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Article

Green taxes and differentiated fiscal policy for MSMES in Hidalgo: Gaps, challenges, and opportunities for a sustainable transition

Impuestos verdes y política fiscal diferenciada para las MIPYMES en Hidalgo: Brechas, desafíos y oportunidades para una transición sostenible

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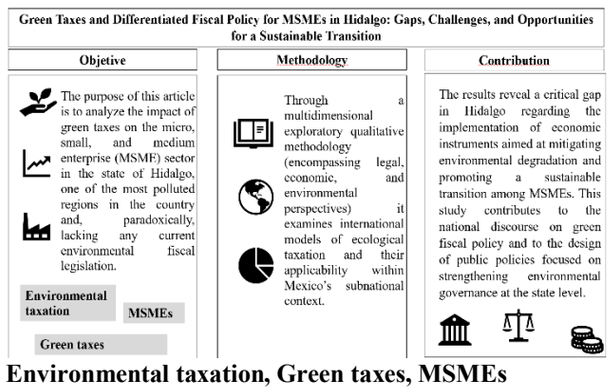
Resumen

El presente artículo tiene como objetivo analizar el impacto de los impuestos verdes en el sector de las micro, pequeñas y medianas empresas [MIPYMES] del estado de Hidalgo, una de las regiones más contaminadas del país y, paradójicamente, sin legislación fiscal ambiental vigente. A través de una metodología cualitativa exploratoria multidimensional [jurídico, económico y ambiental] se examinan modelos internacionales de fiscalidad ecológica y su aplicabilidad al contexto subnacional mexicano. Los resultados evidencian una brecha crítica en Hidalgo respecto a instrumentos económicos para mitigar el deterioro ambiental y fomentar la transición sostenible en las MIPYMES. Este estudio contribuye al debate nacional sobre fiscalidad verde y al diseño de políticas públicas orientadas a fortalecer la gobernanza ambiental desde el ámbito estatal.

Fiscalidad ambiental, Impuestos verdes, MIPYMES

Abstract

The purpose of this article is to analyze the impact of green taxes on the micro, small, and medium enterprise [MSME] sector in the state of Hidalgo, one of the most polluted regions in the country and, paradoxically, lacking any current environmental fiscal legislation. Through a multidimensional exploratory qualitative methodology [encompassing legal, economic, and environmental perspectives] it examines international models of ecological taxation and their applicability within Mexico's subnational context. The results reveal a critical gap in Hidalgo regarding the implementation of economic instruments aimed at mitigating environmental degradation and promoting a sustainable transition among MSMEs. This study contributes to the national discourse on green fiscal policy and to the design of public policies focused on strengthening environmental governance at the state level.



Environmental taxation, Green taxes, MSMEs

Area: Advocacy and attention to national problems

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Introduction

Public revenue, particularly tax revenue, is the cornerstone that enables the State to fulfil its essential functions, including the provision of public goods and services, institutional strengthening and the promotion of social welfare. In this regard, tax revenues are a key tool in any nation's economic development plans, enabling it to improve its position in tax collection indices compared to member countries of the Organisation for Economic Co-operation and Development [OECD], as well as in Europe and Latin America.

Mexico has shown remarkable growth in tax revenues in recent years. However, achieving optimal collection levels remains a challenge, requiring the constant development of innovative, equitable, and sustainable fiscal policies. The current Mexican tax structure includes various tax figures aimed at taxing economic activities in a differentiated manner, with the objective of sustaining public spending without neglecting efficiency and equity.

Among these alternatives, an environmentally oriented tax modality has gained momentum in recent years: so-called green taxes. Green taxes represent a strategic alternative to respond to the global environmental crisis, as they allow two major public policy challenges to be addressed simultaneously: on the one hand, discouraging polluting activities through corrective fiscal mechanisms; on the other, generating additional revenue for the public treasury.

This approach has been called the 'double dividend,'[Méndez, 2005] and its application is directly linked to the objectives of sustainable development and the transition to low-carbon economies.

Air pollution, intensive use of fossil fuels, and limited adoption of clean energy are real problems that require a decisive response from the fiscal and environmental spheres. In this context, green taxes emerge as a key public policy tool for linking economic development strategies with environmental preservation.

European countries, particularly the Nordic countries and members of the European Union, have successfully promoted environmental tax reforms that encourage the use of renewable energy and reduce polluting emissions, as recognised by the.

In the specific case of Mexico, the main environmentally-oriented fiscal instrument is the Special Tax on Production and Services [IEPS] applied to petrol and diesel. However, questions remain about its effectiveness as an environmental mechanism, given that its design and application are primarily for revenue-raising purposes, without a specific allocation of resources for climate action. It is therefore necessary to analyse the behaviour, impact and reform potential of this tax, particularly from an energy transition perspective.

This paper provides an in-depth analysis of the origin and evolution of green taxes at the global level, comparing them with successful European models and their application in the Mexican context. In addition, it presents a proposal for a differentiated environmental fiscal policy for micro, small and medium-sized enterprises [MSMEs], with an emphasis on the state of Hidalgo, in order to strengthen fiscal equity and promote sustainable business practices without compromising competitiveness or revenue collection.

Background

The concept of green taxes is based on the "polluter pays" principle, established in 1972 by the Organisation for Economic Co-operation and Development [OECD]. In the early days, countries such as Sweden [1991] and Denmark implemented taxes on carbon dioxide [CO_2] and other pollutants. Over time, these instruments gained ground in the field of environmental taxation [OCDE, 2021]. In Europe, progress has been characterised by a coherent eco-taxation policy, integrating taxes on carbon, energy, waste and transport.

In Sweden, the carbon tax introduced in 1991 has been one of the most successful tools. With an initial rate of €29/tonne of CO_2, it currently stands at over €114/tonne [Anderson, 2019].

This tax has helped to reduce emissions by more than 27% since its implementation, without compromising economic growth.

Germany implemented a progressive ecological tax reform starting in 1999, incorporating taxes on electricity, fossil fuels and other sources of polluting emissions.

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This policy was part of a broader energy transition approach [Energiewende] that sought both to reduce greenhouse gas emissions and improve energy efficiency. Although these taxes did not reach high proportions of GDP, they represented approximately 1.9% of GDP in 2016, and their revenues were partially used to finance the social security system, including reductions in pension insurance contributions as part of the tax redesign [Green Fiscal Policy Network].

This case is internationally recognised as one of the most solid experiences of green taxation applied with social and environmental objectives.

In the United Kingdom, the Climate Change Levy [CCL] has been levied on industrial energy consumption since 2001 and is complemented by emissions trading schemes [Speck, 2013].

Asia is positioning itself as an emerging benchmark in the implementation of green taxes, integrating fiscal instruments with industrial policies to accelerate its ecological transition [Comisión de Hacianda, 2025].

China, the world's largest emitter, adopted an environmental tax on pollutants such as SO_2, NOx, wastewater and solid waste in 2018, raising $4.3 billion in its first year, although at rates that are still low compared to Western standards. Since 2012, Japan has applied a carbon tax of $2.90 per tonne of CO_2, with the revenue going to renewable energy; Tokyo supplements this with taxes on inefficient buildings, achieving a 23% reduction in emissions since 2010.

Singapore leads the way in green vehicle taxation, with a 100–200% tax on combustion cars and exemptions for electric vehicles, resulting in 40% of its fleet being hybrid or electric. South Korea combines its carbon market with sectoral taxes for heavy industries, reducing its emissions by 6.5% since 2015, although it faces criticism for exemptions for conglomerates [chaebols].

India applies a carbon tax of US$6 per tonne and levies on single-use plastics, with Maharashtra standing out for reducing its plastic waste by 50%.

The main challenges in the region include regulatory inequality—with progress in cities such as Hong Kong, but lagging behind in countries such as Indonesia and Vietnam—and a focus on megacities, leaving rural areas behind [Comisión de Hacienda, 2025].

Unlike Europe, where environmental taxes have been integrated in a structured manner since the 1990s as part of broad ecological tax reforms, Latin America and the Caribbean face structural barriers that have limited the systematic adoption of such fiscal instruments. Factors such as socioeconomic inequality, high poverty rates, and rapid urbanisation have forced governments in the region to design fiscal policies with a redistributive, gradual, and politically viable approach. In many cases, green taxes have been applied in a fragmented manner, lacking integration with national sustainability agendas, which reduces their scope and environmental impact [Alatorre, 2018].

Although the region has abundant natural resources, environmental sustainability has not been structurally integrated into tax systems.

Some countries have implemented specific taxes on fossil fuels, plastic bags or emissions; however, these efforts do not constitute comprehensive environmental tax reforms. An adapted approach is required that combines progressivity, administrative simplicity, intersectoral coherence and measurable objectives.

Notable advances include: Chile, a pioneer with its carbon tax [2014] and fixed source tax [2017], which raised US$289 million in 2017; Colombia, with taxes on carbon [2016], plastics and polluting vehicles; Brazil and Uruguay, with incipient progress through regulatory fees; while the United States has opted for market-based schemes [cap-and-trade] instead of taxes, such as its system for controlling SO_2.

Despite the potential, the development of an environmental fiscal policy in the region requires political will, institutional strengthening and greater technical coordination [Comisión de Hacienda, 2025].

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Application in Mexico

The growing environmental damage that Mexico—like other regions of the world—has experienced in recent years has led the Mexican government to implement various actions aimed at preventing and mitigating ecological deterioration. Among these measures is the creation of taxes, both at the federal and local levels, which not only generate revenue for the nation but also seek to discourage practices that are harmful to the environment.

In this scenario, phenomena such as pollution, overexploitation of natural resources [minerals, water] and widespread environmental damage have been recognised as negative externalities. According to the theoretical approach developed by the economist and Nobel Prize winner [Stiglits,1986], these are defined as 'a situation in which the actions of one individual generate a cost for others'.

Faced with this reality, various states, in their role as guarantors of the care of the natural environment, began to establish taxes on products and activities that are clearly harmful to the environment. In this way, the ecological impacts of economic activities legitimised state intervention in fiscal matters, using it as a mechanism to correct market failures.

Box 1

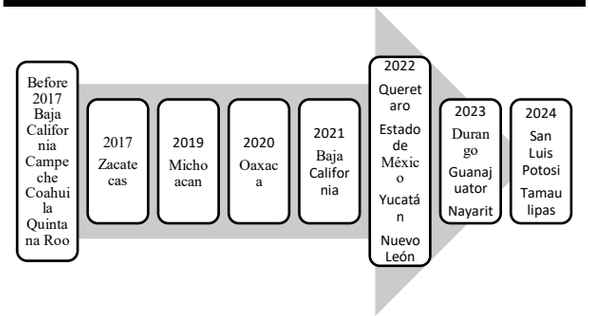

Figure 1

Federal entities that have incorporated some type of environmental tax

Source: Prepared internally based on information contained in Finance Laws, Tax Codes and Revenue Codes of the federal entities.

In Mexico, the legal basis for collecting taxes related to environmental protection is found in Article 4 of the Political Constitution of the United Mexican States [CPEUM], which recognises the right of every person to enjoy a healthy environment, obliging the State to guarantee this and to hold those who damage it accountable.

This principle has been reinforced by the SCJN [Suprema Corte de la Nación, 2020], which has established through case law that pollution constitutes a negative market externality.

In this context, environmental costs are not borne by producers, who obtain economic benefits without considering the damage they cause, thus transferring the costs of repair to the community. In other words, it is society, through public spending, that bears the economic and ecological consequences of environmental damage.

Accordingly, Article 33, section IV, of the CPEUM [Political Constitution of the United Mexican States] imposes on citizens the obligation to contribute to public expenditure in accordance with the provisions of the law. Hence, in fiscal matters, the 'polluter pays' principle is applied, requiring a contribution proportional to the damage caused or its prevention. In addition, the Organisation for Economic Co-operation and Development [OCDE,2022] has pointed out that ecological taxes should be understood primarily as preventive instruments in state environmental policy, and only as a last resort as corrective mechanisms.

Types of environmental taxes in Mexico

The Ministry of the Environment and Natural Resources [SEMARNAT, 2022] defines environmental taxes [also known in the literature as green taxes or eco-taxes] as economic tools designed to incorporate into the prices of goods the negative costs they generate on the environment, either through their production or consumption [Figure 2].

Box 2

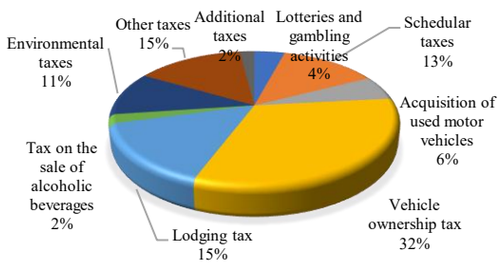

Figure 2

Most representative taxes in the federal entities in fiscal year 2024

Source: Prepared internally based on the revenue laws of the federal entities for fiscal year 2024.

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In Mexico, these taxes are divided into two categories: federal and state. At the federal level, Article 73, section XXIX of the CPEUM grants the Congress of the Union the power to establish specific taxes related to the use and exploitation of natural resources.

It also allows it to legislate on special taxes on various activities, including: electricity generation, tobacco production and consumption, the use of petrol and petroleum derivatives, and forestry exploitation.

This legal framework constitutes the basis for the existence and application of federal ecological taxes in the country.

Federal and state ecological taxes can be consulted in Table 1, which describes some of their main characteristics and the legal basis behind them.

Box 3

Table 1

Federal and State Green Taxes in Mexico.

Level of Government	Green Taxes	Legal Basis / Observations
Federal	- IEPS on fossil fuels - Contributions on the use of natural resources - There is no specific category of "green taxes" - Tax on car ownership or use	Political Constitution of the United Mexican States [Art. 73, fr. XXIX]. Indirect fiscal instrument with environmental and revenue-raising objectives. Administered by the Congress of the Union.
Estatal	- Taxes on atmospheric emissions [Mexico City, Durango, State of Mexico] - Tax on material extraction [Baja California, Durango] - Taxes on water, soil or solid waste pollution - Vehicle environmental tax [several states]	Based on the fiscal autonomy of the federal entities. Examples in: Mexico City, Durango, Baja California, State of Mexico, San Luis Potosí. Design, application and variable rates according to state legislation.

Source: Prepared internally based on GT Law [2025], México2 [2023] y SEMARNAT [2022].

In Mexico, the constitutional framework grants federal entities tax autonomy to establish their own taxes, which has allowed some states to begin implementing green taxes as instruments to discourage polluting activities, strengthen local tax collection, and promote more active environmental policies at the subnational level.

These taxes vary in design, tax base, and objectives according to the environmental, economic, and political conditions of each federal entity [Salazar, 2023].

Below is a detailed and comparative analysis of the main green taxes applied in Mexican states.

Baja California: Environmental Tax on the Extraction and Use of Stone Materials, Environmental Tax on the Emission of Gases into the Atmosphere.

Campeche: Tax on the Extraction of Soil and Subsoil Materials.

Coahuila: Tax on Environmental Remediation in the Extraction of Stone Materials.

Durango: Tax for Ecological Preservation and Restoration in the Extraction of Materials, Tax on the Emission of Gases into the Atmosphere, Tax on the Emission of Pollutants into the Soil, Subsoil and Water, Tax on the Deposit or Storage of Waste.

State of Mexico: Tax on the Emission of Polluting Gases into the Atmosphere, Ecological Tax on the Disposal, Confinement and Storage of Waste, Tax on the Emission of Pollutants into Water.

Guanajuato: Tax for Environmental Remediation for the Emission of Polluting Gases, Tax for Environmental Remediation for the Emission of Pollutants into the Soil, Subsoil and Water, Tax for Environmental Remediation for the Deposit of Waste.

Nayarit: Tax on the Stone Extraction Industry for Transport by Vehicles or Dump Trucks.

Nuevo León: Environmental Tax for Pollution in the Extraction of Stone Materials, Tax for the Emission of Pollutants into the Atmosphere, Tax for the Emission of Pollutants into Water, Tax for the Emission of Pollutants into the Subsoil and/or Soil.

Oaxaca: Tax on the Extraction of Materials for Environmental Remediation.

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Querétaro: Tax on the Emission of Gases into the Atmosphere, Tax on Environmental Remediation Caused by Soil Erosion, Tax on the Final Disposal of Special and Hazardous Waste.

Quintana Roo: Tax on the Extraction of Materials from the Soil and Subsoil.

San Luis Potosí: Tax on the Emission of Polluting Gases into the Atmosphere.

Tamaulipas: Tax on the Emission of Greenhouse Gases and Compounds into the Atmosphere. Yucatán: Tax on the Emission of Gases into the Atmosphere, Tax on the Emission of Pollutants into the Soil, Subsoil and Water. Zacatecas: Tax on Environmental Remediation in the Extraction of Materials, Tax on the Emission of Gases into the Atmosphere, Tax on the Emission of Pollutants into the Soil, Subsoil and Water, Tax on Waste Deposit or Storage [State Finance Laws and Tax Codes of the federal entities in force for the 2024 fiscal year, 2024].

Box 4

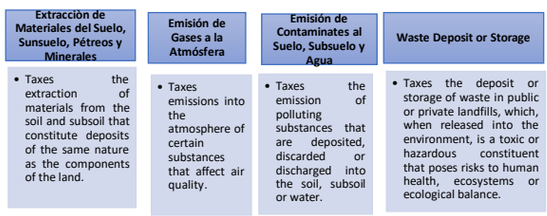

Figure 3

Source: Current environmental tax variables in the federal entities

Source: Tax Bulletin INDITEC.

Future Initiatives

According to the Official Gazette of the Federation 2024, for the period 2026–2027, the implementation of new environmental taxes is contemplated in various federal entities: Coahuila plans a tax on atmospheric emissions; Guanajuato, taxes on soil, subsoil and water pollution; Puebla, a similar tax on emissions; and Tabasco, five new taxes related to materials, emissions, soil and water pollution, and waste disposal.

The Mexico City Megalopolis region, comprising the federal entities of Mexico City, the State of Mexico, Hidalgo, Puebla, Morelos, Tlaxcala and Querétaro, is one of the most densely populated, industrialised and polluted urban areas in the country. Its rapid growth [derived from the centralised model of national economic development] has placed severe pressure on the environment, especially with regard to air quality.

The concentration of population and economic activities has intensified pollutant emissions, mainly from vehicular transport and the industrial sector. Motor vehicle traffic releases large amounts of carbon monoxide [CO], volatile organic compounds [VOCs], tropospheric ozone [O_3], and suspended particulate matter [PM10 and PM2.5]. In turn, the energy and industrial corridor of Tula, in Hidalgo, emits highly dangerous pollutants such as nitrogen dioxide [NO_2] and sulphur oxides [SO_2], generating synergistic effects on the atmosphere and human health. These environmental externalities entail health and economic costs that are not absorbed by the emitters, but by society as a whole.

According to data from the Environmental Commission of the Megalopolis [CAMe, 2022], in 2022 most monitoring stations exceeded the regulatory health protection limits established for PM10 and PM2.5 particles, while ozone and nitrogen dioxide concentrations also exceeded permissible values, especially in the areas of the Valley of Mexico, Puebla and Hidalgo. Despite the existence of programmes such as ‘Hoy No Circula’ [No Driving Today], mandatory vehicle inspections and stricter environmental standards, the results have not been sufficient to reverse the trend of persistent non-compliance in terms of air quality.

This situation highlights the urgent need to incorporate complementary economic instruments, such as green taxes, to internalise the social costs of pollution and encourage the transition to cleaner and more sustainable technologies. However, the complexity and metropolitan scale of the problem requires an effort of inter-state fiscal coordination to harmonise criteria, avoid double counting of emissions and reduce evasion through the territorial displacement of pollution sources.

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In this context, mechanisms such as a regional tax on vehicle emissions, fixed industrial sources or carbon-intensive energy consumption could be effective tools with high revenue and environmental potential. This would turn the problem of air pollution not only into an environmental challenge, but also into an opportunity to strengthen environmental fiscal policy from a technical, socially legitimate and institutionally coordinated perspective.

Some entities in the Megalopolis have begun to explore these avenues. The State of Mexico has implemented a comprehensive environmental taxation model through four green taxes on atmospheric emissions, water pollution, solid waste and polluting gases, complemented by incentive schemes for companies with sustainable practices. Querétaro has opted for a corrective approach, standing out for imposing the highest rate in the country per tonne of CO_2 emitted and for its technical transparency in environmental fiscal management.

In 2025, Morelos introduced its ecological tax based on rigorous technical studies, targeting mobile and industrial sources.

In contrast, entities such as Hidalgo, despite recording high levels of pollutant emissions, have not yet adopted ecological fiscal mechanisms, which represents a critical gap in the region. Puebla and Tlaxcala have also not legislated on this matter, despite facing acute environmental problems and having legal frameworks that would allow for the development of these instruments.

This diversity of approaches and levels of progress shows both significant achievements and substantial challenges for the construction of a coordinated environmental fiscal policy in the Megalopolis. If this regional strategy can be consolidated, it could become a structuring axis for national climate action and a replicable model for other metropolitan areas in the country.

Despite being part of the Mexico City Megalopolis—one of the most polluted and densely urbanised regions in the country—the state of Hidalgo has not yet developed environmental tax legislation that includes ecological taxes, which represents a critical omission in its legal framework.

This absence is particularly worrying considering that Hidalgo is home to one of the country's main industrial hubs, such as the Tula energy-industrial corridor, identified as a significant source of emissions of pollutants such as SO_2, NO_2 and fine particles.

While other entities in the region have made progress in the design and implementation of green fiscal instruments to address environmental degradation, Hidalgo lags behind in terms of regulations, which limits its capacity to respond to the challenges of climate change and air quality. This lack of legislation not only weakens regional cohesion on environmental issues, but also creates negative incentives by becoming a potential tax haven for polluting activities, affecting both public health and the sustainable development of the state.

Methodology

This research is based on a qualitative, exploratory and multidimensional approach, focusing on the analysis of green taxation from three key perspectives: legal, economic and environmental. The methodology includes a review of federal and state laws to identify the existence of green taxes, as well as their design and framework for application.

Fiscal and environmental data from official sources such as the SHCP, SAT, SEMARNAT, INEGI and CAMe are incorporated, as well as reports from international organisations such as the OECD and UNEP.

Particular emphasis is placed on the state of Hidalgo, an entity that, despite being part of the Megalopolis and one of the regions with the highest pollution load in the country—especially due to the Tula industrial corridor—has not implemented environmental tax legislation, creating a critical gap in the regional strategy against ecological deterioration. This omission represents both a regulatory challenge and an opportunity for innovation in public policy at the state level.

It also examines the role of micro, small and medium-sized enterprises [MSMEs] in Hidalgo, analysing how the possible incorporation of green taxes could affect their cost structure, incentives to adopt clean technologies and access to tax incentives.

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The methodology is complemented by a review of academic literature and international case studies, allowing for the identification of best practices and risks in the application of ecological taxes at the subnational level, with the aim of proposing a differentiated environmental tax policy model for MSMEs in Hidalgo.

Results

The multidimensional analysis of green taxation in Mexico revealed a series of key findings that show both significant progress and significant delays in the implementation of green taxes. Firstly, the case of the state of Hidalgo stands out. Despite being part of the Mexico City Megalopolis [one of the most polluted regions in the country] and home to important industrial hubs such as the Tula energy corridor, it currently has no environmental tax legislation.

This omission represents a critical gap in terms of environmental justice and regional coordination, especially when compared to neighbouring entities such as the State of Mexico, Querétaro and Morelos, which have developed ecological tax models with varying levels of sophistication.

The State of Mexico has implemented a comprehensive scheme with four differentiated green taxes; Querétaro has established high rates linked to CO_2 emissions[1] with a solid technical basis; and Morelos has recently legislated on the basis of specific diagnoses.

This regulatory heterogeneity highlights the lack of a coordinated environmental fiscal policy in the region, which creates risks of evasion, territorial disincentives, and weakening of the environmental impact of the taxes.

From a business perspective, it was identified that the application of green taxes can be a challenge for micro, small, and medium-sized enterprises [MSMEs], especially those with lower technological capabilities or limited access to green financing.

However, substantial opportunities are also recognised if a differentiated environmental fiscal policy is promoted, including progressive taxation scales, incentives for clean innovation, and government-supported technological transition shemes.

In this sense, the intelligent design of green taxes can function not only as a revenue-raising instrument, but also as a lever for the productive transformation of the local business fabric, especially in entities such as Hidalgo, where manufacturing and agro-industrial MSMEs predominate.

On the other hand, the study confirmed that environmental pollution generates economic and social costs that are not borne by the emitters, but by society as a whole, through the deterioration of public health, health expenditure, loss of productivity and degradation of ecosystems. The incorporation of green taxes would allow these negative externalities to be internalised, promoting greater fiscal equity and environmental sustainability.

The international evidence reviewed [with successful cases in countries such as Sweden, Japan, Singapore and South Korea] supports the technical and political viability of these instruments, especially when accompanied by transparency in their application and reinvestment of resources in environmental actions.

Finally, the study reveals that green taxes in Mexico have high potential both in terms of revenue collection and their ability to induce positive changes in business and citizen behaviour.

However, their effectiveness will depend on overcoming institutional obstacles, harmonising legal frameworks between levels of government, and developing monitoring and evaluation mechanisms. In particular, the state of Hidalgo faces a strategic opportunity to become a national benchmark if it succeeds in designing and implementing a green taxation model adapted to its productive and environmental characteristics, with a differentiated approach for MSMEs and based on principles of climate justice and economic efficiency [Table 2].

[1] Quota: 5.9 UMAs per tCO_2e.

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Box 5

Table 2

Estimated revenue from environmental taxes in the federal entities, fiscal year 2024

Federative entity	Total estimated revenue from environmental taxes for 2024 [$]	% representing of total taxes
Tamaulipas	1, 511,531,143	21.26
Zacatecas	300,000,000	14.78
Nuevo León	1,526,289,000	8.61
Yucatán	214,033,199	4.97
Querétaro	317,146,519	4.62
Durango	112,000,000	3.36
Campeche	53,620,344	2.83
Quintana Roo	128,454,187	1.52
Oaxaca	20,968,066	1.13
Estado de México	252,186,318	0.93
Coahuila	48,785,684.43	0.76
San Luis Potosí	19,538,541	0.59
Guanajuato	33,685,664	0.32
Baja California	16,47,125	0.12
Nayarit	800,000	0.05
Total	**4,444,404,790**	

Source: Prepared using information from the revenue laws of the federal entities. 2024.

Conclusions

In light of global challenges and successful experiences with green taxation in different parts of the world, the case of the state of Hidalgo represents a critical paradox within the national and regional context. Although it is part of the Mexico City Megalopolis [one of the areas with the highest levels of air pollution and environmental pressure in the country], Hidalgo lags behind in the adoption of green fiscal instruments, with no state legislation providing for environmental taxes or compensatory, regulatory or incentive mechanisms linked to sustainability.

This regulatory gap is particularly worrying given that, according to recent data, the industrial corridor of Tula and its surroundings are home to highly polluting fixed sources that have a negative impact on air quality, local ecosystems and public health. In response to this, international best practices show that well-designed environmental taxes [with progressive rates, reinvestment in green infrastructure, and a redistributive approach] can generate not only ecological benefits, but also social and fiscal benefits, promoting the development of clean economies, energy transition, and environmental equity.

In this scenario, micro, small and medium-sized enterprises [MSMEs] in Hidalgo play a central role. These economic units [which constitute more than 95% of the state's business fabric] are not only generators of employment and local dynamism, but also represent a key opportunity for the successful implementation of green fiscal policies.

A differentiated environmental fiscal policy, adapted to the operational and financial profile of MSMEs, would allow these companies to transition to more sustainable practices without sacrificing their economic viability, promoting efficient use of resources, progressive regulatory compliance and productive innovation with less environmental impact.

Hidalgo has the opportunity [and the urgency] to align itself with a modern environmental fiscal model that responds both to the country's climate commitments and to local financing needs to address the ecological crisis.

The current lag not only implies a potential loss of revenue, but also the omission of tools that could discourage highly polluting activities, support MSMEs in technological conversion processes, and strengthen the state's environmental resilience.

The absence of local green taxation, in contrast to other federal entities such as Querétaro, the State of Mexico or Mexico City, weakens the possibility of coordinated regional environmental governance, which is essential for addressing cross-cutting issues such as air quality, waste management and efficient use of resources.

Consequently, we recommend the creation and implementation of a state ecological tax with a differentiated approach for MSMEs, based on criteria of fiscal progressivity, social compensation, and environmental reinvestment.

This instrument should be accompanied by incentives for technological innovation, transparent monitoring schemes, and citizen participation. This public policy proposal is not only viable but also urgent, and represents an effective route towards an ecological transition with social justice in the state of Hidalgo.

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Declarations

Conflict of interest

The authors declare that they have no conflict of interest. They have no competing financial interests, known personal relationships or other relationships that could have influenced the development of the information disclosed in this article.

Contribution of the authors

Cruz Sánchez Eduardo, did most of the work, including the main research, data analysis, initial writing of the manuscript and the organisation of the content. Assumes the main responsibility in the direction and execution of the research project.

The first co-author, Moctezuma Navia Dalia Alejandra, contributed significantly in complementary aspects, such as data collection, the implementation of metrics, or in the review and editing of the manuscript, playing a crucial role in ensuring the accuracy and soundness of the research. The second co-author, Trejo Encarnación Patricia, provided technical assistance, analysis of secondary data, support in the discussion of the results and critical review of the text, helping to refine the clarity and cohesion of the final document. Finally, the third co-author Hernández Gómez Diana provided technical assistance, analysis of secondary data, support in the discussion of the results and critical review of the text, helping to refine the clarity and cohesion of the final document.

Availability of data and materials

The data used in this research comes from official, public, and verifiable secondary sources. These include statistical reports from the Ministry of Finance and Public Credit [SHCP], the National Institute of Statistics and Geography [INEGI], the Environmental Commission of the Megalopolis [CAMe], as well as publications from international organisations such as the United Nations Environment Programme [UNEP], the OECD and ECLAC. State laws, tax codes and regulatory documents available on local congress websites and in the Official Gazette of the Federation were also reviewed. All information is publicly available in their respective institutional repositories.

No private databases or confidential information were used. Additional analysis materials, document review files, or comparative tables may be shared by the author upon reasonable request for academic purposes and to replicate the study.

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Abbreviations

CAMe	Environmental Commission of the Megalopolis
CCL	Climate Change Levy
CEPAL	Economic Commission for Latin America and the Caribbean
CIEP	Centre for Economic and Budgetary Research
CPEUM	Political Constitution of the United Mexican States
IEPS	Special Tax on Production and Services
INEGI	National Institute of Statistics and Geography
MIPYMES	Micro, Small and Medium-sized Enterprises
OCDE	Organisation for Economic Co-operation and Development
PNUMA	United Nations Environment Programme
SAT	Tax Administration System
SCJN	Supreme Court of Justice of the Nation
SEMARNAT	Ministry of the Environment and Natural Resources
SHCP	Ministry of Finance and Public Credit
UNEP	United Nations Environment Programme

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