State and Entrepreneurship on the Road to Green Growth in a Post Lignite Era: Friends or Foes?

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Abstract

Green governance is an emerging field, attracting increasing attention from scholars, and governments have been using a range of policy tools to support the transition to green economy, including regulation; financial incentives; voluntary agreements; fiscal measures; public sector procurement; targeting to the deployment of clean energy technologies. Greece has little experience in developing comprehensive long-term energy and climate strategies; thus, it is imperative that governance and analytical underpinning of long-term energy and climate planning be improved, and investment needs and innovative financing instruments for clean energy technologies analysed. To investigate the critical issue of state and entrepreneurship synergies in the framework of the green economy, the present survey employed a web-based questionnaire distributed to 417 small and medium sized enterprises in Western Macedonia from September to December 2021. Data analysis involved an exploratory factor and logistic regression analysis, creating a statistical model with three independent factors describing basic tools of the green economy. The results showed that, in Greece, state environmental governance is often perceived as inadequate, scarce, or constrained by considerations of economic growth. In addition, the research indicates that government policies with regards to environmental law implementation are mainly restricted to the "command and control" regulatory model, which fails to address green innovation and entrepreneurship and promote synergies between the private sector and the State. The analyses demonstrate that if government revenues are heavily reliant on taxes and fines, their capacity to finance structural adjustment programs can be severely affected, and alternative approaches are necessary to achieve the green growth.

1. Introduction

Climate change and environmental degradation are an existential threat to the European Countries, which forces governments to ensure efficient and responsive governance to manage the green transition, as part of the European Union's policy. The European Commission (2022) highlights that public support for climate and environmental action has

increased, and action is now a major concern for all citizens. In addition, environmental degradation has become a 'common concern' for European states over the past few decades and the necessity of turning to a green economy has become obvious, thus, emphasizing the import of creating synergies between the State and Entrepreneurship on the road to Green Growth and investigating whether a common path is followed or there are obstacles that need to be removed (Lesnikowski et al., 2019). This is a particularly significant issue as small- and medium-sized enterprises form the backbone of most economies, offering large-scale employment and highly contributing to GDP growth (Popescu, 2021). In Greece, particularly in Western Macedonia, the specific relationship is crucial to the forced transition to a post-lignite era, as lignite combustion is not claimed to be an environmentally or economically sustainable activity (Mousouroulis, 2021). It is, thus, imperative that the state support enterprises which promote sustainable development.

Considering that the processes towards a new emerging reality in Western Macedonia are vital to be explored, and the present study, based on the international relevant literature, examines the determining factors, which, according to local entrepreneurs, have an impact on a smooth transition towards green growth and analyses the findings of a quantitative research on a sample of businessmen trading in the Region of Western Macedonia. The specific research region was chosen for several reasons. First, the Greek government decided to phase out all lignite plants of the country by 2028 by implementing the Just Transition Development Plan (JTDP), a comprehensive multi-dimensional development roadmap for the Region of Western Macedonia. Second, as Western Macedonia has been the energy hub in Greece, it contributes to the national GDP with a percentage ranging from 2.0 to 2.5% of the total national income (Farmaki et al., 2021). Finally, water pollution from mining activities has had a detrimental effect on rivers, agriculture, drinking water, ecosystems and industrial activity, and, consequently, to the climate change of the River Basin District of Western Macedonia (Ojeaga & Posu, 2017). The specific reasons obviously enhance the assumptions that the research findings are relevant with the tested hypotheses.

Climate change has been a most crucial global problem for the last decade, forcing the European Union to sign the Green Agreement (European Commission, 2019) and take environmental and economic measures, mainly aiming at reducing CO_2 emissions. The dramatic increase of greenhouse gases (GHGs), mostly carbon dioxide (CO_2), produced by a variety of fossil fuel-related human activities, has led to the greenhouse effect (IPCC) (Kumar & Verma, 2021). According to Pearce-Higgins et al. (2022), the effects of climate change will further increase and have a detrimental effect on biodiversity and natural ecosystems. The literature on the specific negative effects of the climate change has set the requirements for state policy makers, in the context of sustainable development, to take action for the protection of the environment rather than maximise profits and enhance unrestrained over-consumption (Scheffers et al., 2016). Climate change adaptation policies aiming at protecting biodiversity and habitats and remodelling sustainability for all living beings on the globe, including human beings (Chausson et al., 2020), is a key target to policy making of all states.

Governments and organisations at multiple levels have been using various policy tools and instruments to respond to the impacts of the climate change, most of which are based on the "command and control" strategy and include economic incentives, information availability and capacity building (Berkhout, 2012). The principles of transparency, partnership and "shared responsibility" are probably the most suitable tools to address relevant problems regarding older policy tools, due to lack of transparency and inclusivity

(Clar & Steurer, 2018;) in governance structures and organisations as regards their interactions and interventions in the environmental sector (Mubaya & Mafongoya, 2017).

2. Methodology

Data were collected through a survey, which was carried out in Greece, in particular, in the Region of Western Macedonia. Data collection was based on an online questionnaire delivered via email and the social media during the period of September –October 2022. Convenience sampling was applied. ***Table 1*** below shows the profile of respondents.

Table 1. Sampling

Information	No. of respondents	Percent (%)
Business Size:		
1-3 employees	207	49.6
4-10 employees	121	29.0
11-15 employees	35	8.4
16-20 employees	13	3.1
more than 20 employees	41	9.8
Length of Business Operations:		
1-5 years	66	15.8
6-10 years	94	22.5
11-15 years	83	19.9
16-20 years	60	14.4
more than 20 years	114	27.3
Business Headquarters:		
Kozani	143	34.3
Ptolemaida	116	27.8
Florina	59	14.1
Grevena	64	15.3
Kastoria	35	8.4
Business sector:		
Primary	58	13.9
Secondary	131	31.4
Tertiary	228	54.7

The questionnaire as a measurement instrument was based on information drawn from the extant literature. In detail, the items of the questionnaire (***Table 2***) are based on previous research. It is worth mentioning that a 5-point Likert scale was applied to all questions. Regarding the dependent variable, a dichotomous variable, "Users/Non-Users", is applied, classifying businesses in terms of whether they apply green entrepreneurship (i.e., adopters vs. non-adopters). Finally, four questionnaire items were added to the measurement instrument to collect information on the profile of the business.

Table 2. Measurement items

Variables	Measurement Items
V1	Do you invest in green business
V2	Does your business offer green jobs
V3	Have you obtained ISO 14001 (it encourages organisations/ businesses to prevent environmental impacts of operation, by committing to controlling pollution, complying with the relevant legislation, and always making improvements)

Variables	Measurement Items
V4	Are you familiar with quality labels such as the Eco-Management and Audit Scheme (EMAS) label
V5	Does your company fully comply with the environmental legislation
V6	Do you think that environmental taxes are potential threats to business operation
V7	Do you think that penalties or lawsuits against companies that violate environmental legislation are effective
V8	Do you think that state incentives are satisfactory to encourage application of energy minimisation know-how technologies and use of other resources in your business facilities
V9	Does the state endorse business extroversion by encouraging export activities and creating business initiatives in the Balkan and neighbouring countries via environmentally motivated programmes

The following hypotheses have been tested:

H1: Impact of the "Green business profile" Factor (F1) on green business applications

H2: Impact of the "Legislation – tax policy - penalties" Factor (F2) on green business applications

H3: Impact of the "State environmental management incentives" Factor (F3) on green business applications

To investigate the proposed research hypotheses, a two-staged data analysis was carried out. First, an exploratory factor analysis was applied by employing Principal Component Analysis (PCA) and orthogonal rotation (VARIMAX), as well as Composite Reliability (CR) and Cronbach's alpha analysis to test data validity and reliability and develop the latent factors. In addition, a logistic regression analysis was employed to test the determinants, which were relevant to the research hypotheses.

As far as it considers reliability and validity analyses, the corpus of data was analyzed in terms of reliability, as well as convergent and discriminant validity between the latent constructs. In detail, to examine variable validity, and group measurement items into latent factors as well as calculate factor loadings, the research employed factor analysis via PCA and VARIMAX. To examine data appropriateness of the factor analysis, various measures were also applied. More specifically, Bartlett's tests of sphericity (Chi-square=1321.291, $p<0.001$) verified that the correlation matrices were significantly correlated among variables. Kaiser-Meyer-Olkin (KMO) (0.798) measures and sampling adequacy (MSA) ranged from 0.702 to 0.863, which implies that both values were acceptable and demonstrated the appropriateness of factor analysis. Notably, all MSA values were higher than 0.50. Hair et al. (2014) suggest that convergent validity is achieved when items load strongly on their correlated factors, i.e., they are higher than 0.50, whereas discriminant validity, when each item loads more strongly on its correlated factor than on any other factor. All factor loading indicators ranged from 0.684 to 0.878 (***Table 3***), exceeding the 0.5 threshold (Fornell & Larcker, 1981; Hair et al., 2014). They also load more strongly on their correlated factors than on other factors. Overall, the analysis demonstrated that convergent and discriminant validity were satisfactory. In addition, the assessment of the three (3) latent factors can explain 69.855% of the measurement item variance (Table 3). Finally, Cronbach's alpha test, which was applied to test item reliability, proved that the results, ranging from 0.767 to 0.794 (Table 3), exceeded the 0.7 threshold (Hair et al., 2014), whereas composite reliability (CR), ranging from 0.819 to 0.864, also exceeded 0.6 (Bagozzi & Yi, 1988).

Table 3. Factor loadings, convergent validity, and reliability

Construct	Item	Loading	Mean	SD	CR	Cronbach's α
F1: Green business profile	V1	.758	2.691	1.224	.819	.767
	V2	.750	1.882	1.104		
	V3	.684	2.408	1.443		
	V4	.723	2.173	1.451		
F2: Legislation - Tax policy - Penalties	V5	.778	3.530	1.021	.857	.795
	V6	.863	3.827	1.091		
	V7	.806	3.276	1.228		
F3: State environmental management incentives	V8	.867	2.041	1.043	.864	.794
	V9	.878	1.911	1.063		
						Total Variance Explained=69.855

3. Results

Logistic regression analysis was employed to test the hypotheses (H1-H3) of the proposed conceptual framework. The results of the logistic regression analysis are shown in *Table 4*. The dependent variable is a nominal variable measuring green business applications, whereas the predictors are the following variables: F1: Green business profile; F2: Legislation- tax policy -penalties; F3: State environmental management incentives.

The analysis demonstrated that logistic regression fits well to the data, with indicators Chi-square=176.163 with df=3, p-value<0.001 and R-Square of Cox & Snell and Nagelkerke, 0.345 and 0.465, respectively. Variables F1 (b=0.609, p<0.001, Exp(B)=1.838) and F2 (b=1.531, p<0.001, Exp(B)=4.624) are statistically significant. The specific variables also displayed high coefficients, thus, implying they are key predictors. Overall, hypotheses H1 and H2 were confirmed, whereas H3 was rejected.

Table 4. Logistic regression analysis

Independent variables	B	SE of B	Wald´s χ^2	df	p	Exp(B) Odds ratio
F1: Green business profile	.609	.148	16.837	1	.000	1.838
F2: Legislation - tax policy - penalties	1.531	.185	68.336	1	.000	4.624
F3: State environmental management	.066	.143	0.211	1	.646	1.068
Constant	7.538	.753	100.29	1	.000	.001
Statistical test (Overall model evaluation)			χ^2	df	p	
Score test			176.163	3	.000	
R Square		Cox & Snell		Nagelkerke		
		.345		.465		

Our research shows that the use of green entrepreneurship can be structured - justified on the basis of three key factors, such as the elements of "Green entrepreneurship" of the factor "Legislation - taxes - penalties" and the factor "Government environmental incentives", among others.

The above factors explain 70% of the variability of the dependent variable "Use of green entrepreneurship". The factors "green entrepreneurship data" and the factor "Legislation - taxes - penalties" were found as statistically important factors with a positive effect on the use of green entrepreneurship (b = 0.609, 1.531 respectively). The "Legislation - taxes - penalties" is taken "higher" by companies in relation to the first factor (f1) (Exp (B) = 4.624,

1.838 respectively). The Impact of the Factor "Government incentives for environmental management are statistically insignificant, it seems, at this stage, the government mechanism has not managed to turn businesses into green entrepreneurship in Western Macedonia.

4. Conclusion

From our research we note that, in Greece, state environmental governance is often perceived as inadequate, scarce, or constrained by considerations of economic growth. While Governance appears to be the most important factor for ensuring effective environmental management, we suggest caution given to environmental law implementation. In addition, the research indicates that government policies with regards to environmental law implementation are mainly restricted to the "command and control" regulatory model, which fails to address Green innovation and entrepreneurship, and promote synergies between the private sector and the State. According to EU environmental policy the public and private institutions should play a key role in facilitating adaptation, which appears a major problem in Greek environmental policy as the role, and function of different government level, agencies and organizations aren't coordinated and communicated to stakeholders. The analyses demonstrate and alternative approaches are necessary to achieve the Green growth. A full review article would be required to synthesize the Impact of the "Legislation – tax policy - penalties" on green business applications in the post lignite area of Western Macedonia. However, two major trends can be outlined. The first consists that if government revenues are heavily reliant on taxes and fines, their capacity to finance structural adjustment programs can be severely affected. The second shows that green entrepreneurship positively contributes to the economic, social, and environmental components of sustainable development.

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