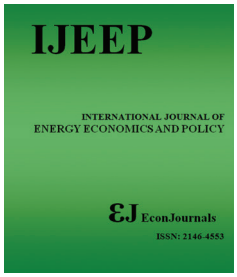

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Influence of Green Investment, Environmental Tax and Sustainable Environment: Evidence from ASEAN Countries

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ABSTRACT

Currently, sustainable environment (SE) has become a global requirement due to the uncertainty of the environmental conditions and require researchers' and policymakers' attention. Therefore, the present research examines the role of green investment and environmental taxes on the SE in ASEAN countries. The researchers have also used economic growth (EG) and population growth as the control variables. The present article has used secondary sources of data collection such as the Organization for Economic Co-operation and Development and world development indicators (WDI) and extracted secondary data from 1981 to 2020. The current research has applied the Augmented Dickey-Fuller test to examine the stationarity and applied the panel pooled mean group model to test the association between the constructs. The results revealed that green investment and environmental taxes have a negative linkage with carbon (CO_2) emission that shows a positive linkage with the SE in ASEAN countries. The results also exposed that EG and population growth have a positive linkage with CO_2 emission that shows a negative linkage with the SE in ASEAN countries. The present article has provided the guidelines to the policymakers while establishing new regulations regarding SE through green investment and environmental taxes.

Keywords: Green investment, Environmental taxes, Sustainable environment, Economic growth, Population growth
JEL Classifications: H23, F64, Q35

1. INTRODUCTION

The sustainable environment (SE) that is developed by profit or non-profit making organizations, particularly the organizations involved in industrial activities, is significantly beneficial to an economy. A SE refers to an environment that is clean, have natural resources in abundance, and with good quality, healthy living creatures whether they are in air, land, or under the water surface, and a balanced climate for humans to breathe and live in. Fairbrother et al. (2019), defines SE as the environment that has the capacity to preserve the natural resources, and living creatures that are used as the operational resources and raw material to businesses, and the ability to keep the humans healthy, which provides efficient and active human resources not only for the present use but also for future economic and social activities (Chien et al., 2021a; Nedjimi, 2021). A SE assists in giving rise to healthy and active administrators, employees, customers, and other public. When the population of a country has sound health, it is likely that the country may have success and progress at a high rate because of the fact that these are the humans who are to administer the businesses and carry out their operations. Moreover, the businesses are based on the natural elements for energy resources and raw material purposes which is possible under a SE (Baloch et al., 2021; Mehta et al., 2019; Moslehpour et al., 2021; Sadiq et al., 2021a).

However, there is a reciprocal relationship between the environment and the economy. The geographical features, natural resources, and climate influence the business organizations and the performance of their operations. On the other hand, it's also been determined that business firms, their processes, products, and services have an influence on the abundance and functioning of geography, climate, and natural resources, including living beings (Chien et al., 2021b; Othman et al., 2020; Pal and Gander,

2018). The incorporation of environmental sustainability into the economic setting is an effort to reduce the negative effects of commercial activities on the environment, natural resources, and people's health (Chien et al., 2021c; Sun et al., 2020; Sadiq et al., 2021b). This concept conveys that the green initiatives must be adopted to minimize the effects of their operations on the natural environment and make changes to their policies and strategies as needed (Buffa et al., 2018; Huang et al., 2021c; Nawaz et al., 2021). Green investment and environmental taxes are the two initiatives that bring green reformation in the economy and reduce the negative impacts of economic activities on the environment. One of the major pollutants that the economic activities release is CO_2 emissions creates a disturbance in the balanced environmental quality. Green investment is one of the dimensions of green finance, which is meant to put funds in environmentally friendly practices like energy transition, energy efficiency, reduction in transportation activities, and forestry. These activities reduce CO_2 emissions and provide a SE (Indriastuti and Chariri, 2021; Moslehpour et al., 2022b; Nawaz et al., 2021; Zhuang et al., 2021). Environmental taxes are the green incorporation in the fiscal policy of the government and the tool to control the pollution from spreading in the environment. Davidovic et al. (2020), describes those environmental taxes, which are commonly known as green taxes, are a large variety of legislative charges imposed on individuals and businesses for controlling practices that cause pollution like CO_2 emissions, which damage the environment.

The study intends to explore the role of green investment and environmental taxes along with EG and population growth in developing a SE by controlling CO_2 emissions in ASEAN countries. ASEAN's aggregate economy is one of the fastest-growing in the world. As per the statistics of 2021, the gross domestic product (GDP) in terms of purchasing par parity is $8.993 trillion, and the nominal GDP is $3.356 trillion. The EG rate increased from 4.6% in 2021 to 4.8% in 2020. The economy is based on three main sectors: agriculture, service, and industry (Mahrinasari et al., 2019; Sadiq et al., 2021c). This dominance of Malaysian and ASEAN countries has aided in the provision of low-cost, reliable energy resources to the concerned countries, as well as contributed to their socio-economic progress (Huang et al., 2021b; Mohsin et al., 2021; Nathaniel, 2021; Tan et al., 2021). Well, no doubt, it has made the energy sector of the ASEAN economy the largest emitter of greenhouse gases (GHG), especially CO_2. As a result, it contributes the most to global warming that is one of humanity's most important issues (Chien et al., 2021d; Masud et al., 2018; Xueying et al., 2021).

In the ASEAN region, energy-related GHG emissions will nearly double by 2040, hitting 2.3 billion tons, if there is no considerable de-carbonization in the energy technology fuel mix. This will exacerbate global warming and put the region's socio-economic prosperity in jeopardy (Ahmad et al., 2021; Chien et al., 2021e; Zhao et al., 2021). It comes true, especially when one considers that the ASEAN region is one of the most vulnerable to the effects of climate change in the globe. Five out of the twenty ASEAN countries are considered the most affected by climate change (Li et al., 2021a; Liu et al., 2022). Despite ASEAN's strong development rate, the industrial sector emits 1.5 billion tons of CO_2 into the air every year, making it a higher source of GHG emissions as compared to Japan (per year 1.3 billion tons) or Germany (per year 1.4 billion tons). If CO_2 emissions into the air continue to increase, they will pose a serious threat to ASEAN countries' economic progress (Chien et al., 2022; Debrah et al., 2022; Ehsanullah et al., 2021; Shair et al., 2021). Some appropriate efforts must be made to minimize CO_2 emissions and boost the quality of natural resources and a healthy labor force for economical usage in order for countries to achieve long-term growth.

The present study would be an initiative in this regard, as it examines the impacts of green investment and environmental taxes along with EG and population growth on developing a SE. For several reasons, this study is a great addition to the literature. (1) In the previously conducted literature, the change in the environmental quality is measured through the proxy, namely GHG gases. The present study takes CO_2 emissions as the proxy of environmental sustainability. (2) Mostly, the green investment and environmental taxes impacts on developing SE have been analyzed separately as the green investment is taken as the part of green finance. The current study collectively examines the green investment and environmental taxes impacts on a SE. (3) this study would be the first of its kind as it focuses on the increase of CO_2 emissions and SE in ASEAN countries.

After the introduction, the 2nd part of the paper reviews the authors' arguments on the impacts of green investment, environmental taxes, EG and population growth on a SE. In the third part, ways of collecting data and the analytical procedures are described. The results, which are based on the data analysis, are compared with and supported by other studies. Then the study is concluded in short, and study significance is revealed.

2. LITERATURE REVIEW

Increased human domestic activities, as well as the expansion of the commercial sector, have had negative or destructive effects on the environment and natural resources all over the world (Chien et al., 2021g; Han, 2021; Li et al., 2021b; Xiang et al., 2021). While the social efforts that have been done for social welfare as the changed situation are still not satisfactory. The increasing environmental contamination may reduce or deplete the future generations' natural resources completely. The major cause of the environmental deterioration is the use of energy, technology, or other resources which releases the GHG like CO_2 emissions, which trap the heat in the planet and adds to the climate change (Amankwah-Amoah, 2020; Hsu et al., 2021; Huang et al., 2021a; Moslehpour et al., 2022a). As the SE has remarkable importance to the SE, it has attained the attention of scholars. The present study explores the impacts of green investment, environmental taxes, EG and population growth on a SE. The relationship between green investment, environmental taxes, EG, population growth, and SE has long been discussed in the existing literature. The present study here examines many of the past literary articles for establishing the relationships among these factors and SE.

Chițimiea et al. (2021), state that the green investment is the fundamental tool of green finance to overcome GHG emissions

like CO_2. Green investment, also known as ecological-friendly investment, is a type of socially responsible investment in which funds are invested in businesses that promote or supply for ecologically friendly goods and activities. These businesses or activities promote emerging technologies, resources, techniques, or processes that aid in the exchange from carbon-based sources dependence toward more sustainable alternatives (Liu et al., 2021; Owen et al., 2018). Can et al. (2021), defines green investment as a structured investment activity that is designed especially to ensure a better environmental outcome out of the business policies or activities. A study conducted by Tran et al. (2020) investigates the impacts of green investment on SE and sustainable development. The study identifies the relation between green investment, SE and sustainable development in Vietnam with the help of the Exploratory Factor Analysis methodology for the analysis of the data from 208 business firms in different industries for the year 2018. The study reveals that when the firms have the policy to put funds on the adoption of environmentally-friendly infrastructure for supporting the business operations, they can overcome the release of CO_2 emissions during the performance of business activities and thus, contribute to environmental sustainability. So, green investment has a negative relation to CO_2 emissions and positive relation to a SE. The empirical research of Sun et al. (2019) highlighted that green investment encourages effective wastes management. When the harmful waste is minimized or properly disposed of, the CO_2 emission from wastes of energy or other things burnt is reduced. This develops a clean environment with quality natural resources.

Khan et al. (2020), identifies the relationship between green investment and the SE from a CO_2 emissions perspective. For the purpose of relationship identification, the authors checked investment in energy transition and innovation in technology with their impact on the SE in China from 1990 to 2017. Authors employed unit root test via generalized least square, Maki cointegration test, fully modified OLS, dynamic OLS, frequency domain causality test, and canonical cointegration regression. Authors found that the region where the financial institutions follow the policies to provide funds for the green investment, the businesses transit energy pattern from fossil fuel consumption to renewable energy adoption and the change of old technology with the ecological friendly technology. This helps reduce the reliance on the use of unclean energy like fossil fuels for business functions and minimize CO_2 emissions. Hence, a sustainable business environment is established. A research article Shen et al. (2021) investigates the role of financial development, green investment, and energy consumption in reducing CO_2 emissions for achieving the goal of a SE. Through a panel data technique, the evidence for the relationship among financial development, green investment, energy consumption and reducing CO_2 emissions for a SE were collected from China's thirty provinces for 1995-2017. For analysis, cross-sectional augmented autoregressive distributed lags (CS-ARDL) methodology was applied. The use of renewable energy resources and the technologies which uses either clean energy or need the minimum amount of energy for the same level of functioning reduces the GHG emission. So, the green investment for such energy resources and technological innovations aids to minimize CO_2 emissions and attaining a SE.

Bashir et al. (2021), analyzes the influences of environmental taxes on energy intensity, energy consumption, and SE. The panel data from the 29 Organization for Economic Co-operation and Development (OECD) economies for the time of 1994–2018. Panel quantile regression, FMOLS, and DOLS were applied for the research to determine the impacts of environmental taxes on environmental sustainability. The execution of an environmental tax is helpful to limit overall energy demand and encourages energy efficiency by motivating governments, companies, and citizens to stimulate innovation in environment-related technology. The reduced use of energy resources minimizes CO_2 emissions. Hence, the efforts to reduce CO_2 emissions by reducing energy in a SE can be achieved. Similarly, the study of Shahzad (2020) makes an assessment of the impacts of environmental taxes on energy consumption and environmental sustainability. The study states that the quality of the environment is much affected by the nature of energy. Non-renewable energy releases harmful gases like CO_2 emission, the major factor which causes climate change and affects the minerals, greenery, crops, trees, fish, and animals that provide for business use in future. The environmental taxes discourage the use of non-renewable energy CO_2 emissions and increase environmental quality, which determines a SE.

Through empirical research Chien et al. (2021f) examines the role of eco-innovation, green energy consumption, and environmental taxes in reducing air pollution like CO_2 and developing a SE. The study considers the carbon emissions as a result of eco-innovation, renewable energy, non-renewable energy, any environmental taxes and determines the achievement of a SE for the fast-emerging Asian economies for 1990–2017. The unit root test, cross-sectional dependence analysis, panel cointegration analysis, slope heterogeneity analysis, and CS-ARDL were determined. The study confirms that environmental taxes and other factors stated has a negative and significant impact on the CO_2 emissions both in the long and short run. As the environmental taxes reduce the CO_2 emissions, it aids to achieve a SE. The paper written by Štreimikienė et al. (2022) examines the environmental taxes efficiency in promoting energy, environmental, and economic security. Evidence was collected from the six European countries, Belgium, UK, France, Finland, Austria, and Denmark, for the period from 1994 to 2019. The paper finds that environmental taxes motivate individuals and firms to minimize the use of non-renewable energy through the use of renewable energy resources and ecologically friendly technologies. This secures the environment from pollution like CO_2 emissions and develops a SE.

The CO_2 emissions and environmental sustainability are linked to the EG of the country. The increase in the EG rate leads to the increase in economic activities, which requires energy resources in large amounts and fast functioning technologies. Thus, there is a significant increase in the CO_2 emissions which are released by the energy resources, and there is always a threat to the environmental quality (Gorus and Aydin, 2019). The study of Zhang et al. (2018) is an investigation about EG impacts on the SE with the measurement of CO_2 emissions. The study implies that in the country developing at a high pace, the transportations activities are greater in number. This increase is because of economic and social prosperity. The increased transportation requires large sources of energy, and the

use of non-renewable energy like the combustion of fossil fuels emits CO_2. As a result, the environment gets polluted. Mahmood et al. (2019), focuses on EG, technology use, and a SE. They say that the increase in EG allows the individuals and commercial entities to adopt different technologies in order to facilitate their work, but these technologies cause CO_2 emissions and destroy the environmental quality. Similarly, the population increase has always been a major cause of CO_2 emissions and a threat to environmental deterioration. Sulaiman and Abdul-Rahim (2018), considers the population as the natural source of CO_2 emissions and the increase in the population results in increase in the CO_2 emission.

3. METHODOLOGY

The research examines the role of green investment and environmental taxes on the SE in ASEAN countries. The present article has used secondary sources of data collection such as OECD and WDI and extracted secondary data from 1981 to 2020. The researchers have developed the following equation using understudy constructs:

$$CO2_{it} = \alpha_0 + \beta_1 GI_{it} + \beta_2 ET_{it} + \beta_3 EG_{it} + \beta_4 PG_{it} + e_{it} \quad (1)$$

Where;
CO_2 = Carbon Emission
i = Country
t = Time Period
GI = Green Investment
ET = Environmental Taxes
EG = Economic Growth
PG = Population Growth

The current article has used the SE as the dependent variable and measured the carbon dioxide damages (% of GNI). In addition, the researchers used two predictors such as green investment, which is measured as the logarithm of investment for climate and green growth and environmental taxes, which is measured as the environmental tax (% of GDP). Finally, the current article has also taken two control variables, such as population growth measured as the annual percentage change growth while EG measured as the GDP growth (annual percentage). Table 1 shows the measurements of all the variables used in the study.

The finding section of the present article shows the descriptive statistics that exposed the number of observations used, minimum values, maximum values, mean values and standard deviation of all the constructs used in the study. In addition, the finding section also shows the correlation matrix that highlights the directional association between the constructs but does not provide the significance of the association. Moreover, the results section also show the Augmented Dickey-Fuller (ADF) test for examining the stationarity because the stationarity of the constructs helps in selecting the suitable model. The equation is given below:

$$d(Y_t) = \alpha_0 + \beta t + \mathrm{Y} Y_{t-1} + d(Y_t(-1)) + \varepsilon \quad (2)$$

Moreover, the stationarity has been examined by authors individually, and the equations for individual construct are given as below:

Table 1: Variables with measurements

Variables	Measurement	Sources
Sustainable Environment	Carbon dioxide damages (% of GNI)	WDI
Green Investment	Logarithm of investment for climate and green growth	OECD
Environmental Tax	Environmental tax (% of GDP)	OECD
Economic Growth	GDP growth (annual percentage)	WDI
Population Growth	Population growth (annual percentage)	WDI

Carbon emission

$$d(CO2_t) = \alpha_0 + \beta t + \mathrm{Y} CO2_{t-1} + d(CO2_t(-1)) + \varepsilon \quad (3)$$

Green Investment

$$d(GI_t) = \alpha_0 + \beta t + \mathrm{Y} GI_{t-1} + d(GI_t(-1)) + \varepsilon \quad (4)$$

Environmental Taxes

$$d(ET_t) = \alpha_0 + \beta t + \mathrm{Y} ET_{t-1} + d(ET_t(-1)) + \varepsilon_t \quad (5)$$

EG

$$d(EG_t) = \alpha_0 + \beta t + \mathrm{Y} EG_{t-1} + d(EG_t(-1)) + \varepsilon_t \quad (6)$$

Population growth

$$d(PG_t) = \alpha_0 + \beta t + \mathrm{Y} PG_{t-1} + d(PG_t(-1)) + \varepsilon_t \quad (7)$$

The results section also show the Hausman test for the selection of suitable model between the pooled mean group (PMG) and mean group (MG) models. The rule of thumb for the test is that if the probability value is higher than 0.05, the PMG estimator is suitable and vice versa. The equation is given below:

$$H = (b_1 - b_0)(Var(b_0) - Var(b_1))(b_1 - b_0) \quad (8)$$

The current research has applied the panel PMG ARDL model to test the association between the constructs. The ARDL model is considered the best model when constructs are integrated at "1(0) or 1(1) but not 1(2)". The PMG panel ARDL has the ability to generate short and long-run associations among constructs. The PMG panel ARDL model is given as under:

$$\Delta CO2_{it} = \alpha_0 + \sum \delta_1 \Delta CO2_{it-1} + \sum \delta_2 \Delta GI + \sum \delta_3 \Delta ET_{it-1} + \sum \delta_4 \Delta EG_{it-1} + \sum \delta_5 \Delta PG_{it-1} + \varphi_1 CO2_{it-1} + \varphi_2 GI_{it-1} + \varphi_3 ET_{it-1} + \varphi_4 EG_{it-1} + \varphi_5 PG_{it-1} + \varepsilon_{it} \quad (9)$$

In equation (9), "δ_1, δ_2, δ_3, δ_4, and δ_5" shows the "short term" coefficients; while, "ϕ_1, $_2$, ϕ_3, ϕ_4, ϕ_5, and ε_1" shows the "long term" coefficients.

4. RESEARCH FINDINGS

The findings section of the present article shows the descriptive statistics that exposed the number of observations used, minimum values, maximum values, mean values and standard deviation of all the constructs used in the study. The figures indicated that 400 (10 countries x 40 Years) observations were used. The average value of CO_2 emission was 3.882 per cent, while the mean value of GI was 5.910 per cent and ET mean value was 3.819. In addition, the mean value of EG was 4.392 per cent, and population growth has an average value of 1.312 per cent. These figures are mentioned in Table 2.

In addition, the finding section also shows the correlation matrix that highlights the directional association between the constructs but does not provide the significance of the association. The results indicated that GI and ET have a negative linkage with CO_2 emission but a positive nexus with environmental sustainability. In contrast, the results also indicated that PG and EG have a positive linkage with CO_2 emission but a negative nexus with environmental sustainability. The results highlighted that if there is one per cent change in GI, the CO_2 emission will also change by 0.92% in the opposite direction. In addition, the results also highlighted that if one per cent changes in ET, the CO_2 emission will also change by 0.39% in the opposite direction. However, the results highlighted that if 1% changes in EG, the CO_2 emission will also change by 019% in the same direction. Finally, the results highlighted that if there is one per cent change in PG, the CO_2 emission will also change by 0.28 per cent in the same direction. Table 3 shows these figures given below:

Moreover, the results section also show the ADF test for examining the stationarity because the stationarity of the constructs helps in selecting the suitable model. The findings indicated that GI and EG are stationary at level, but CO_2 emission, ET and PG are stationary at first difference. Thus, the ARDL model is appropriate. Table 4 shows these findings given below:

The results section also show the Hausman test for the selection of suitable model between the PMG and MG models. The results exposed that the probability value is larger than 0.05 that exposed PMG estimator is suitable in the study. Table 5 highlights these findings given below:

The panel PMG ARDL model results revealed that green investment and environmental taxes have a negative linkage with carbon (CO_2) emission because the negative signs are linked with the beta values, which means a positive linkage with the SE in ASEAN countries in the short and long run. In contrast, the results also exposed that EG and population growth have a positive linkage with CO_2 emission because the positive signs are linked with the beta values, which means a negative linkage with the SE in ASEAN countries in the short and long run. These associations are shown in Table 6 given below:

5. DISCUSSIONS AND IMPLICATIONS

The results stated that green investment has a negative relation to CO_2 emissions, which is a barrier to a SE. The results agree with Wang et al. (2020), which show that the investment in green initiatives like the exchange of energy into clean resources through energy-efficient technologies and processes, on the part

Table 2: Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Max
CO_2	400	3.882	2.291	0.538	15.922
GI	400	5.910	2.991	2.001	13.921
ET	400	3.819	1.029	0.981	9.001
EG	400	4.392	2.101	-4.531	12.231
PG	400	1.312	0.301	0.231	4.221

GI: Green investment, ET: Environmental taxes, EG: Economic growth, PG: Population growth

Table 3: Matrix of correlations

	CO_2	GI	ET	EG	PG
CO_2	1.00				
GI	–0.92	1.00			
ET	–0.39	–0.42	1.000		
EG	0.19	0.52	–0.13	1.000	
PG	0.28	–0.29	0.11	0.32	1.000

GI: Green investment, ET: Environmental taxes, EG: Economic growth, PG: Population growth

Table 4: Unit root test

Augmented Dickey-Fuller Test (ADF)	Level	t-statistics	*P*-values
CO_2	I (1)	–6.820	0.000
GI	I (0)	–2.713	0.043
ET	I (1)	–6.476	0.000
EG	I (0)	–2.548	0.048
PG	I (1)	–5.867	0.000

GI: Green investment, ET: Environmental taxes, EG: Economic growth, PG: Population growth

Table 5: Hausman Test

	Coef.
Chi-square test value	0.920
P-value	0.211

Table 6: Panel ARDL (PMG)

D. CO_2	Beta	S.D.	z	P>z	L.L.	U.L.
Short-run relationships						
GI	–0.325	0.114	–2.851	0.034	–0.123	–0.042
ET	–0.324	0.118	–2.746	0.039	–0.658	–0.320
EG	0.524	0.216	2.426	0.047	1.206	3.701
PG	1.629	0.432	3.771	0.012	1.303	3.920
ECT	0.127	0.021	6.048	0.000	0.037	0.157
Long-run relationships						
GI						
D1.	–0.372	0.172	–2.163	0.044	–2.224	–1.022
ET						
D1.	–0.431	0.199	–2.166	0.043	–2.376	–1.078
EG						
D1.	0.632	0.224	2.821	0.033	0.034	1.058
PG						
D1.	0.473	0.192	2.464	0.040	0.796	1.236
_cons	–0.322	0.059	–5.458	0.000	–2.545	–0.256

GI: Green investment, ET: Environmental taxes, EG: Economic growth, PG: Population growth, ARDL: Autoregressive distributed lags

of the business management, enables the firms to control the CO_2 emission one of the GHG. The reduction of CO_2 emissions minimizes climate change which could affect the natural resources of the environment. The green investment through the reduction of CO_2 emission develops environmental sustainability. These results match with Zahan and Chuanmin (2021), which highlights that many business organizations set aside some profits to invest in ecological friendly practices such as environmental monitoring, waste management, renewable energy, and ecologically friendly technologies. These green initiatives are effective to reduce CO_2 emissions, and thus, the quality of the environment along with its elements can be sustained.

The results stated that environmental taxes has a negative relation to CO_2 emissions, which is a barrier to a SE. The results agree with Hao et al. (2021), which show that the areas where the taxes are imposed on the individuals or organizations for their activities which could cause the release of pollutants, the amount of CO_2 emissions into the air is minimum, and there is no significant negative change in environmental elements. These results also agree with Tao et al. (2021), which examines the environmental taxes on the SE. Since the environmental taxes, which are imposed on the businesses when they indulge in damaging environmental activities against the environmental legislation, increase the total costs for the firms. This threat to the profits motivates the firms to restrain from the activities which cause CO_2 emissions and destroy the environment. So, the increase in environmental taxes ensures a SE.

The results stated that EG has a positive relation to CO_2 emissions, which restricts the SE. These results are in line with Wasti and Zaidi (2020), which show that in case the country has high EG, there is an increase in the use of energy for transportation, technologies, infrastructure, and prediction processes. The increased use of energy releases harmful gases and increases the amount of CO_2 in the air. This creates disorder in the environment. The results stated that EG has a positive relation to CO_2 emissions, which restricts the SE. These results match with Mohsin et al. (2019), which takes the population growth as the contributor to CO_2 emissions and a barrier in the way to gain sustainability. The study implies that the major cause of environmental pollution is the use of energy which releases GHG like CO_2. When the population increases, the use of energy in the country increases and the release of CO_2 damages the environment and its resources. Thus, the increase in population growth makes it difficult to attain a SE. These results agree with (Dong et al., [2018]), which highlights that the population, while increasing becomes harmful for the environment and destroys its sustainability as the increased population causes CO_2 emissions.

The present study has much theoretical significance on account of its contribution to green literature. The present study explores the impacts of green investment and environmental taxes along with EG and pollution growth on a SE. Green investment relation to SE al or similar terms like environmental protection or clean environment etc. has long been analyzed by past studies as an indicator of green finance. The study, which presents the green investment with environmental taxes for controlling environmental pollution and establishing a SE, is a great contribution to the literature. The article has many empirical implications. It is a guideline for the government, environmental regulators, investors, and businesses in making policies to develop a SE which is a source to sustain EG, social well-being, and people prosperity. Government must focus on the implementation of environmental taxes while making fiscal policies in order to control the CO_2 and develop a SE. The environmental regulators must monitor the environmental quality and the investment for ecological friendly practices to achieve the goal of environmental sustainability. The present article has provided the guidelines to the policymakers while establishing new regulations regarding SE through green investment and environmental taxes. The businesses which want to sustain their performance must focus on environmental sustainability through green investment and compliance with environmental regulations.

6. CONCLUSIONS AND LIMITATIONS

The study was conducted to examine the influences of green investment and environmental taxes on a SE. The study was also to examine the impacts of EG and population growth on a SE. For the analysis of environmental sustainability, the authors examine the influences of green investment and environmental taxes along with EG and population growth on CO_2 in the context of ASEAN countries. The results indicated a negative relation between green investment and environmental with CO_2 emissions, which restricts the achievement of a SE. The incorporation of green investment motivates businesses to encourage green actions so that CO_2 emissions can be reduced and a healthy, SE can be achieved. The execution of the policy for environmental taxes in the country proves to be a check on the practices which causes CO_2 emissions. Thus, the environment can be sustainable. The results indicated a positive relationship between EG and population growth with CO_2 emissions. In a country where the population and EG are fast increasing, the use of energy resources is high that is the major cause of CO_2 emission and reduces environmental sustainability.

Some limitations are linked to the current study. These limitations require some additions for the study so that reliability can be improved. The study examines the impacts of only two factors like green investment and environmental taxes along with EG and population growth on a SE. There are many other factors like green securities, green credit, green HR etc., which all have great significance to reducing the CO_2 emission, one of the strongest pollutants which are threatening to environmental sustainability, but these factors are missing in this research. Future scholars must pay attention to these factors as well for a true analysis of a SE. Similarly, here only one proxy of environmental pollution, which is CO_2, is used. All the other pollutants or environmental concerns have been ignored here. Thus, the scope of the study is limited, and there is a need for more research on environmental sustainability, which covers all the possible pollutants.

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