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Original Paper

Does Adopting Environmental Tax Contribute to Achieving Sustainable Development in Lebanon? A Survey of Academics and LCPAs

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Abstract

For a long time, Lebanon has suffered from pollution, and its successive governments have tried to solve it since. The regulations set to deal with pollution are neither enough nor effective, since, after the economic crisis, the fines that were set have no significant value nowadays. Thus, there is need for a stricter and more intense procedures than the fines. Therefore, environmental taxes are an urgent need to limit damages to the environment. This is what had the researchers think about the main theme of the study at hand that is summarized in the question: Does adopting environmental tax contribute to achieving sustainable development in Lebanon? The researchers used the quantitative approach, constructed a questionnaire based on the five-point Likert-style and distributed it to a sample of university professors and Lebanese Certified Public Accountants (LCPAs). The sample comprised 200 academics and 250 LCPAs since they are engaged in taxation practices and distributed the questionnaire among them, 180 academics and 220 LCPAs responded and all were valid for testing and analysis. The study rendered some essential findings, most importantly that the sample agrees that adopting environmental tax contributes to achieving sustainable development in Lebanon. In addition, the results exposed that there are many hindrances facing adopting environmental tax in Lebanon. Moreover, there was no statistically significant difference among the responses of the sample members in that adopting tax on pollution contributes to achieving sustainable development due to the job title. However, there was a statistically significant difference among the responses of the sample in that LCPAs perceive the hindrances to adopting environmental tax in Lebanon to be greater compared to University Professors.

Keywords

sustainable development, environmental pollution, environmental tax, environmental protection

1. Introduction

Environmental pollution has been one of the most important problems facing human beings since the twentieth century, as they allowed themselves to exploit the Earth's resources and deplete its them to the point of harming the Earth and its resources (United Nations Environment Programme, 2021a). Thus, life is now threatened by many diseases and dangers due to the harmful activities to the environment. Pollution has attracted a lot attention since the early fifties of the twentieth century because of the scientific and technological progress that the world has witnessed (United Nations, 2021) especially in the industrial field, despite the advantages it has achieved in the interest of human progress and well-being. However, the majority of these advantages now threaten human health, safety, and future (IPCC, 2022).

Recently, the issue of environmental protection has become a very critical issue and is plainly available on the top of the priorities' lists at the local, regional and global level. Nevertheless, international cooperation is more urgently required in light of the effectiveness of the joint international effort in preserving the environment (World Health Organization, 2021). Therefore, interest in protecting and improving the environment and preserving natural resources increased worldwide. Conferences were held and agreements concluded at the global, regional and national levels to be aware of the seriousness of the issue in all its aspects—economic, social and health. An important gathering to discuss the issue was the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, which recommended to take all necessary measures to safeguard the environment from pollution (United Nations, 1992). Environmental tax was then suggested as a means of confronting environmental pollution and reducing it in an economical manner (Fan et al., 2019). One of the most important justifications on which the imposition of environmental taxes was practically based is that it is a measure aimed at having a protected the environment along with the natural resources of the Earth, in addition to protecting living beings, including humans who had the most contribution to the problem in the first place (European Environment Agency, EEA, 2022).

Since the issue is relative to natural resources and ways to preserve them, the relation between sustainable development and environment emerged plainly. Environmentalists and economists have been working on finding the most suitable ways to use natural resources with minimal harm done to the environment, each on their own accord (Chu & Karr, 2017). This relation first emerged in the eighties of the previous century, but it was at the beginning of the twenty-first century that the term "environmental sustainability" had appeared during the World Summit on Sustainable Development that took place in Johannesburg, South Africa from August 26th till September 4th of, 2002 (Bergquist, 2017). The European Union was among the first who collectively adopted sustainable development to protect the environment in the Treaty of Amsterdam (Eurostat, 2017).

What adds to the complication of pollution is its global spreading since the air and water are the same all over the globe as they are linked together. Manufacturers largely contribute to the environmental damage while the costs are burdens on the consumers, as the latter pay for hospitalization and medication, which

manufacturers should have born as they are the main cause of pollution; therefore, there is a negative relationship between development and environment since the more development increases, the more environmental issues increase (Ekins & Zenghelis, 2021). This means that the more environmental issues increase, the more costs the consumers will bear.

This issue became louder between economists and conservatives. The conservatives see that the presence of a government that has resources and can use it to protect the environment while the market would fail to allocate resources efficiently. Because the sole interest of the private sector is profit, and because of externalities, the environment would definitely get contaminated (Mostafavi et al., 2022). The economists, on the other hand, see that the market may encounter some deformations externalities but these can be corrected using proper fiscal and monetary policies; thus, there is no possible way to prevent pollution 100 percent as development increases (Beer et al., 2023). With the increase of expenditure on environmental protection, there would be a point where this expenditure would be more than its yielded benefits. Therefore, it would be better to reach an optimal level of pollution to maintain sustainable development. In Lebanon, the market economy prevails since the private sector has most of the essential aspects of the Lebanese economy under its control (World Bank, 2022a). Also, the environmental crisis in Lebanon is not new, but is rooted in all aspects of Lebanese life for decades.

There is no doubt that the rampant corruption in the country has made the environment a hostage to wrong political decisions and encroachment on the public interest in order to achieve the private interest, such as deals with electricity plants and landfills, the spread of illegal quarries, the failure of projects to build dams, the issue of neglected reservations, suspicious forest fires, and sectarian quotas in hiring guards for them (Ghsoub, 2018). According to the Lebanese Ministry of Environment (2022), Lebanon suffers from a high rate of air pollution by about 50%, and about 941 random landfills are spread in the regions, 8 of which are on the beach and dozens are burned in the open air. Furthermore, forest fires have led to the loss of about 7,000 hectares of its green area in 2020, in addition to the pollution of river waters, especially the Litani River, and its overlap with sewage water, which mainly affects citizens' health, multiplies serious diseases, and increases the death rate in a tragic way. It is worth mentioning that the cost of damage caused by environmental pollution in Lebanon has approached two billion dollars, which requires the development of an integrated strategy in line with the goals of sustainable development that promote economic and social growth and take into account global environmental systems (World Bank, 2022a).

According to the Lebanese Ministry of Environment, in collaboration with the German "Hans Seidel" Foundation, the very high level of pollution in urban air (and indoor air) causes many fatal diseases to one in every 9 people (National News Agency, NNA, 2023). The Ministry asserts that the health cost of air pollution is $900 million annually, due to emissions from generators not using safe standards. In 2022, Greenpeace released a study which documented the seriousness of air pollution in some Lebanese regions, which frequently exceeded the daily level determined by the standards of the World Health Organization.

Before the economic crisis, Lebanon faced severe environmental challenges, and according to the World Bank (2022b), "The annual cost of environmental degradation in 2018 was about 4.4 percent of GDP—equivalent to about $2.39 billion." Since then, the situation has worsened as the country has witnessed a sharp deterioration in pollution levels and further depletion of natural resources.

Facing this severe environmental situation, the Lebanese parliament issued a regulation in 2002 under the number 444, to protect the environment and penalize those who harm it. However, it was not effective until 2017, the date it was published in the Lebanese Official Journal. It is worth mentioning that the penalties mentioned in the regulation are not efficient nowadays since the last economic and financial crisis in Lebanon affected negatively the amounts mentioned. For example, the fines for breaking this environmental regulation were equal to, in USD, between $10,000 and $133,333.4 at the time of endorsing the law. Now, these numbers decreased to roughly between $136.4 and $1818.9 due to the severe devaluation of the national currency.

Consequently, the researchers decided to study a mandatory and effective approach suitable for the damage and pollution rate, based on the principle that was first discussed and approved in Rio de Janeiro in 1992 (the polluter pays). Thus, the current research investigates whether or not adopting environmental taxes helps in achieving sustainable development, and it is the first of its kind in Lebanon as far as the researchers know.

1.2 Literature Review

The first economic studies on environmental taxes go back to the year 1920, when the British economist Arthur Cecil Pigou published his renowned book "The Economics of Welfare", in which he discussed the external effect of production or consumption (Edenhofer et al., 2021). Pigou takes the coal fragments that sometimes fly out of steam locomotives and cause forests or fields adjacent to the railway to burn. Pigou believes that a tax on the damages resulting from these fragments fined to the railway company may cause the development of equipment against these flying fragments and help reduce the negative consequences. Thus, the principle 'who pollutes pays' was later established (European Court of Auditors, 2021).

In light of this, tax incentives were also utilized to protect the environment in the modern era, as the environmental tax was first applied in the United States of America in 1967 under 'Expenditure Tax'. It aims at a partial or total exemption from the payment of ecological fees if the polluting facilities comply with the measures related to pollution control (Klemm, 2009).

In December 1997, during the Kyoto meeting on the environment in Japan, the European Union defended the idea of protecting the environment by imposing environmental fees and taxes in order to protect the environment and combat global warming. At that meeting, the United States of America opposed to the demands of reducing the target amount of greenhouse gases, and the American proposal was eventually accepted (European Court of Auditors, 2021). However, European countries sought to make the Eco Tax the best contemporary means to protect the environment. This led the Eco Tax to become the best method to protect the environment both nationally and internationally (United Nations Environment Programme,

2021b). Almost all European countries in the European Union have adopted this proposition, in addition to many Arab countries and have issued environmental tax laws in their homelands (Norregaard & Hill, 2000). The Arab countries include Egypt, Algeria, Tunisia, Morocco, the Gulf states, and Syria.

As early as 1920, Arthur Pigou discussed that environmental taxes must be equal to the damage done and should be levied on the source of the pollution. This should induce an effective level of reduction in pollutants. Environmental tax has attracted a lot of attention to a large number of scientific researches. In a study, Bekmez & Nakıpoglu (2012) demonstrated that the aim of environmental taxes is minimizing the economical activities that directly or indirectly pollute the environment. They further discuss principles of preventing harm on the environment and encourage the use of environmentally friendly methods of production and/or consumption.

Kwilinski et al., (2019) discuss that pollution taxes constitute a constructive environmental policy tool that can control pollution. According to sustainability, environmental tax can help companies perform technological innovation. Adopting environmental taxes is necessary to obstruct pollution which production and consumption activities cause, in order for future generations to find a healthy environment and to protect the environment which is considered a public property (UNHR, 2014).

As a result of continuous emergence of environmental problems related to various industrial activities, and since environment and development are associated with mutual dependence and harmony, it is difficult to continue developing on the basis of the deteriorating environmental resources (Wassie, 2020). In addition, the environment cannot be protected if development overlooked costs of environmental harm. Moreover, it is essential for different enterprises to be aware of and recognize their responsibilities towards their environment (Hohnen, 2007). It is also pivotal to take some issues into consideration, among which is the role of the accounting profession in measuring and disclosing environmental costs which help determine the amount of the tax relative to the polluting actions, which may help resolve environmental problems. This can be achieved through environmental (green) accounting which is today at a vital level after the International Bank had called for the importance of integrating environmental accounting in the national income, which measures the economic activity of the whole society, considering that there should be some spending to stop, or at least reduce wastes resulting from industrial activities (Boruah, 2021).

In a study, Tijiani (2014) asserts that there are many reasons why organizations have not fully adopted environmental accounting in certain countries. The study asserts that there is not enough awareness of environmental issues by the employees, a minimal of environment-related information and high costs of adaptation of environmental accounting. Tijiani also emphasizes that all the above hinder adoption of environmental accounting. Moreover, the strategies related to environmental accounting are not clear as to issues environmental costs, recognition and measurement of such costs. Some various studies about this topic were previously conducted, one of which is Kercher's study (2006). In this study, the researcher points out that both consumers and investors demonstrate an increasing interest in supporting liable business practices and demand more information on methods that companies utilize to tackle issues

related to environmental taxes. Another study by Dorweiler and Yakhou (2004) argued that environmental accounting is an addition which measures and tackles environmental performance in addition to integrating environmental policies in the business. The strategy of an enterprise entails responding to operating and capital costs of environmental control equipment. This comes as a result of the elevating public concerns over issues related to the environment.

A study by Mohaisen et al. (2019) confirms that the community and other related parties showed an increasing interest in financial and non-financial information related to environmental performance so that an objective evaluation of the environmental responsibility be put forth since it affects investment decisions. This conclusion came after winning so many law-suits that were filed against environmentally harmful organizations that pollute their surrounding areas.

A study by Susanto and Meiryani (2019) shows that the environmental accounting information system (EAIS) has a positive and significant effect on organization and environmental performance. The study also shows that the organization's response to environmental requirements is important not only for the environment but also for the organization itself as it helps the organization build its corporate image which augments not only its reputation but also managers' recognition of the environmental needs. Their study also asserts that the soundness of accounting information is important not only for owners, sellers, managers, and workers but also for the investors and funders as well. In addition, the accounting information helps in the decision-making process in an organization.

Bose (2006) asserts that because resources like oil and gas are non-renewable natural assets and the environmental the sector's influence is considerable, measurement and reporting of such resources and their environmental effects are substantial to guarantee sustainability. With the rising apprehension for sustainability, the demand for environmental accounting has started. Environmental accounting has a vital role in providing the data on the environment that is needed by diverse users, most importantly, decision-makers. After surveying some oil companies, Bicer and El-Darewi (2019) found that there exist environmental awareness and organizations' strategies towards environmental matters. The study also demonstrated that there were impediments that limit applying environmental cost measurement and disclosure.

Egbunike and Eze (2017) confirm a number of challenges facing the adoption of environmental accounting including shortage of environmental information, lack of environmental awareness on the workers' behalf, high running costs, unsuitable infrastructure to adopt environmental accounting, shareholders' challenge, high adaptation costs, and others. Contrary to that, Shukla and Nidhi (2013) acknowledge that environmental accounting was embraced in most nations, both developing and developed. In most developing countries, the adoption of environmental accounting is still at a young stage. Many studies have been conducted worldwide, whose results showed the efficiency of environmental tax in combating pollution and achieving sustainable development (Liu & Liu, 2022; Chawla et al., 2022 & Congjuan et al., 2022).

1.3 Regarding the Literature Gaps

The above-mentioned literature states that environmental tax is a vital method of eco protection; additionally, it can be realized that it is an essential issue for the world in order to achieve sustainable development and green economic growth recovery. Second, governments' environmental policies (environmental taxation) are affected by the volume of pollution differently. Moreover, the literature discussed the importance of the accounting profession that can measure and disclose the environmental costs. This facilitates determining the amount of tax that corresponds to the polluting action. This paper attempts to analyze whether or not adopting environmental taxes helps achieve sustainable development in Lebanon from the perspective of Certified Public Accountants (CPAs) and University Professors in Lebanon. Based on the knowledge of the researchers, such a study has never been done, so this paper will fill in this literature gap.

2. Conceptual Framework

Environmental (Green) taxes are on the agenda of many governments in developing nations, for two reasons, revenues and meeting countries' obligations on climate change and sustainable development (United Nations, Oct. 2021). The Organization for Economic Co-operation and Development (OECD, 2023) has defined the environmental taxes as a compulsory, non-refundable payment to the government. These taxes are imposed on polluters who cause environmental damage through their economic activities resulting from their polluted or polluting products, and their use of environmentally harmful production techniques. The rate of these taxes is determined on the basis of estimating the amount and degree of severity of environmentally damaging emissions. This tax is named after the economist Pigou.

2.1 Types of Environmental Taxes

OECD (2005) categorized environmental tax as: energy tax, transportation tax, pollution tax, and resources tax.

1) Energy Taxes: These include taxes on energy products that are used for transportation and stationary purposes together. The most significant energy products used for transport are petrol and diesel. As for the energy products for stationary use, they consist of natural gas, fossil fuel oils, coal and electricity. Taxes imposed on emissions of carbon dioxide are considered under energy taxes rather than pollution taxes.
2) Transportation Taxes: These largely comprise taxes associated to owning and using motor cars. Taxes on different transportation devices, such as an airplane, and other transport services associated with it, like the duty on passengers on scheduled air trips are also counted in only if they conform to a definition for environmental taxes. Transportation taxes may be 'one-off' taxes, or frequent taxes just like the yearly road tax. Taxes on diesel oil and other fuels used for transportation can be included under energy taxes rather than transportation taxes.

3) Pollution taxes: These comprise taxes on estimated or measured emissions into the air or water, managing noise and solid waste. It is worth mentioning that CO_2 taxes go under energy taxes discussed above.
4) Resource taxes: These are imposed on the organizations that exploit natural resources commercially such as water, minerals (oil and gas are not included) and forestry. Nevertheless, it is not obvious till present if extracting natural resources is destructive, although there is a wide consensus that it may result in environmental issues like pollution and erosion.

2.2 Advantages of Environmental Taxes

Imposing environmental taxes aim mainly at protecting humans by providing suitable environmental conditions free from all manifestations of pollution (OECD, 2011). Pollution taxes have many advantages that make them among the most important environmental policy tools. These include:

- Integrating the environmental services and damage costs right into the prices of goods and services or the activities that lead to them. It additionally helps apply the principle of paying the polluter and integrating economic, financial and environmental policies.
- Creating motivations for both industrialists and customers to keep away from environmentally damaging behavior.
- Creating incentives of innovation for producers. When energy, water, raw materials, in addition to solid, liquid and gaseous waste are taxable, taxpayers would create new methods for production, transportation, housing, using energy and public consumption to reduce the amount of the taxes they pay.
- Creating a new race for production, transportation, energy use and public consumption in order to minimize the sum of taxes they pay.
- Raising revenues that can be used to develop the environment and achieve economic well-being.
- Imposing taxes by governments to raise revenue for the public benefit, or to depress consumption of substances environmentally harmful or leading to lasting societal costs.
- Distinguishing environmental tax from other procedures that are more efficient and less costly in the field of pollution control.
- Reallocating resources and directing them from industries that pollute the environment to new usages or new areas where the resulting damages from pollution are lesser.
- Finding means to maintain the swift growth of society to achieve sustainable development that guarantees the sustainability of resources for generations to come.

2.3 Challenges Facing Adoption of Environmental Taxes

As for developing countries, adoption of ecological (environmental) taxes was delayed due to many factors, the most important of which include (OECD, 2011):

1) The delay in the formation of local environmental administrative bodies that work to follow up the application of laws that are legislated, especially those related to environmental taxes on facilities that pollute the environment.

2) Factors related to the delay of public economic institutions to work in the environmental field, as many of these institutions have started their work for many years and only about half of them are equipped with anti-pollution systems, in addition to the absence of a plan to renew these systems or follow up the malfunctions they are exposed to or the rehabilitation of these institutions. Therefore, this leads these institutions to let most of the flows of the industrial units go directly to nature without any reduction of the extent of their pollution of nature.
3) There are difficulties related to determining the tax rate that is proportionate to what can lead to achieving the optimum level of pollution by determining the external cost of the causes of pollution, which varies by nature from one production unit to another according to the type and size of the pollution it is causing. Thus, the difficulty lies in the possibility of limiting this cost and finding the adequate basis to measure it.
4) Decreased tax awareness, which is a characteristic that developing countries are often known for. Since the fact that environmental tax rates rise in order to become effective, give their required result, and create an incentive for those charged with their performance to evade tax in illegal ways, including an attempt to get rid of the causes of pollution and waste, which may lead to increasing damage and pollution, and thus, increasing the volume of environmental hazards.
5) Economic problems resulting from the attempt of those charged with environmental tax, and in particular industrial enterprises, to charge their products the cost of the environmental tax, especially in the most polluting industries, such as cement and petrochemical industries. This leads to the increase of the production costs, which may negatively affect exporting the products internationally because of their high prices.
6) The lack of clear accounting standards about disclosure and measurement of environmental costs hinders implementation of environmental taxes.
7) The industrial enterprises avoid disclosure of the environmental information believing that disclosure might lead their competitors to benefit from it. Also, the expected financial benefits from the disclosure of environmental costs are less than the cost of making it.

2.4 Contribution of Environmental Taxes to Sustainable Development

The massive industrial revolution accompanied by huge technological advances resulted in various areas in achieving economic development, which leads to achieving development in the various aspects of life. Perhaps this was mainly based on exploiting available resources in various forms, especially natural resources. Environmental taxation is the most important economic tool as relative to its deterrent and motivational nature that contribute to achieving sustainable development by focusing on its environmental dimension as follows (Khoruzhy et al., 2022):

- By imposing environmental taxes, ecological and rational use of available resources can be promoted, in addition to using environment-friendly technologies to achieve sustainable development.

- Promoting the national sustainable development by improving living conditions and working to ensure a healthy life framework and inhibited from all forms of pollution and damage to the environment based on imposing environmental taxes that corresponds with the extent of environmental damage.
- Increasing revenues from taxes that are used for environmental expenditure, whether by increasing the level of the tax on the pollutant or by reducing it to encourage replacement, renewal and innovation. This leads to enhancing productivity and competitiveness among the diverse economic units.

3. Research Problem and Hypotheses

Lebanon suffers from a high rate of air pollution by about 50%, and about 940 random landfills are spread in the regions, 8 of which are on the beach and dozens are burned in the open air. Moreover, the forest fires led to the loss of about 7,000 hectares of its green area in 2020, in addition to the pollution of river waters, especially the Litani River, and its overlap with sewage water, which mainly affects citizens' health, multiplies cancerous diseases, and tragically increases death rate (United Nations Framework Convention on Climate Change, UNFCCC, 2021). The cost of damage caused by environmental pollution in Lebanon is close to two billion dollars, which requires developing an integrated strategy that conform with the goals of sustainable development that promote economic and social growth and take into account global environmental systems. All this had the researchers consider methods or approaches that may be useful in tackling the issue. Therefore, they pondered on the following questions:

1) Does adopting environmental tax contribute to achieving sustainable development in Lebanon?
2) Are there hindrances to adopting environmental tax in Lebanon?

Based on the research questions and the previous studies, the researchers have the following hypotheses:

H_1: Adopting environmental tax contributes to achieving sustainable development in Lebanon.

H_2: There are hindrances to adopting environmental tax in Lebanon.

H_3: There is no statistically significant difference among the responses of the sample members about adopting environmental taxes in achieving sustainable development due to the job title.

H_4: There is no statistically significant difference among the responses of the sample members about the hindrances to adopting environmental taxes in Lebanon due to the job title.

4. Procedures and Methods

4.1 Population and Sample Selection

The population of this study consists of all academics in the Lebanese University, faculty of Economics and Business Administration, and all Certified Public Accountants (CPAs) in Lebanon as they are engaged in taxation practices. The researchers picked a random sample of 200 academics and 250 LCPAs and distributed the questionnaire among them, 180 academics and 220 LCPAs responded and all of the responses were valid for testing and analysis.

The demographic data of the sample is shown in Table 1:

Table 1. The Participants' Distribution According to Personal Data

Variable	Frequency	Percentage
Education		
Bachelor	114	28.5%
Master	106	26.5%
PhD	180	45.0%
Major		
Accounting	153	38.3%
Economics	97	24.3%
Business administration	116	29.0%
Banking and Finance	34	8.5%
Years of experience		
0 – 5 years	46	11.5%
5 – 10 years	89	22.3%
10 – 15 years	181	45.3%
15 years and above	84	21.0%
Job Title		
LCPA	220	55.0%
University Professor	180	45.0%
Total	**400**	**100.0%**

It is quite evident from Table 1 that 28.5% of the sample has Bachelor's degrees; thus, they are all practitioners because holders of bachelor's degrees are not allowed to teach at the Lebanese university, regardless of the job title. In addition, 26.5% have Masters' and 45.0% have PhDs, most of whom (62.6%) have majored in Accounting and Economics which are the appropriate majors for them to understand the items of the questionnaire and can give professional and reliable responses for the subject-matter of the study at hand. It is also clear that 88.6% of the sample have an experience of more than 5 years in practicing the profession, which adds to the reliability of their responses.

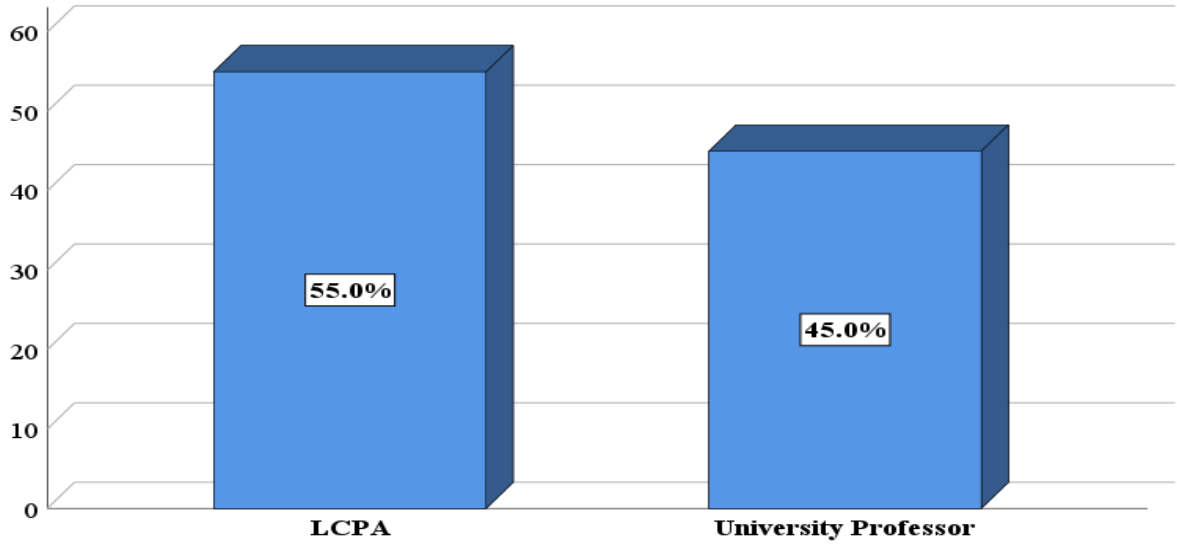

Figure 1. Distribution of the Sample according to Job Title

4.2 Instrumentation

Based on the literature review, discussions with university Professors and interviews made with members of the Lebanese Certified Public Accountants (LCPAs) in addition to the researchers' personal experience, a five-point Likert Style questionnaire was constructed by the researchers consisting of 27 items categorized into two domains.

The scale ranges as follows:

Table 2. Correct Tool of the Study

Scale	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Score	5	4	3	2	1

Table No. (3) provides the scale categories and the scope of each:

Table 1. Five-point Likert Scale

	Approval Level				
	Very low	**Low**	**Moderate**	**High**	**Very high**
Mean	< 1.8	1.8 - 2.59	2.6 - 3.39	3.4 - 4.19	> 4.2
Relative Weight	< 36%	36% - 51.9%	52% - 67.9%	68% - 83.9%	> 84

4.3 Data Analysis and Discussion

Table 4 shows the correlation coefficient among all the items of the questionnaire, and the results came in as follows:

Table 4. Correlation between the First Section Items and the Section Overall Degree

	Item	Pearson Correlation	P-value
1	Imposing the environmental tax contributes to keeping manufacturers from harmful behavior to the environment.	0.463**	0.000
2	Imposing environmental tax encourages manufacturers to innovate and find new, environment-friendly ways of production to reduce the taxes they pay.	0.413**	0.000
3	Environmental tax is considered more efficient than other policies in combating pollution.	0.691**	0.000
4	Imposing environmental tax motivates manufacturers to move to new areas where the damage caused by pollution is less.	0.772**	0.000
5	Imposing environmental tax encourages manufacturers to dispose of dangerous industrial waste and not store it.	0.756**	0.000
6	Imposing environmental tax leads to engraving environmental culture in society.	0.671**	0.000
7	The financial resources from imposing environmental tax can be used to remove waste.	0.702**	0.000
8	Environmental tax contributes to protecting the health of living beings.	0.756**	0.000
9	Environmental tax contributes to increasing the productivity of living beings.	0.784**	0.000
10	Implementing Environmental Taxes create new revenues which help the government invest them.	0.393**	0.000
11	Environmental taxes contribute to an increase in the gross domestic product on the long run.	0.355**	0.000
12	Implementing Environmental Taxes helps in using the optimum level of natural resources and doesn't compromise the needs of future generations.	0.600**	0.000

Correlation is significant at (P) < 0.01

Table 5. Correlation between the Second Section Items and the Section Overall Degree

	Item	Pearson Correlation	P-value
1	There are political factors represented in the absence of a reference for environmental policy.	0.537**	0.000
2	There are factors related to weak and incomplete administrative regulations for environment protection.	0.615**	0.000
3	There is a weakness in the local administrative bodies that follow up implementing enacted laws that protect the environment.	0.608**	0.000
4	The complication of measurement of environmental costs in industrial organizations are obstacles in determining the tax on environmental pollution.	0.664**	0.000
5	The complication of disclosure of environmental costs in industrial organizations are obstacles in determining the tax on environmental pollution.	0.593**	0.000
6	The lack of clear accounting standards about disclosure of environmental costs hinders application of environmental taxes.	0.660**	0.000
7	The lack of clear accounting standards about measurement of environmental costs hinders application of environmental taxes.	0.551**	0.000
8	The low environmental tax awareness leads to tax evasion by getting rid of the causes of pollution and industrial waste in illegal ways.	0.488**	0.000
9	Imposing environmental tax leads to higher production costs of industrial products.	0.473**	0.000
10	Absence of statistics that would reveal the extent of pollution prevents from specifying environmental tax.	0.629**	0.000
11	The accounting system applied in Lebanon is not appropriate for the measurement and disclosure of environmental costs.	0.509**	0.000
12	There are difficulties in determining the value of the environmental tax relative to the type of pollution.	0.574**	0.000
13	There are difficulties in determining the value of the environmental tax relative to the volume of the pollution.	0.430**	0.000
14	The industrial enterprises avoiding the disclosure of the environmental information might lead the competitors to benefit from it.	0.339**	0.000

15	Expected financial benefits from the disclosure of environmental responsibility is less than the cost of making it which may lead industries to avoid it.	0.420**	0.000

Correlation is significant at (P) < 0.01

Tables 4 and 5 show the correlation coefficients between the items and the overall degree of two domains. It is clear that all items of the questionnaire are significant at the level 0.01, where the correlation coefficient for the items is positive and ranged from 0.339 to 0.664, which signifies the internal consistency among the items of the study tool.

Cronbach's Alpha and Guttman Split-Half Coefficient are shown in Table 6:

Table 6. Reliability of the Questionnaire Using Cronbach's Alpha

Domain	Cronbach's Alpha		Split-Half	
	Number of Items	Cronbach's Alpha	Correlation between forms	Guttman Split-Half Coefficient
First Domain	12	0.843	0.807	0.893
Second Domain	15	0.826	0.755	0.860
Overall	**27**	**0.828**	**0.789**	**0.882**

It is clear from table 4 that Cronbach's Alpha for the items of the questionnaire as a whole is **0.828** and the Guttman Split-Half Coefficient is **0.882**, this means that there is reliability among all items of the questionnaire.

5. Testing the Hypotheses

5.1 The First Hypothesis

H_1: Adopting environmental taxes contributes to achieving sustainable development in Lebanon.

Table 7. Testing the First Hypothesis

	Item	Mean	S. D	T	P	Relative weight	Level of agreement	Rank
1	Imposing the environmental tax contributes to keeping manufacturers from harmful behavior to the environment.	3.99	0.85	23.06	0.000	79.8%	High	7
2	Imposing environmental tax encourages manufacturers to innovate and find new, environment-friendly ways of production to reduce the taxes they pay.	3.81	1.16	13.95	0.000	76.2%	High	12
3	Environmental tax is considered more efficient than other policies in combating pollution.	3.94	0.97	19.25	0.000	78.8%	High	11
4	Imposing environmental tax motivates manufacturers to move to new areas where the damage caused by pollution is less.	4.02	1.01	20.25	0.000	80.4%	High	6
5	Imposing environmental tax encourages manufacturers to dispose of dangerous industrial waste and not store it.	3.97	0.94	20.46	0.000	79.4%	High	8
6	Imposing environmental tax leads to engraving environmental culture in society.	3.95	0.97	19.44	0.000	79%	High	10
7	The financial resources from imposing environmental tax can be used to remove waste.	4.08	0.99	21.53	0.000	81.6%	High	3
8	Environmental tax contributes to protecting the health of living beings.	3.97	0.94	20.46	0.000	79.4%	High	9
9	Environmental tax contributes	4.08	0.99	21.61	0.000	81.6%	High	4

	to increasing the productivity of living beings.							
10	Implementing Environmental Taxes create new revenues which help the government invest them.	4.09	1.07	20.17	0.000	81.8%	High	2
11	Environmental taxes contribute to an increase in the gross domestic product on the long term.	4.05	1.09	19.09	0.000	81%	High	5
12	Implementing Environmental Taxes helps in using the optimum level of natural resources and doesn't compromise the needs of future generations.	4.31	0.88	29.64	0.000	86.2%	Very high	1
	Overall	**4.02**	**0.60**	**33.81**	**0.000**	**80.4%**	**High**	

Significant at (P) < 0.05

The mean of the responses of the sample to all items of the first domain of the questionnaire as related to the study is **4.02** and relative weight of **80.4%**. In addition, the value of the calculated 'T' test is **33.81**, which is greater than the value of tabulated 'T' at the significance 0.05. This means that there is an increase of statistical significance to the neutral level in the average responses of the members of the sample; consequently, the first hypothesis of the study which states "**Adopting environmental tax contributes to achieving sustainable development in Lebanon. at significance level α=(0.05)" is accepted.**

5.2 The Second Hypothesis

H_2: There Are Hindrances to Implementing Environmental Tax in Lebanon.

Table 8. Testing the Second Hypothesis

	Item	Mean	S. D	T	P	Relative weight	Level of agreement	Rank
1	There are political factors represented in the absence of a reference for environmental policy.	3.82	1.15	14.12	0.000	76.4%	High	5

2	There are factors related to weak and incomplete administrative regulations for environment protection.	3.72	1.17	12.30	0.000	74.4%	High	13
3	There is a weakness in the local administrative bodies that follow up implementing enacted laws that protect the environment.	3.76	1.20	12.61	0.000	75.2%	High	12
4	The complication of measurement of environmental costs in industrial organizations are obstacles in determining the tax on environmental pollution.	3.78	1.25	12.31	0.000	75.6%	High	8
5	The complication of disclosure of environmental costs in industrial organizations are obstacles in determining the tax on environmental pollution.	3.83	1.15	14.34	0.000	76.6%	High	4
6	The lack of clear accounting standards about disclosure of environmental costs hinders application of environmental taxes.	3.88	1.13	15.48	0.000	77.6%	High	2
7	The lack of clear accounting standards about measurement of environmental costs hinders application of environmental taxes.	3.79	1.20	13.12	0.000	75.8%	High	6
8	The low environmental tax awareness leads to tax evasion by getting rid of the	3.77	1.08	14.06	0.000	75.4%	High	9

	causes of pollution and industrial waste in illegal ways.							
9	Imposing environmental tax leads to higher production costs of industrial products.	3.72	1.15	12.41	0.000	74.4%	High	14
10	Absence of statistics that would reveal the extent of pollution prevents from specifying environmental tax.	3.68	1.34	10.09	0.000	73.6%	High	15
11	The accounting system applied in Lebanon is not appropriate for the measurement and disclosure of environmental costs.	4.17	0.93	25.05	0.000	83.4%	High	1
12	There are difficulties in determining the value of the environmental tax relative to the type of pollution.	3.79	1.13	13.94	0.000	75.8%	High	7
13	There are difficulties in determining the value of the environmental tax relative to the volume of the pollution.	3.77	1.08	14.23	0.000	75.4%	High	10
14	The industrial enterprises avoiding the disclosure of the environmental information might lead the competitors to benefit from it.	3.77	1.11	13.88	0.000	75.4%	High	11
15	Expected financial benefits from the disclosure of environmental responsibility is less than the cost of making it which	3.86	1.14	15.00	0.000	77.2%	High	3

may lead industries to avoid it.						
Overall	**3.80**	**0.62**	**25.77**	**0.000**	**76.0%**	**High**

Significant at (P) < 0.05

The mean of the sample's responses to all items of the first domain of the questionnaire as related to the study is **3.80** and relative weight of **76.0%.** In addition, the value of the calculated 'T' test is **25.77**, which is greater than the value of tabulated 'T' at the significance 0.05. This means that there is an increase of statistical significance to the neutral level in the average responses of the members of the sample; consequently, the second hypothesis of the study which states **"There are hindrances to adopting environmental tax in Lebanon at significance level α=(0.05)" is accepted.**

5.3 The Third Hypothesis

H_3: There are no statistically significant differences between the responses of the sample members that adoption of environmental taxes helps achieve sustainable development due to the Job Title.

Table 9. Testing the Third Hypothesis

Job Title	Mean score	Standard deviation	T	P
LCPA	4.01	0.60	-0.247	0.805
University Professor	4.02	0.60		

Significant at (P) < 0.05

Table 9 provides information on the relationship between job title and the responses of the sample members about whether or not environmental taxes help achieve sustainable development. The table includes the mean score and standard deviation for each job title, as well as the T-value and P-value for the comparison between the two groups (LCPA and University Professor).

The mean scores for both job titles are very similar, with LCPAs having a slightly lower mean score of 4.01 compared to the University Professors' mean score of 4.02. The standard deviations are also very close in value, indicating a similar range of responses from both groups.

The P-value of 0.805 > 0.05 suggests that there is no significant difference among the two groups regarding their responses to the adoption of environmental taxes contributes in achieving sustainable development.

In summary, Table 9 shows that both LCPAs and University Professors have similar opinions about the adoption of environmental taxes contributes in achieving sustainable development, and job title does not appear to influence their responses.

5.4 The Fourth Hypothesis

H_4: There are no statistically significant differences between the responses of the sample members about the hindrances to implementing environmental tax in Lebanon due to the Job Title.

Table 10. Testing the Fourth Hypothesis

Job Title	Mean score	Standard deviation	T	P
LCPA	3.95	0.51	5.382	0.000
University Professor	3.62	0.69		

Significant at (P) < 0.05

This table provides information on the relationship between job title and the responses of the sample members about the hindrances to implementing environmental tax in Lebanon. The table includes the mean score and standard deviation for each job title, as well as the T-value and P-value for the comparison between the two groups (LCPA and University Professor).

The mean score for LCPAs is higher (3.95) compared to University Professors (3.62), suggesting that LCPAs perceived the hindrances to implementing environmental tax in Lebanon to be greater compared to University Professors. The standard deviation for LCPAs is lower (0.51) compared to University Professors (0.69), indicating that LCPAs had a more consistent response to the hindrances to implementing environmental tax in Lebanon compared to University Professors.

The P-value of 0.000 < 0.05 suggests that there is a significant difference between the two groups regarding their responses to the hindrances to implementing environmental tax in Lebanon.

In summary, table 10 shows that LCPAs perceive the hindrances to implementing environmental tax in Lebanon to be greater compared to University Professors, and job title appears to influence their responses. The LCPAs had a more consistent response compared to University Professors.

6. Conclusions and Recommendations

6.1 Conclusions

This paper aimed at exploring whether or not adopting environmental taxes contribute to sustainable development in Lebanon from the perspective of both academics (university professors) and practitioners (LCPAs). Findings assert that the sample agrees that adopting environmental tax contributes to achieving sustainable development in Lebanon. This has manifested in the high mean for the responses for both academics and LCPAs, which was significant. The result was mainly evident in Table 7, in addition to other results, and shows the first rank among the responses. It states that adopting environmental taxes helps use the optimum level of natural resources and doesn't compromise the needs of future generations. This result agrees with what the OECD (2011) states and is essential in sustainability. The table also

shows that adopting environmental tax creates new revenues, which agrees with Khoruzhy *et al.* (2022) and OECD (2011). This would help the government invest these revenues in different domains such as economic, social, and environmental development, which contribute to human development and, consequently, productivity. In addition, the results show that there are hindrances to implementing environmental tax in Lebanon. This is clearly shown in Table 8 which assert that among the most important hinderances is the lack of clear accounting standards for measurement and disclosure of environmental costs. This agrees with the results reached in the study done by Bicer and El-Darewi (2019). There is no doubt that determining the environmental tax highly depends on measurement and disclosure of environment costs. However, there was statistically significant difference between the responses of the sample members about whether or not adopting environmental taxes helps achieve sustainable development due to the job title, as the LCPAs perceive the hindrances to implementing environmental tax in Lebanon to be greater compared to University Professors. The researchers believe that the differences in responses is due to that academics tackle the issue theoretically while LCPAs deal with it hands-on.

6.2 Recommendations

Based on the results, the researchers propose the following:

1) There is need to spread the culture of preserving the human and natural environment so that humanity is aware of the danger of environmental pollution to humans and the earth.
2) The government should spread awareness regarding the importance of the environmental taxes, and that these taxes should be linked to predetermined goals, making these taxes acceptable to most citizens, since they would know in advance where the tax money is going.
3) There is need to pay attention and take measures to prevent projects and activities that contribute to pollution, and to issue the necessary laws for that and not settling for fines and implement environmental tax that may prevent citizens from violating environmental laws.
4) There should be a gradual increase in taxes in order to avoid sudden social crises, and to avoid a rapid impact on the ability of producers to compete pending adaptation to the new situation.
5) Environmental taxes must be flexible according to the type of waste, the polluted geographical area, and the extent of the social cost of the facility's activity.
6) There is need to benefit from the experiences of developed countries in the field of using tax and non-tax tools in the field of environment.
7) There is no doubt that developing the accounting standards that can disclose and measure the environmental costs would facilitate implantation of environmental taxes.

The researchers also suggest future studies be conducted regarding the effect of measurement and disclosure of environmental costs on sustainable development. Moreover, further research may be conducted to assess the role of social responsibility in achieving sustainable development. Also, more research can be done to assess the role of lean accounting in achieving sustainable development.

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