

The impact of natural capital protection on economic growth: An empirical evidence-case of Algeria during the period 1990-2021

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Abstract: The main objective of this paper is to quantify the impact of natural capital protection indicators on Algeria's economic growth. The analysis is entirely quantitative after a complete database was obtained covering a time horizon of 32 years during the period 1990-2021. Data were processed using multiple linear regression analysis.

The study's findings within the parameters of data analysis suggested that there is an impact of natural capital protection on Algeria's economic growth.

Keywords: Natural Capital Protection, Economic Growth, Green Growth, Sustainable Development.

Jel Classification Codes : Q56, O40, O13, Q01.

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Introduction:

Several studies show that nearly every nation in the world overuses its natural resources. for instance, deforestation of vast areas without replanting, reduces future forest revenues and destroys carbon sinks and vital natural ecosystems. these actions cause huge losses to the economic system. natural capital protection term seems to highlight how crucial it is for the world economy to safeguard natural resources and manage them sustainably. most of the pressures placed on natural capital in the world are rooted in the social and economic systems of production and consumption that provide us with material well-being.

The debate over the relationship between natural capital protection and economic growth is not new; The idea that environmental and climate factors may have a major impact on economic performance has been discussed extensively, not to mention the potential benefits that protecting natural capital can provide in terms of enhancing both social and economic ecosystems. To the extent that environmental factors play a role in economic outcomes, obtaining better knowledge and comprehension of the causal effects of changes in natural conditions on economic output is essential to better designing contemporary economic policies and institutions. Considering how widely known the effects of economic activity on the environment are, this is becoming more and more significant.

This article addresses the protection of natural capital and its impact on economic growth. It analyzes the reality of natural capital protection indicators (Share of forest area to total land area, PM2.5 air pollution-mean annual population-weighted exposure, DALY (disability-adjusted life years) rate due to unsafe water sources, Ratio of CO2 emissions to population), measuring the impact of these indicators on economic growth, represented by Algeria's real gross domestic product. to explore the potential impact of natural capital on economic growth in Algeria, we can raise the following problem:

What is the impact of protecting natural capital on economic growth in Algeria?

I- The theoretical framework of the study:

Countries economic activity fundamentally depends on the natural resources of the planet. but today, the deregulation of the climate, biodiversity loss, and growing environmental pressures have all contributed to the depletion of natural capital, which is one of the most important types of capital (natural, financial, human, social, and physical), it supplies the necessities for human existence. It includes ecosystem services (like providing and regulating services, cultural services, etc) as well as the resources-biotic or abiotic-used in production processes (Acosta, Maharjan, Peyriere, & Jill Mamiit , 2020).

Considering the recent violations of the environment that we have seen, which are just some of the dire consequences of our current consumption and production pattern, there has been a surge in interest in the term "natural capital protection" (L'équipe Manutan, 2023). Environmental consciousness grew in the 1960s and 1970s due to growing concerns about pollution and deforestation. This led to the formation of many international agreements and institutions to protect natural resources and promote the Sustainable Development Goals (SDGs), the achievement of several which depend on increasing natural capital stock (Markandya, 2020), which were adopted in 2015, to promote sustainable practices and protect natural resources by 2030. However, the most important event of all was the publication of Rachel Carson's book "Silent Spring" in 1962, which highlighted the detrimental effects of pesticides on the environment and raised public awareness about the need to protect our ecosystems.

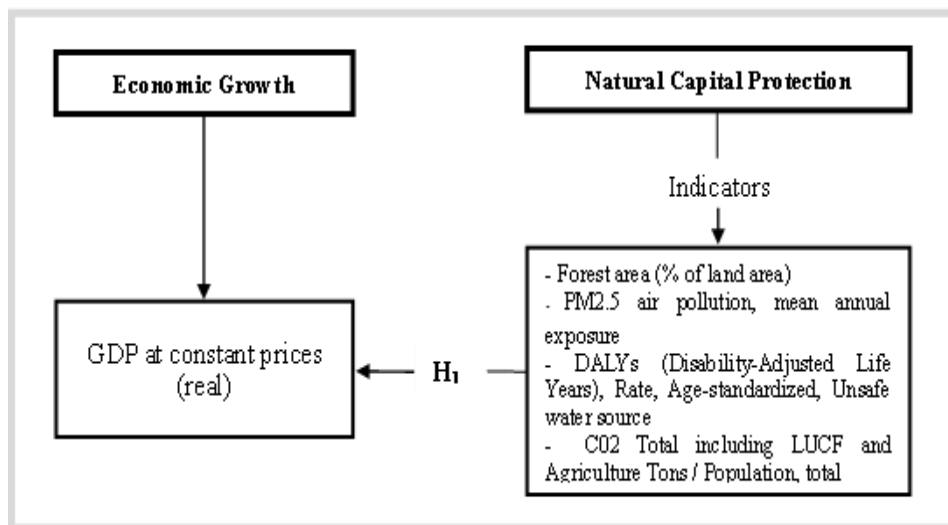
In general, the natural capital concept is central to the field of true cost economics, which seeks to calculate the full social and environmental costs of economic activity. By valuing ecosystem services, true cost economics provides a framework for decision-making that takes into account the long-term sustainability of natural systems. Natural capital is a term that refers to the stock of natural resources, including air, water, soil, and living organisms. In other words, it is the estimated value of all-natural resources that society uses or exploits to produce goods and ecosystem services. These

services include providing food and water, regulating climate and diseases, and preserving biodiversity (Faster Capital , 2023).

In particular, the preservation of natural capital is crucial. It is important for economic growth because societies depend on biodiversity and the ecosystem for their products and services (Acosta, Maharjan, Peyriere, & Jill Mamiit , 2020). the Global Green Growth Institute has positioned the protection of natural capital as a key composite dimension of green economic growth (GGGI, 2020). Researchers have identified Numerous paths through which natural capital affects economic growth. In other words, their relationship is intricate. natural capital is viewed as a source of economic growth Because it provides raw materials and ecosystem services for production (L'équipe Manutan, 2023). also, economic growth can have negative consequences for natural capital (overexploitation of natural resources; destruction of natural habitats; generated pollution; loss of biodiversity...etc).

Based on the above, we formulate the following hypothesis:
protecting natural capital affects the development of economic growth in Algeria Figure N° (1) shows the theoretical model of the study.

Figure (1): The theoretical model of the study



Source: Prepared by researchers.

II– Methodological framework:

The study's sample and instruments are explained in this article part, which also includes the reality of Algeria's natural capital protection, data management procedures, the nature of measuring variables, detailing the statistical techniques used in analyzing the data and presenting the initial theoretical equations for the multiple regression analysis statistical technique.

II.1. Study population and sample

In this study, we relied on natural capital protection indicators data in Algeria from the Global Green Growth Institute (GGGI) data. As for economic growth data, expressed as the gross domestic product (GDP) at constant prices in Algeria, we relied on World Bank (WB) Open Data. For the period extending from 1990 to 2021, this data includes 32 observations distributed over 32 years.

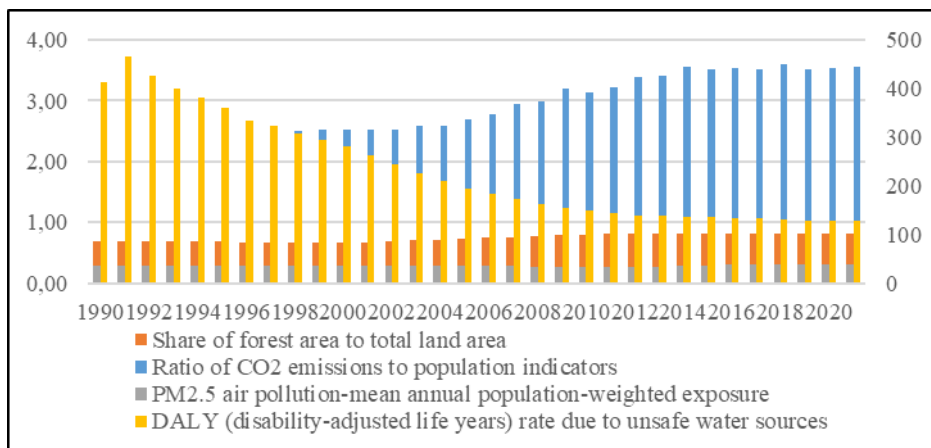
II.2. The reality of Algeria's natural capital protection

David W. Peirce was the first economist to use the term "natural capital" to refer to natural resources and services (Missemer, 2018). The importance of natural capital emerged when it was considered a key component of economic growth, through the intensive extraction of natural resources and its contribution to economic development (Dai, et al., 2024). To analyze the reality of natural capital in Algeria, we relied on four indicators (Share of forest area to total land area, PM2.5 air pollution-mean annual population-weighted exposure, DALY (disability-adjusted life years) rate due to unsafe water sources, Ratio of CO2 emissions to population).

According to Figure N° (2), Algeria had fixed and generally steady forest areas between 1990 and 2002, which is estimated to have accounted for 0.69% of the country's total area. But beginning in 2003, there was a relatively discernible rise in the percentage of forest area, reaching The forest area is 0.82% of the total area in 2021, despite not giving importance to investments in the forest field, Additionally, there have been massive forest fires, about 2,992 fires in

2017 and 797 fires in 2018, which devoured 56,696 hectares in just two years (National Office of Statistics, 2021)

Figure (2): Indicators of Algeria's natural capital protection



Source: Prepared by researchers.

Regarding the indicator of air annual mean pollution exposure, Figure N° (2) shows that it peaked at roughly 37 micrograms per cubic meter between 1990 and 2001, after which it steadily declined to 34 in 2010 as a result of the imposition of taxes and fees on air pollution by the industrial source from in compliance with Article No. 205 of the Finance Law of 2002. Air pollution in Algeria then witnessed a rapid rise until it reached the highest value in decades, which was 40 micrograms per cubic meter in 2016, despite the existence of an environmental tax in Algeria, it was not sufficient to cover environmental damage, in addition to the government's provision of fossil fuel subsidies, which contributed to the air pollution crisis.

The DALYs indicator, which is a measure of the overall burden of disease and is represented as the number of years of life lost owing to illness, disability, or early death, is related to contaminated water sources. World Health Organization developed it (World Health Organization, 2019). Consequently, years of life lost as a result of early deaths and years of life lost as a result of time spent in states of less than full health are combined to create the DALYs indicator, a time-based metric (World Health Organization, 2019). As for Algeria,

from Figure N° (2), it appears to us that there is a continuous decrease in the average life year of disability due to unsafe water sources, starting in 1991 at a rate of 466, until 2021, when it reached about 128. This decrease is attributed to the tireless efforts made by the Algerian government to provide safe water.

As we can also see from Figure N° (2), there was a notable rise in carbon emissions in Algeria between 2000 and 2015, with a level of 2.5 tons per capita and 3.6 tons per capita, respectively, according to the indicator of Ratio of CO₂ emissions to population. This increase is attributed to double manufacturing operations and a boost in GDP. Algeria is one of the countries that consumes the most energy, as the contribution of fossil fuels to electricity generation exceeds 95%, and the oil and gas sector represents about 20% of the gross domestic product and 85% of the country's total exports (Sustainable Development Solutions Network, 2022).

II.3. Data management

Following an analysis of data on indicators received through the World Bank Data (WB) and the Global Green Growth Institute (GGGI). The effect of natural capital protection on GDP growth (gross domestic product at constant prices) demonstrates that the data we have covers the years 1990–2021, and none of the variables have missing or unavailable values. As a result, there is enough information in the data to do statistical analysis. Therefore, over a period of thirty-two (32) years, we examined 32 observations. The statistical analysis of this sample will likewise be carried out using Stata, version (16).

II.4. Measuring variables

This model incorporates the possible relationship between the evolution of GDP at constant prices and natural capital protection indices. Five (05) variables are included in total, divided into two dimensions: economic growth (one dependent variable) and protection of natural capital (four independent variables). In actuality, Table N° (1) illustrates how these variables will be measured using a quantitative scale. also includes the variables that measure each

dimension, in addition to the name, source, and coding of the variables used to measure these dimensions.

a. Dependent variable

In this model, we will use the evolution of GDP in constant prices (in 2010 US dollars) to represent economic growth. These basic data are taken from World Bank Data - WB, through the World Development Indicators (WDI) database, during the period extending from 1990 to 2021.

b. Independent variables

We will make use of the following variables: Share of forest area to total land area, PM2.5 air pollution-mean annual population-weighted exposure, DALY (disability-adjusted life years) rate due to unsafe water sources, Ratio of CO2 emissions to population indicators. based on The Global Green Growth Institute (GGGI) database to collect these statistics between 1990 and 2021. An overview of the metrics used to measure the independent and dependent variables is provided in Table N° (1).

Table (1): Summary of measures and sources of indicators

Dimensions	Indicators	Symbol	Data Source	Measure
Economic Growth	Real gross domestic product (at constant prices in 2010 US dollars)	RGDP	World Development Indicators (WDI) and World Bank (WB) database	Quantitative (Digital 10 ⁹ US dollars)
	Share of forest area to total land area	FA	Global Green Growth Institute (GGGI) database	Quantitative (Percent %)
Natural Capital Protection	PM2.5 air pollution-mean annual population-weighted	APMAE		Quantitative (Digital)

exposure		
DALY (disability-adjusted life years) rate due to unsafe water sources	RDALYUWS	Quantitative (Digital)
Ratio of CO2 emissions to population indicators	RCO2EP	Quantitative (Percent %)

Source: Prepared by researchers.

II.5. Statistical techniques used in data analysis

In the context of analyzing the study data, we will rely on the inferential statistics method, by using the multiple regression analysis technique. We can find the independent variables (natural capital protection indicators) that affect the dependent variable (GDP) in Algeria by using this method during the period under study. As for the applicable significance level, the significance level (5%) will be relied upon. In addition, we will rely on the descriptive method through the use of frequency distribution, to diagnose the reality of protection natural capital indicators in Algeria.

II.6. Elementary theoretical equations

we have formulated preliminary theoretical equations through which the values of the dependent variable (economic growth) can be estimated based on the coefficients of the non-standard independent variables. We will verify the equations during data analysis and this allows us to identify the independent variables that explain the dependent variable as well as refute the independent variables that do not explain the Dependent variable. It should be noted that the theoretical model is classified as a multivariate model. Our dependent variable includes one indicator, and the independent variable includes 4 indicators. Therefore, a preliminary mathematical equation will be formulated that includes the potential relationship between indicators of natural capital protection and the development of GDP at constant

prices. Therefore, we can define it in the form of a regression equation as follows:

$$RGDP = \beta_0 + \beta_1 FA + \beta_2 APMAE + \beta_3 RDALYUWS + \beta_4 RCO2EP + \varepsilon$$

Due to the large discrepancy between the values of the variables of the second model, the logarithmic formula will be used to reduce the gap between large and small values.

So, we can define the study model in the form of a regression equation as follows:

$$\log RGDP = \beta_0 + \beta_1 \log FA + \beta_2 \log APMAE + \beta_3 \log RDALYUWS + \beta_4 \log RCO2EP + \varepsilon$$

The equation can be written more simply:

$$LRGDP = \beta_0 + \beta_1 LFA + \beta_2 LAPMAE + \beta_3 LRDALYUWS + \beta_4 LRCO2EP + \varepsilon$$

The above formula helps us in analyzing the data by relying on the non-standard parameters of the independent variables. It also helps us determine which independent variables explain the dependent variable and which variables do not.

III- Results and discussion :

The results of the statistical analysis of the data include the following: descriptive analysis of variables, correlation analysis by correlation matrix, and semantic statistical analysis by multiple regression analysis.

III.1. Descriptive statistics

Although the main method of analyzing data is statistical analysis using multiple regression to test hypotheses, descriptive statistical analysis is useful as it will allow us to know the statistical aspects of the series under study. which gives a more accurate picture of knowing the shape of the model variables distribution. Table N° (2) describes the descriptive statistics for the variables of the second model, which contains the minimum, maximum, average, and standard deviation values for each indicator and the number of

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observations for each variable, in addition to the Skewness and Kurtosis measures.

Table (2): Presentation of some descriptive statistics

Indicators	Obs	Min.	Max.	Mean	Deviation	Skewness	Kurtosis
RGDP	32	7.85e+10	1.77e+11	1.24e+11	3.54e+10	0.11	1.53
FA	32	0.66	0.82	0.74	0.06	0.04	1.23
APMAE	32	33.63	39.85	36.51	1.64	0.03	2.41
RDALYUWS	32	127.63	465.69	232.03	107.03	0.71	2.13
RCO2EP	32	2.49	3.59	2.94	0.44	0.35	1.36

Source: Prepared by researchers. based on the outputs of Stata. Version (16.0).

We may get a better idea of the distribution shape that these variables (indicators) take by looking at Table N° (2) above, which displays a set of descriptive statistics for the variables of the second model during the period spanning from 1990 to 2021. So we note that the variable of the development of GDP at constant prices in US dollars for the year 2010 (RGDP) includes 32 observations, and its lowest value is estimated at 7.85 billion dollars, and the highest value is 177 billion dollars, which is a very large difference that reveals the extent of the development taking place in GDP at constant prices during the study period. the average is estimated at \$12.4 billion over 32 years, with a standard deviation estimated at \$3.54 billion, which is an acceptable number that highlights the extent of the dispersion of values around the average, which indicates the extent to which the values of GDP at constant prices diverge from the average. According to Table N° (2), the skewness coefficient (symmetry) estimated at 0.11 shows that it is close to zero (0), which represents the value of the skewness coefficient in the normal distribution, meaning that the data is symmetrical. As for the kurtosis coefficient, it is estimated at 1.53, which is an acceptable kurtosis compared to the number (3), which is considered the kurtosis coefficient of a normal distribution, which

shows that the distribution of the dependent variable is moderately flattened.

We also note, from Table N° (2), that the number of observations is equal to 32 for the remaining independent variables: Share of forest area (% of land area) (FA); air pollution-mean annual exposure (APMAE); DALY rate due to unsafe water sources (RDALYUWS); Ratio of CO2 emissions to population (RCO2EP), where the standard deviation for each of them is estimated respectively: (0.06, (1.64, (107.03), and (0.44) so that they are considered acceptable numbers that highlight the extent of the dispersion of the values around the mean. Table N° (2) also shows that the skewness coefficients for each variable are estimated at (0.04), (0.03), (0.71), and 0.35), respectively, and all of them are close to zero (0), which represents the value of the skewness coefficient in the normal distribution, meaning that the data are symmetrical. As for the flatness coefficients, they are estimated at (1.23), (2.41), (2.13), and (1.36) respectively. These are coefficient values that are not far off compared to the number (3), which is considered the flatness coefficient of the normal distribution, This shows that the distribution of the variables used for the second model: Share of forest area (% of land area) (FA); air pollution-mean annual exposure (APMAE); DALY rate due to unsafe water sources (RDALYUWS); Ratio of CO2 emissions to population (RCO2EP), its flatness is close to the mean.

There is no doubt that these descriptive statistics give us a general and preliminary overview of the extent of heterogeneity in the measures of the variables of the statistical model of the regression, and accordingly, the logarithmic formula will be used in estimating the statistical model.

III.2. Correlation matrix analysis

Table N° (3) below shows the partial correlation coefficients between the independent variables of the statistical model: the variable FA; the APMAE variable; the variable RDALYUWS; And the variable RCO2EP, indicates the presence of the problem of multicollinearity, so that the value of the partial correlation coefficient between the variable of the RDALYUWS; The variable RCO2EP is estimated at -82%, which is a larger factor than the generally

permissible limit of 80% when resorting to the Pearson binary correlation. Which results in a false regression relationship that leads us to an incorrect analysis.

Table (3): Correlation matrix for model variables

Indicators	FA	APMAE	RDALYUWS	RCO2EP
FA	1.0000			
APMAE	- 0.05	1.0000		
RDALYUWS	- 0.85	0.07	1.0000	
RCO2EP	0.97	0.11	- 0.82	1.0000

Source: Prepared by researchers. based on the outputs of Stata. Version (16.0).

We also note from the same table N° (3) above, that the value of the partial correlation coefficient between the variable RDALYUWS and the variable RCO2EP, together, respectively, with the variable FA, is estimated at -85% and -97%, which are very high coefficients compared to the generally permissible limit estimated 80% when using Pearson's binary correlation. This indicates the presence of a linear relationship, which results in a false regression relationship that leads us to an incorrect analysis, and therefore the variable RDALYUWS, RCO2EP will be cancelled (dropped), when estimating the multiple regression equation for the statistical model.

III.3. Multiple linear regression analysis

To test the hypothesis of the study, we used multiple linear regression analysis, through this statistical technique, we can identify variables that have a positive impact on economic growth (GDP at constant prices). Table N° (4) includes the use of logarithmic regression to calculate the explanatory power of the statistical model. So the Ordinary Least Squares (OLS) method will be used in estimation. Through this technique, we can determine the effect of the independent variables (percentage of forest area (% of land area) (LFA), and average annual exposure to air pollution (LAPMAE)) that affect the dependent variable (evolution of GDP at constant prices), to express Economic Growth (LRGDP). The model also contains 32

observations, distributed over thirty-two (32) years, during the period extending from 1990 to 2021.

Table (4): Summary of regression analysis and regression analysis of variance

Regression analysis summary			Regression variance analysis		
Correlation r	Coefficient of Determination R^2	Adjusted Coefficient of Determination $\overline{R^2}$	Degree of freedom df	F Calculated	Significance Level Sig
0.9551	0.9124	0.9063	(2, 29)	151.00	0.0000

Model: (constant value), forest area (% of land area) (FA), average annual air pollution exposure (APMAE).

Source: Prepared by researchers. based on the outputs of Stata. Version (16.0).

Table N° (4) expresses the moral importance and explanatory power of the second regression model. So we notice that the relationship between the independent variables and the dependent variable is positive and strong, and equals (0.9551) as shown by the correlation coefficient (r) of the model. As for the explanatory power of the model or the percentage of variance, as shown by the coefficient of determination R^2 , which is equal to (91.24%), this percentage is very close to the corrected coefficient of determination $\overline{R^2}$, which is equal to (90.63%). Accordingly, the variables included in the model explain a percentage of (91.24%). of the change (variance) occurring in the dependent variable, which is a strong and acceptable percentage. We also note that the “Fisher” statistical value for the model is equal to ($F = 151.00$), and this difference represents a highly significant variance such that “ $F(2, 29) = 151.00$, Sig $F = 0.0000 < 0.05$.” Therefore, we conclude that the regression model is highly significant, as the set of independent variables reliably estimates the dependent variable, the sample used is homogeneous, and the variance of the data distributed over thirty-two (32) years has no effect on the consistency of the data.

Table N° (5) also shows the results of the regression analysis. From these results, we can determine the importance of the independent variables based on the Student statistic. The beta value

can explain the effect of significant variables on the dependent variable.

Table (5): The result of the regression analysis of the statistical model

Model	“Beta” standard coefficients	Std. Err	“t” test	P> t
Constant	23.43887	1.29115	18.15	0.000
LFA	3.40021	0.19592	17.36	0.000
LAPMAE	0.85366	0.35996	2.37	0.025

Source: Prepared by researchers. based on the outputs of Stata. Version (16.0).

Through the significance of the parameters of the variables. We can point out that both independent variables are statistically significant at the level: $\alpha = 0.05$. The results of the multiple logit regression model are shown in Table N° (5) above:

The coefficient of the variable (LFA), which is equal to (3.40021), which represents the partial elasticity coefficient for the variable percentage of forest area (% of land area), shows a significant difference from zero (0) using the significance level of 0.05 because the value of the error level is equal to (0.000), which is smaller. of 0.05, which means that the proportion of forest area (% of land area) (LFA) positively affects the development of GDP at constant prices (LRGDP), and the strength of this effect is estimated at 3.40021 units. That is, whenever the proportion of forest area (% of land area) changes by one unit, the GDP at constant prices will increase by (3.40021) units.

The coefficient of the variable (LAPMAE), which is equal to (0.85366), which represents the partial elasticity coefficient of the variable average annual exposure to air pollution, also differs significantly from zero (0) using the significance level of 0.05 because the value of the error level is equal to (0.025), which is smaller than 0.05. This means that the average annual exposure to air pollution (LAPMAE) positively affects the development of GDP at constant prices (LRGDP), and the strength of this effect is estimated at 0.85366 units. That is, whenever the average annual exposure to air pollution

changes by one unit, the GDP at constant prices will increase by (0.85366) units.

III.4. Discuss the results

Based on the results of the logit multiple regression analysis of the statistical model, we will analyze the variables at the 5% confidence level (Share of forest area (% of land area) (LFA) and air pollution-mean annual exposure (LAPMAE)). On the dependent variable economic growth (gross domestic product at constant prices (LRGDP)), indicating the direction of the effect (negative or positive) as shown in Table N° (6). In this section, we will also present the empirical regression model that is presented in the following empirical equation:

$$LRGDP = 23.43887 + 3.40021 LFA + 0.85366 LAPMAE + \varepsilon$$

Table (6): The impact of indicators of the natural capital protection dimension on GDP at constant prices

hypothesis	Indicators	P> t	Decision	Direction of relationship	Test result of the hypothesis
H1	LFA	0.000	Significant	+	Supported
	LAPMAE	0.025	Significant	+	

Source: Prepared by researchers. based on the outputs of Stata. Version (16.0).

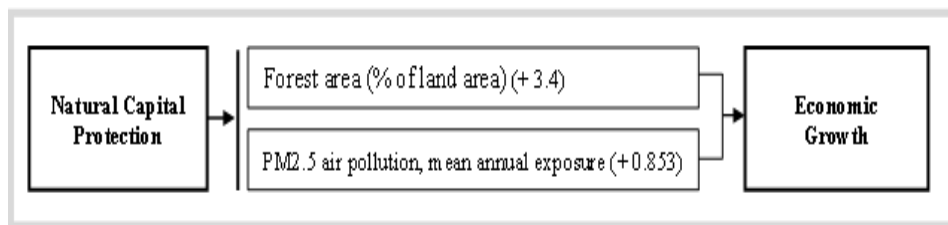
Based on Table N° (6), which shows the impact of indicators of the natural capital protection dimension on the development of gross domestic product at constant prices (LRGDP), and in response to the significance threshold indicated by the level of hypothesis testing with the probability of error (P>|t|) we explained the statistically significant and non-significant variables. Which variables are influencing and influencing, and we will explain the reasons for this in detail below:

The results of the study indicated that there is a direct (positive) statistically significant relationship between Share of forest area (% of land area) (LFA) and the gross domestic product at constant prices (LRGDP), and the strength of this effect is estimated at 3.40021 units.

That is, whenever Share of forest area (% of land area) changes by one unit, the GDP at constant prices will increase by (3.40021) units, that is, as expected. The results of the study also showed that there is a direct (positive) statistically significant relationship between air pollution-mean annual exposure (LAPMAE) and the development of the gross domestic product at constant prices (LRGDP), and the strength of this effect is estimated at 0.85366 units.

That is, whenever the average annual exposure to air pollution changes by one unit, the gross domestic product at constant prices will increase by (0.85366) units, which reflects the success of the policies adopted by the Algerian state in protecting forest areas and ensuring their increase, giving importance to afforestation initiatives, and spreading awareness. Among society circles the importance of afforestation and preserving forest areas. In addition to giving importance to reducing gas pollution, by imposing various environmental taxes. Which reflected positively on the development of the real gross domestic product in Algeria. Accordingly, the hypothesis that “protecting natural capital affects the development of economic growth in Algeria” was verified according to the results of the study. Figure N° (3) shows the experimental model of the study.

Figure (3): Empirical model of the study



Source: Prepared by researchers.

Conclusion:

The study relied on a complete database covering a time horizon of 32 years during the period extending from 1990-2021. We conducted several statistical tests on the data to extract the study's determinants. We also used the multiple linear regression technique on

economic growth, expressed as the development of the real gross domestic product. The results of the study also showed that there is a direct (positive) relationship to both of percentage of forest area (% of land area); and Average annual exposure to air pollution with GDP. This demonstrates the need of safeguarding forest areas, making sure they grow, prioritizing afforestation projects, and raising public awareness. In addition to keen to contribute to combating gas pollution, which will reflect positively on the development of economic growth in Algeria.

Referrals and references:

- Acosta, L., Maharjan, P., Peyriere, H., & Jill Mamiit , R. (2020). Natural capital protection indicators: Measuring performance in achieving the Sustainable Development Goals for green growth transition. *Environmental and Sustainability Indicators* ELSEVIER, 08(100069).
- Dai, Y., Ding, Y., Fu, S., Zhang, L., Cheng, J., & Zhu, D. (2024). Analyzing the impact of natural capital on socio- economic objectives under the framework of sustainable development goals. *Environmental Impact Assessment Review*, 104. doi:10.1016/j.eiar.2023.107322
- Missemer, A. (2018). Natural Capital as an Economic Concept, History and Contemporary Issues. *Ecological Economics*(143), 90-96. doi:10.1016/j.ecolecon.2017.07.011
- Faster Capital . (2023, December 07). Natural Capital: Valuing Ecosystem Services in True Cost Economics. Récupéré sur Faster Capital : <https://fastercapital.com/content/Natural-Capital--Valuing-Ecosystem-Services-in-True-Cost-Economics.html#Introduction-to-Natural-Capital-and-True-Cost-Economics>.
- GGGI. (2020). Green Growth Index 2020 Measuring Performance In Achieving Sdg Targets. Korea: Global Green Growth Institute .
- Markandya, A. (2020). Natural Capital and the Sustainable Development Goal. Geneva: Green Growth Knowledge Partnership.
- National Office of Statistics. (2021). Algeria in numbers results 2016-2018.
- Sustainable Development Solutions Network. (2022). 2022 Arab Region SDG Index and Dashboard Report. United Nations.
- L'équipe Manutan. (2023, May 16). What is natural capital and why companies need to take interest in it? Récupéré sur Manutan: <https://www.manutan.com/blog/en/news/what-is-natural-capital-and-why-companies-need-to-take-interest-in-it>
- World Health Organization. (2019). Disability-adjusted life years (DALYs). Récupéré sur <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158>

- World Health Organization. (2019). Global health estimates: Leading causes of DALYs. Récupéré sur <https://www.who.int/data/gho/data/themes/mortality-and-global-health-estimates/global-health-estimates-leading-causes-of-dalys>