the official exchange rate is positive and statistically significant, meaning that a 1% increase in US dollar value compared to ASEAN national currencies leads to an increase of green economic growth of these economies by nearly 0.08%. The main reason is that the increase in the exchange rate makes the green projects of ASEAN countries cheaper for foreign investors, which will attract more investments from abroad in projects related to a sustainable economy (Sun et al., 2022a). This finding contrasts Deka and Dube (2021), who found no relationship between exchange rate and green energy consumption in the long term.

Regarding FDI, the estimation confirms that with a 1% increase in inflows of FDI to ASEAN countries, their green economic growth decreases by approximately 0.39%. The critical reason for this finding is that a large share of foreign direct investment enters ASEAN countries in non-green economic areas, which causes more greenhouse gas emissions and environmental damage. According to ASEAN Investment Report (2021), in 2020, finance (50.7 billion dollars), wholesale and retail (26.8 billion dollars), and manufacturing (20 billion dollars) were the three top sectors in ASEAN that received the most volume of FDI. The globalization index has no statistically significant impact on the green economic growth of ASEAN member states. This finding is different from Li et al. (2020), Farooq et al. (2022), and Ghosh et al. (2022), who found the positive impact of economic globalizing on mitigating environmental pollution. The absence of a significant relationship between globalization and green economic growth in ASEAN countries may be due to the focus of globalization in these countries on the fluidity of labor and capital between countries, which can be a positive or negative factor for environmental protection and sustainable development.

In order to find out the validation of empirical findings, two strategies of robustness check are applied. In the first strategy, the empirical model is re-estimated through the panel cointegration technique named FMOLS (Fully Modified OLS). All preliminary tests (panel unit root tests and panel cointegration tests) were done to determine the appropriate panel estimator. Table 6 lists the results of FMOLS estimation. According to the results, the tourism sustainable development index has a positive and statistically significant coefficient which is in line with the earlier finding.

In the second strategy of robustness check, the dummy variable of COVID-19 (it takes 1 in 2019, 2020 and 2021, otherwise 0) to the empirical model, and the coefficients are re-estimated through the system-GMM dynamic panel technique. The findings are reported in Table 7:

According to the second robustness check's findings, the validation of empirical estimations can be confirmed. Only FDI as a control variable does not have a significant variable. However, the coefficients of the main explanatory variables have

Table 6 FMOLS estimation results (first robustness check), Source: Authors

Explanatory variable	Coefficient	<i>P</i> -value
TSDI	0.042	0.002
Squared TSDI	0.134	0.144
GGI	0.005	0.043
OEXCH	0.193	0.194
FDI	0.432	0.039
GLOB	0.044	0.102

TSDI, GGI, OEXCH, FDI and GLOB represent tourism sustainable development index, good governance index, official exchange rate, FDI inflow, and globalization index, respectively

Table 7 Second robustness check, Source: Authors

Explanatory variable	Coefficient	<i>P</i> -value
TSDI	0.942	0.023
Squared TSDI	0.001	0.382
GGI	0.553	0.023
OEXCH	0.102	0.053
FDI	0.011	0.482
GLOB	0.048	0.162
COVID	0.005	0.003

TSDI, GGI, OEXCH, FDI, GLOB and COVID represent tourism sustainable development index, good governance index, official exchange rate, FDI inflow, globalization index and COVID-19, respectively

similar signs to the earlier findings in Table 5. In addition, COVID-19 positively impacts the green economic growth of ASEAN member states. Nasr Esfahani et al. (2022) declared that with the beginning of the spread of the corona disease, Asian countries, which were the biggest emitters of carbon dioxide, began to impose economic and transportation restrictions to control the corona disease, which caused the closure of many of their companies and industries, which reduced the emission of carbon dioxide (Sun et al., 2022b). Although this reduction has been temporary, and with the start of industries and economic enterprises, we have seen an increase in carbon dioxide emissions in 2022, which is a matter of paying more attention to green economic growth and ecotourism as its drivers in ASEAN countries.

6 Conclusions and policy recommendations

6.1 Concluding remarks

Paying attention to the issue of protecting the environment through the revival of green economic growth and its drivers is one of the critical issues of the world

economy today. One of the essential drivers of the green revival of the economy in the post-corona era is sustainable tourism, which pays attention to the environmental aspects of the tourism industry. In this article, by studying ASEAN countries from 2000 to 2021, an attempt was made to study the effect of ecotourism on the green economic growth of these countries. Based on the obtained results, the following concluding remarks can be presented:

- Firstly, the tourism sustainable development index has a positive and linear relationship with ASEAN countries' green economic growth index. By improving the sustainable development index of tourism, along with earning foreign currency from attracting foreign tourists, the protection of the higher quality environment will be followed, which will positively contribute to these countries' green economic growth. It confirms the TLEG hypothesis that ecotourism growth can lead to green GDP growth in a destination owing to its capability of green job creation and national currency appreciation.
- The good governance index positively affects green economic growth in ASEAN economies. The improvement of the good governance index means the reduction of administrative bureaucracies, the transparency of the law, and greater civil freedom, all of which will increase the level of sustainable economic growth in ASEAN countries.
- The coefficient of the official exchange rate is positive and statistically significant. Any increase in the exchange rate makes the green projects of ASEAN countries cheaper for foreign investors, attracting more investments from abroad in projects related to a sustainable economy.
- FDI negatively affects the green economic growth of ASEAN member states. A large share of foreign direct investment enters ASEAN countries in non-green economic areas, which causes more greenhouse gas emissions and environmental damage.

The globalizing economy has no statistically significant impact on the green economic growth of ASEAN member states. One of the essential issues of concern in recent years is green globalization, which means global interactions of countries with a focus on sustainable development. There is no such concept in the globalization approach of ASEAN countries, and it has led to the statistical significance of the globalization coefficient in the research model.

6.2 Policy implications

Various practical policies can be recommended to ASEAN countries and other countries worldwide. As the first practical policy, developing a joint action plan for sustainable tourism in ASEAN countries is suggested. Currently, there are several long-term plans and visions in the field of sustainable tourism (e.g., see ASEAN Tourism Strategy Plan 2016–2025; The ASEAN Ecotourism Forum 2016; The 2016 Pakse Declaration on Roadmap for Strategic Development of Ecotourism Clusters and Tourism Corridors), which are not adequate. Considering the issue's importance

in the post-corona era, accurate and *coherent action plans* are necessary. Another practical policy is *developing the green financing market* to promote projects related to ecotourism in ASEAN countries. The green financing tool can provide a sufficient guarantee to cover the risk of ecotourism projects, which attracts private sector investors to these projects. Another practical policy is to increase the role of the government in *supporting small and medium enterprises (SMEs)* in the ecotourism industry. Due to their insufficient financial power, these companies need more support from the government through financial incentives, green loans, green carbon tax (Yoshino et al., 2021), and tax exemptions, facilitating the business process by reducing administrative bureaucracies. Therefore, the governments of ASEAN countries should have a particular monetary and financial support program for these companies. Creating a *regional ecotourism value chain* can be an effective practical policy in ASEAN countries. In this way, each member country has a relative advantage in ecotourism. Together, these advantages can create an extraordinary capacity for ASEAN in ecotourism.

Moreover, the ASEAN member states need to promote digital infrastructure to provide digital ecotourism services which are environmentally friendly and paperless. Marx et al. (2021) expressed that virtual tourism is an efficient model of sustainable tourism, mainly to improve the virtual community in the COVID-19 era. Another practical policy is to increase the share of green foreign direct investment to ASEAN member countries in the total foreign direct investment. Green foreign direct investment focusing on projects related to the environment can play a significant role in creating green tourism and developing green economic growth. However, for the development of green foreign direct investment, ASEAN countries should prioritize projects related to ecotourism and then provide information to foreign investors in a centralized system with transparency.

6.2.1 Research limitations and suggestions for future research

This research investigated the relationship between ecotourism and the green economy's growth in ASEAN countries. However, the lack of access to information on variables in local databases, seasonal fluctuations, and the lack of local websites in English limited the research. In future research, we expect that many of the existing limitations will be removed and the supplementary results of this research will be obtained. As a first suggestion, future research should look at the relationship between ecotourism and green economic growth on a country-by-country basis, which will provide policymakers with more accurate results at the level of ASEAN countries. Also, considering the military tension between Ukraine and Russia since February 24, 2022, the effect of this shock should be considered in the relationship between green economic growth and ecotourism in ASEAN countries. Since Russia is considered one of the essential energy supplier countries in Asian countries, its economic instability can affect the macroeconomic variables of ASEAN countries, such as ecotourism and green economic growth. It is suggested to use other econometric models, such as artificial neural networks, in future research to predict the relationship between the two variables of ecotourism and green economic growth

of ASEAN countries. Forecasting this relationship can help formulate policies and programs for ASEAN countries in green economic growth and ecotourism.

Author contributions We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed. We further confirm that the order of authors listed in the manuscript has been approved by all the authors.

Declarations

Conflict of interest We declare that there is no conflict of interest.

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