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Original article

Economic instruments for the environmental management: notes for Cuba

Instrumentos económicos para la gestión ambiental: apuntes para Cuba

Instrumentos econômicos para a gestão ambiental: notas para Cuba

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ABSTRACT

Both nationally and internationally, it has been necessary to diversify the instruments that allow achieving the objectives of environmental policy. In all this initiative of green the planet, there are entities which vocation is design and implement mechanisms that modify behaviors or grant resources that support the commitments of society and the governments for a viable development to long term. Therefore, the objective of this work is to show, based on the analysis of the conditions of Cuba, essential elements to design economic instruments within their regulatory frames and capabilities for responsible environmental management. The study is located in two stages, first capturing the national baseline in the application of economic instruments and in a second moment the preparation of a summary of these and the implementation advantages and limitations in the country. To do this, theoretical methods such as historical logical and documentary analysis, as well

as empirical methods such as interviews and observation are used. The role of the legal field and structural dynamics are of great relevance to achieve the diversification of economic instruments in the nation with greater effectiveness and acceptance.

Keywords: economic instruments; environmental management; sectors of the economy.

RESUMEN

Tanto a nivel nacional como internacional, ha sido necesario diversificar los instrumentos que permitan alcanzar los objetivos de la política ambiental. En toda esta iniciativa de enverdecer el planeta, existen entidades cuya vocación es diseñar e implementar mecanismos que modifiquen conductas u otorguen recursos que soporten los compromisos de la sociedad y los gobiernos por un desarrollo viable a largo plazo. Por tanto, el presente trabajo tiene como objetivo mostrar, a partir del análisis de las condiciones de Cuba, elementos esenciales para diseñar instrumentos económicos dentro de sus marcos regulatorios y capacidades para la gestión ambiental responsable. Se ubica el estudio en dos etapas, captando primero la línea base nacional en la aplicación de instrumentos económicos y en un segundo momento la elaboración de un sumario de estos y las ventajas y limitaciones de implementación en el país. Para ello se emplean métodos teóricos como el histórico-lógico y el análisis documental, así como métodos empíricos tales como entrevistas y observación. Resultan de gran relevancia el papel del ámbito legal y de dinámicas estructurales para el logro de la diversificación de los instrumentos económicos en la nación con mayor efectividad y aceptación.

Palabras clave: instrumentos económicos; gestión ambiental; sectores de la economía.

RESUMO

Tanto em nível nacional quanto internacional, tem sido necessário diversificar os instrumentos que possibilitam alcançar os objetivos da política ambiental. Em toda essa iniciativa para tornar o planeta mais verde, existem entidades cuja vocação é projetar e implementar mecanismos que modifiquem comportamentos ou concedam recursos que apoiem os compromissos da sociedade e dos governos para um desenvolvimento viável a longo prazo. Portanto, o objetivo deste documento é mostrar, com base em uma análise das condições de Cuba, os elementos essenciais para a elaboração de instrumentos econômicos dentro de seus marcos regulatórios e capacidades de gestão ambiental

responsável. O estudo está dividido em duas etapas: primeiro, a captura da linha de base nacional na aplicação de instrumentos econômicos e segundo, a elaboração de um resumo desses instrumentos e das vantagens e limitações de sua implementação no país. São empregados métodos teóricos, como a análise histórico-lógica e documental, bem como métodos empíricos, como entrevistas e observação. O papel da esfera jurídica e da dinâmica estrutural na obtenção de uma diversificação mais eficaz e aceita dos instrumentos econômicos no país é de grande importância.

Palavras-chave: instrumentos econômicos; gestão ambiental; setores da economia.

INTRODUCTION

Every day in an economy, decisions are made based on the use of a very diverse matrix of Economic Instruments (IE in Spanish). They seek to influence certain growth or development goals and, indirectly, regulate the behavior of those economic agents that deviate from these objectives. In parallel with the desire to meet these goals, and in the absence of other economic signals that indicate to the actors that their decisions are correct or not, a group of environmental externalities are generated (such as pollution or overexploitation and/or loss of natural resources), which, seen from an economic perspective, mean nothing other than a loss of capital, in this case of a natural kind. However, this perception does not reach each economic agent in the form of obvious signals that help correct their behavior, since, in part, external effects are not part of the goods and services that are traded in the market, while, on the other hand, traditional IEs are inefficient and "fail" to capture them and, therefore, induce a change in behavior. As a result of this, a typology of instruments emerges that is classified as "economic-environmental" as its purpose is to change the behaviors of the economic agents that generate environmental externalities.

External environmental effects or environmental externalities not only affect an ecosystem or a natural resource, they can be both positive and negative and depending on that, the behavior of the agents is rewarded or corrected. However, the greatest focus of attention is occupied by the negative external effects, which often radiate throughout society, generating, in the form of a social cost, a loss of well-being or simply, in the form of a private cost, greater production costs and/or lower business profitability. This type of contradiction between economic growth and simultaneous generation of environmental externalities is not something casual, but rather has a causal character, based on its roots in historically established patterns of production and consumption. Faced with this

type of situation, the State, in its role as a regulatory actor of the economy, has the possibility of reversing the problems through the use of economic-environmental instruments.

Authors such as Llanes Regueiro et al. (2012) state that, for greater effectiveness in solving environmental externalities, it is not enough to use IE based on each environmental problem to be resolved, but rather it is recommended that these be combined with administrative instruments. Given the diversity of environmental externalities that are generated in the economy, not all IEs show the same level of effectiveness, so in the literature it can be found a combination of instruments that are effective for different types of environmental problems, or at least for minimizing impacts and/or encouraging good behavior.

The use of IE at the service of environmental public policies has become widespread in all countries. There is great heterogeneity in its design and application, for this reason it can be found traditional IE adapted to environmental purposes and others that arise from a strictly environmental perspective. The use of IE constitutes a link between policy and environmental management.

The objective of this work is to show, based on the analysis of the conditions of Cuba, essential elements to design IE within their regulatory frames and capabilities for responsible environmental management. To this end, a first section provides a general framework of the IE and the possibilities of application in Cuba and then a section for each identified instrument. Finally, the conclusions are presented.

MATERIALS AND METHODS

The methods used to achieve the objective of the study, taking into account a diagnostic phase of the national context and a second space for the compilation and contribution of the relevant elements for the identification of the different economic instruments, are conceived in a combined way between the theoretical and the practical.

A documentary and bibliographic analysis (classical and contemporary, in Spanish and English) is used to determine the theoretical framework of the research, systematize the concepts and assess the trends in the use of economic instruments, synthesis of characterization for those selected, according to the potential for application in the country, as well as their respective implications.

A historical-logical analysis is developed in the study of the evolution of the concepts and competencies of each of the economic instruments to be shown, by virtue of their application conditions and other attributes of interest to the actors involved.

A systemic method is promoted that allows acting in two stages based on the decomposition for the analysis of all the relevant elements in the application of the different economic instruments. In addition to empirical methods such as scientific observation, based on the exchange with experts that involve the topic at the national level, procedures are used to develop the research such as: analysis and synthesis, abstraction and induction-deduction.

RESULTS AND DISCUSSION

Economic instruments: general aspects and perspectives for Cuba

Although in light of today there is a greater understanding of the need to use IE, there is not a single nomenclature or taxonomy for them, using the terms "instrument", "mechanism" or "incentive", which are also accompanied by different adjectives such as "financial", "environmental" or "economic". Although this conceptual distinction seems trivial, in practice it generates both problems of communication and effectiveness in its implementation.

According to Llanes Regueiro et al. (2012) the most accepted universal version of an instrument is that of what is used to do something, while by mechanism it is understood the practical means used in the arts. This is why there are mechanisms that try to establish how a certain instrument or combination of them is applied to achieve some objective or goal. Consequently, they define IE as: those that seek to achieve environmental improvement, modifying the lines of action of people, groups, communities and corporations, through indirect regulations and incentives, preferably, but also through negative sanctions / stimuli for not adapting to environmental regulations (Llanes Regueiro et al., 2012). This definition makes it clear that IEs act on key economic variables such as prices, costs or income, just to name some of the most common.

Financial instruments are conceived within the IEs. They are part of the economic incentives, taxes, credits and specific funds, which aim to contribute to financial sustainability in the use and conservation of natural resources and the environment, the fight against pollution and the confrontation with climate change. Financial instruments facilitate financial solutions to environmental problems in key sectors of the economy, based on the mobilization and redistribution

of financial resources. As they also contribute to warning the behavior of economic actors, in order to correct the main existing environmental problems.

While financial mechanisms are a mode of operation of an economic-financial instrument that is applied to solve, correct or mitigate a given environmental problem. Its structure will depend on the group of actors involved, the legal regulations that regulate its operation, as well as the characteristics of the sector and ecosystem to which it is associated.

The Economic Commission for Latin America and the Caribbean (ECLAC, 2015) states that in terms of environmental management and policy, the most used instruments beyond the IE are:

- of Command and Control: they are regulatory in nature and establish specific standards or limits that the different agents must comply with, for example, emission or quality standards.
- Economic: they are based on the use of economic or market incentives to generate the desired behaviors.
- of Education and Information: they seek to educate and inform the different actors in society about relevant aspects of the environment, such as behaviors that are environmentally beneficial or harmful, the effects of different levels of pollution on the population and the benefits of conservation policies, among others.
- Voluntary: are those implemented by the productive sectors, in which, through agreements, they raise environmental protection above the levels established in the norms or standards.

Specifically, the IEs seek to achieve environmental improvement, modifying the lines of action of the agents, in addition to generating economic resources for environmental management. The implementation pursues adequate management of the Ecosystem Services (ES) that ecosystems provide for the development of key sectors such as: agriculture, fishing, tourism, forestry and conservation, under a sustainability scenario.

The use of IE in environmental management dates back to the 70s when the most industrialized countries began their environmental policies. The use of these in solving environmental problems comes hand in hand with the neoclassical theoretical basis of Environmental Economics. While Ecological Economics, another of the most important disciplines within economic theory and nature, despite doubting the convincing internalization of externalities, does not dismiss in a practical sense how the use of these instruments helps reduce the impact of the economy about ecology. It is then observed, from the beginning of the use of IE to the present, a growth in the variety of instruments

used, in the same way they do not have the same presence in developed countries as in underdeveloped ones. The wide range of IE opens accordingly to the evolution and emerging needs. The areas of application, among other subjects of environmental policy, are usually identified in: pollution problems (waste management and recycling, changes in the quality of water, air and soil, gas and particle emissions); resource management (water, forest, soil); biodiversity (conservation, education and research).

The objective of the IE is that the protection and good use of the natural heritage is a consequence of the regulation of the laws of supply and demand. They affect the costs and benefits attributable to alternative courses of action faced by economic actors. Additionally, they offer the opportunity to complement environmental management due to two basic advantages: 1) They introduce greater flexibility through incentives based on prices and costs and 2) They also offer the possibility of obtaining revenue to finance environmental management and investments through funds specifically destined.

For these reasons, in addition to not enjoying the same level of acceptance as Administrative or Command and Control Instruments, IEs have been gaining space. However, they are considered regulatory instruments, perhaps the criterion is that success often depends on mixed policies that include both types of instruments.

Once the types of instruments are defined, their origin is known for environmental policy, therefore, the areas of application, in addition to identifying factors that condition the implementation of the IE, are limited to: the relationship between the environmental authority and the fiscal authority, the generation and availability of information to carry out environmental management, the adaptation of the legal-institutional framework to enable operational environmental management, the territorial/ regional specificity of the instruments and the political priority and institutional strength achieved by environmental authorities.

In summary, when selecting the IE to use, one must take into account the nature of the environmental problem to be solved, its causes, its consequences and the practical, economic, political and ethical reality in which its design and execution.

At the national level, the policy environmental is executed through a comprehensive management that uses a group of instruments, for a total of 14, according to the new Law of the Natural Resources and Environment System (National Assembly of Popular Power, 2022). Inside of the IE they conceive:

financial instruments and economic incentives, taxes, credits and specific funds, which aim to contribute to financial sustainability in the use and conservation of natural resources and the environment, the fight against pollution and the confrontation with climate change. Not everyone has equal participation, neither there is a briefcase further ambitious inside of the wide battery of Existing IEs, however, the need for new IEs is recognized.

Based on different initiatives and projects that have been developed in recent years in Cuba, the context is conducive to the approach and insertion into the policy of the application of EI that link priority sectors and ecosystems, with the decision-making processes. at different scales and allow:

- Correct and regulate the behavior patterns of actors, with a view to reversing the latent causes of the main environmental problems identified today.
- Provide financial solutions to environmental problems in key sectors of the economy, based on the mobilization and redistribution of financial resources that encourage the sustainable use and conservation of the country's natural heritage.
- Promote economic, financial and environmental culture in productive and service organizations and entities on the national and territorial scene.

Recently, at the closing of the Biodiversity Finance Initiative (BIOFIN), as well as he Project GEF/UNDP "Incorporating considerations environmental multiple and its economic implications, in the management of landscapes, forests and productive sectors in Cuba" or ECOVALOR, in execution, the need to apply several IE is identified, which are shown in table 1. They are presented with a proposed time horizon and sectoral for implementation according to the viability of each one, taking into account the starting conditions, inter-institutional arrangements, among other aspects that mark the design and incorporation.

Table 1. Frame temporary and sectorial for IE potentials

IE	Temporary Horizon	Key sectors of Application
Payment for Environmental Services	Short term	Forest, Agriculture and Conservation
Market of carbon	Long term	Forest, Agriculture and Conservation

Tax Instruments	Current, short and long term	Conservation, Tourism, Industry
Concessions	Long term	Tourism, Fishing
Green Banking	Long term	Agriculture, Conservation
Funds	Current and long term	Conservation
Insurance environmental	Long term	Hydrocarbons

Source: Prepared by the authors

The future application of these IE requires a group of adjustments in the legal and regulatory field. Among the results and outputs committed to in the project, the application of at least three of these IE that incorporate the economic value of SE is planned. Therefore, the strategy to respond to these goals will be aimed at the following work objectives: 1) promote the development of technical capabilities for the economic analysis of different environmental problems, 2) develop standardized and legally supported methodological tools for the analysis economic-financial analysis of different environmental problems and their solutions and 3) demonstrate the practical viability of applying IE as a way to solve problems and generate environmental benefits.

The need to establish the critical path in the project emerges, which contributes to the creation of technical capabilities, the design and implementation of instruments and their incorporation into the decision-making processes. However, with a general approach, a conceptual framework of the different IE identified is presented with a view to providing a guide for national policy, which supports the process of selection for the sustainable management of SE by the different sectors. The annex presents a summary of the applicability of the identified IE.

Conceptual frame about the IE potentials for Cuba

Payments for Ecosystem or Environmental Services (PSE or PSA)

This IE responds to the two challenges that raises the rural world: the conservation of nature and the support it can provide to strategies of development socioeconomic in the communities. The idea central of the PSE o PSA is that the external beneficiaries of the SE pay in a manner direct, contractual and conditional to local owners and users for adopting practices that secure the conservation and restoration of ecosystems.

In 2005, the Forest Research Center, in order to use it in its research, developed a concept based on five criteria that must be met by systems of PSE (Wunder, 2007), because the its concept had not been materialized. The criteria for its definition, no being exempt of critics, are stated as follows: 1) are: a voluntary transaction, where...; 2) a well-defined ES (or a land use that would ensure that service)...; 3) is "bought" by at least one buyer of SE...; 4) to at least one SE provider...; 5) only if the supplier ensures the provision of the SE traded (conditionality).

Wunder's (2007) definition is the most popular to date, but many researchers in this area have realized that, in practice, the most of the systems of PSE do not comply with the five criteria proposed by him, which corresponds to the criteria of the present authors.

An essential part of this IE are the benefits that are linked to the living conditions of the people who manage it. Thus, in recent years the concept has been expanded to include the social benefits resulting from its implementation, seen above all in the sphere of agricultural production: rural employment, community cohesion and other measures aimed at mitigating rural migration. This new approach that adds specific additional investments in collateral socioeconomic benefits is what is called Remuneration for Positive Externalities, which distances itself from environmental problems and adds all the dimensions of sustainability.

The schemes of this instrument revolve around three groups of SE: those related to water and soil; climate stabilization and biodiversity conservation. The benefits of ecosystem interventions are multiple and although PES plans can focus on the improvement of one of the SE, this will impact the others, hence the need for a comprehensive approach when implemented.

Currently, PSE are classified into three types of schemes: based on area or products, public or private, and restricted use or productive enhancement. The most used is the first where the contract stipulates comparable uses of the land and/or resources for a predetermined number of land units. When they are based on products, consumers pay a `green premium', which is a premium for production schemes certified as friendly to the environment and, especially, to biodiversity (Pagiola & Ruthenberg, 2002). Private or public schemes refer to who the buyer is. Private ones have a greater focus on local needs and buyers pay directly. In the case of the public, the State is a mediator, acting in defense of the buyers of the SE, using for this purpose the collection of taxes and requests for donations to pay the suppliers. Finally, restricted-use PES schemes reward providers for conservation, while productive enhancement schemes seek to restore SE in a given area.

The financing of the PSE is referred to the legislation of each country, which does not allow its standardization. The few state financial resources require external (private) resources such as subsidies and donations from international organizations. According to Pagdee and Kawasaki (2021), PSE projects need the harmony generated by the application of technical expertise and external assistance for a long time, together with financial investments and government intervention. Until now, most PSE schemes have used cash as a payment vehicle, with some exceptions based on in-kind payments.

Carbon market

In 1997 the Protocol of Kyoto (PK) took place, international agreement that is derived of the United Nations Framework Convention on Climate Change. The PK wanted 37 countries and the European Community to reduce their greenhouse gas (GHG) emissions; in this context, the Carbon Market is born through the signing of the nations of the world for commit to stabilizing GHGs. It itself has as theoretical support Theorem of Coase and is defined as a trading system through of which governments, companies or individuals can acquire or sell GHG emissions reduction units, in order to comply with current and future obligations. What is exchanged in these markets are certificates that represent a GHG reduction. Each certificate generally constitutes an "X" amount of tons of CO_2 equivalent (tCO_2-eq.), a unit of measurement agreed upon by the Convention Secretariat, which represents the convertibility of the various GHG gases based on their intensity of pollution comparable to CO_2. The Carbon Market has two mandatory periods, the first of which runs from 2008 to 2012 and the second, starting with the Doha Amendment, between 2013 and 2020. According to the KP, countries must meet their reduction objectives, primarily through national measures, however, it also offers them an additional means to meet their objectives through market-based mechanisms: 1) Clean Development Mechanisms, 2) Joint Implementation and 3) Emissions Trading.

This market is usually divided into mandatory and voluntary. Voluntary Markets are institutional systems created with the intention of reducing CO_2 emissions, in States or regions that do not have obligations within the KP. What is marketed in this case is the sale of Emission Reductions which can be Certified or Verified, which translate into one ton of CO_2. The Regulated Carbon Market is used by companies and governments that have binding legal commitments due to the KP.

The way in which trading is carried out in the Carbon Market is like in any other market: there is a transferable good that can be negotiated between a supplier and a demander, agreeing on a fixed

value of such good for each party. The price is complex, both in the first mandatory period and currently, in which there is even talk of a financial bubble. Although there has been an increase in profits, it comes from the increase in the exchange of bonds, not from an increase in the prices of tCO_2-eq, which cannot be taken as positive. Prices should be maintained at a high enough level so that actors have sufficient incentive to change their technology to a less polluting one. The price of tCO_2-eq is essential for the Carbon Market to be an effective mechanism to mitigate GHG emissions; that is, more and more bonds are traded in different ways, although the price fluctuation was not what was expected. It is worth mentioning that each unit may vary in price depending on the needs of the market and its regulation.

The steps to establish it are (ParlAmericas, 2018):

- Establish the scope of the market (geographical area, sectors, sources of emissions and GHG that must be regulated).
- Collect robust emissions data; determine the limit level for the sectors.
- Distribute emissions rights to regulated entities while ensuring adequate oversight to address potential leakage issues that prevent carbon emissions sources from moving to different jurisdictions, with the intention of improving distributional impacts and creating opportunities for governments increase income.
- Address potential price volatility and uncertainty through market stability design features, such as a price floor, price ceiling, or emissions allowance reservations.
- Define a rigorous approach to meeting participants' obligations and for government oversight of the system.
- Constantly collaborate with stakeholders to understand and address respective perspectives and concerns to avoid public policy misalignment and ensure political and public support, as well as foster collaboration between government and market actors.
- Try to link national carbon markets with international markets. This expands flexibility in how far emissions reductions can occur, and can also improve market liquidity and competitiveness and facilitate international cooperation.
- Enable regular reviews of market functioning, supported by rigorous and independent evaluation, to enable continuous improvement and adaptation to changing circumstances.

Fiscal instruments

This block is made up of the most widely used IEs. The adaptation of these to the environment identifies them as environmental taxes. Which are nothing more than the taxes, fees and contributions that are applied for events that cause negative effects to the environment, which causes the intervention of the State as a control entity; to do this, it collects money based on what is established by the laws related to the event.

When designing and applying environmental taxes, it is very important to determine the objectives for the tax, taking into account various aspects such as: collection, incentives, delimitation of a sector, the taxpayer or, failing that, the object subject to tax. Whether the goal is the conservation or improvement of natural resources, an environmental problem to be solved must always be considered. This must be followed by the analysis of the contributing capacity of the polluting agents, which must be positive. Added to this is the application of the tax principles reflected in a legal and constitutional manner, and thus establish a structure that is made known in a transparent manner, appealing to the environmental and tax culture. Finally, it is essential that the simplicity of the tax structure be maintained. to avoid unnecessary costs on the part of the tax administration and reduce the possibility of evasion and avoidance (García López, 2018).

The application of environmental taxes has advantages compared to the use of traditional instruments that are seen in both static and dynamic efficiencies, generalizing their collection potential; however, hypothetically the main problems lie in their distributive impact. An environmentally related tax is one which tax base consists of a physical unit (or a substitute thereof) of some material that has a proven and specific negative impact on the environment. They include all taxes on energy and transportation and exclude value-added taxes (Cepal, 2015).

Environmental taxes are characterized by mandatory payments that are collected by he government and in which the benefit delivered by his application is not proportional to the payment made; for example, the collection of a tax for the emission of a pollutant into the atmosphere either to a course of water which collection goes destined to the general budget of the administration of environment of the government and no directly to reduce either treat are emissions. An example of a tax related to the environment corresponds to the tax on fossil fuels. Although in most national experiences this tax was developed for other purposes (for example, collecting resources for road maintenance or other general State purposes), its implementation generates environmental benefits through the

disincentive to fuel consumption and, therefore, it reduces associated emissions. Other examples are: taxes on energy generation, on the circulation of motor vehicles and others. Taxes that correspond to specific charges for the use of a natural resource should also be included, for example, a royalty for mining extraction or use of water for specific purposes.

For their part, charges and fees are mandatory payments to the government which Collection is more or less proportional to the services delivered, as is the case of garbage collection rates, sewage treatment, utilization of highways, etc.

Inside of this classification it is also included the subsidies to the consumption and to the production which application generates negative effects on the environment, with independence of other socioeconomic considerations. For example, subsidies for fossil fuels, energy consumption, water use, irrigation and fishing, among others, should be included.

Concessions

Concession is understood as the permit, contract, agreement, license, alliance granted by a government or administrative institution of the place to a "partner", of a special right of temporary use over land or assets, for a determined purpose based on the pre-established conditions. The authority that grants the Concession is the one in charge of monitoring and controlling the agreement between both parties.

These agreements constitute a legal tool that allows natural or legal persons to take advantage of the services provided by ecosystems, in exchange for economic remuneration (although there are non-profit agreements), as they are considered the natural resources heritage of a nation. Which allows diversifying recreation, tourism and other opportunities in Protected Areas (PA).

In the case of areas with great potential for public use, it is vitally important to enter into different models of public-private cooperation to leverage the skills and cPAital of the business sector to manage high-quality tourism services and infrastructure to guarantee safe, educational and unforgettable experiences to national and international visitors (Barborak, 2021).

Alliances according to the parties that make them up can be classified into three types: public-public, public-private or private-private. Generally, on one side is the State (the grantor), which grants non-governmental organizations, foundations, universities, private individuals, operators, communities,

companies, MSMEs (the concessionaires), through contract, the rights to use the natural resource. At the same time, they pay for it, they are responsible for the financing that guarantees the adequate maintenance of the service that is concessioned, under the principle of a profitable investment, in any area that is applied. Understand, for example, the landscape for tourism and recreational purposes, fishing, forestry, mining resources, soil and water.

The fundamental objective of the Concessions is that, through investment in equipment, infrastructure, services and better management by third parties, an improvement in the services offered is achieved, the satisfaction perceived by customers who are in search of contact with nature and environmental education, and that this contributes to greater local, regional and national development.

The experience in relation to this IE shows that, in a general sense, no institution is capable of achieving successful PA management in a unitary manner; everything indicates that the best functioning ones are those that normally involve several actors. At the same time, there is a direct relationship between the size of the PA management and its managers, that is, the larger and more complicated the management, the more actors are required.

It is important to note that the Concessions are limited to the offering of services and not to lands (land), the latter continue to form part of the PA where the concession project is located. Another relevant aspect is the duration of the contract, it must be sufficient for the concessionaires to recover the investment (if it exists and taking into account its characteristics), in addition to the opportunity to generate profits, but the grantor has the power to modify or terminate the Concession in case of non-compliance with what was agreed by the concessionaire(s), in no case it is recommended to reach very long-term or permanent agreements, if everything works correctly and if it is interest of both parties the contract is renewed. The institutional framework related to Concessions is not more or less effective, but depends on the national and local reality, the category of management, the complexity in the management of the PA in question, among other situational factors.

Some examples are: special events, hotels, restaurants, camping areas, transportation services, equipment rental, tours guided by different means or local guides, sale of souvenirs and local products, stores to purchase groceries, firewood, etc., sport fishing and hunting (guides, companies, areas), design, construction and maintenance.

Green banking

Starting in the 90s, relationships began to be established between the banking system and sustainability. As financial intermediaries, it became necessary to incorporate sustainability criteria for their management; for this reason, it is possible to assume the definition of Sustainable Banking offered by Aliciardi (2014): it is one that, by conscience and own decision of its shareholders, directors and employees, provides products and services called "ethical" or "green" only to clients who take into consideration the impact of their activities on the environment and society. For a bank to be considered sustainable, it must take on the challenge of developing, incorporating and applying corporate policies with environmental criteria based on policies and administrative systems for evaluating credits, risks, projects, among others, so that products and services are environmentally friendly and socially responsible.

Sustainable Banking, being a fast-moving area, many global institutions have researched and evaluated specific initiatives related to sustainability in the sector with the aim of accelerating and strengthening the development of good practices. Table 2 shows its main differences with respect to Traditional Banking.

Table 2. Main differences between Traditional Banking and Sustainable Banking

Criteria	Traditional Banking	Sustainable Banking
Goals	Obtaining economic benefits	Obtaining economic, social and environmental benefits
Investment and financing	Unlimited and aimed at companies that generate the greatest profits	Restricted to socially responsible companies
Information	Sparse and unclear	Transparent
Customer preferences	Profitability and security	Ethical use of your money
Customer engagement	scarce and null	Possibility to decide where you invest your money (environment and society)

Credit concessions	They grant prior credit, endorsement or guarantee	They grant credits to viable projects, without the need for endorsements and guarantees
Product designs	More adapted to the needs of the bank	More adapted to customer needs
Decision making	Directors and managers	All stakeholders

Source: Ramos López and Roiz Jique (2021)

The term has different meanings used by various stakeholders in the banking sector. Such is the case of global actors, such as the G20 Green Finance study Group and learning networks, the Sustainable Banking Network. These focus on green investment and environmental risk analysis, while local initiatives are even broader and incorporate areas such as knowledge sharing and dissemination and eco-efficiency practices. Another term related to Sustainable Banking is Green Finance which is often considered part of Green Banking and is understood as a component of a global initiative to protect the environment.

The Green Finance Latin America Report refers to Sustainable Banking as the group of actions and practices carried out by a bank in the following areas:

- Green Products and Services: value proposition of a bank to meet the needs of its clients, which incorporates environmental benefits and/or is assigned to economic activities that are part of the green economy, understood as the transition towards low-carbon, efficient economies resource-intensive and socially inclusive.
- Green Strategic Commitment: commitment of a bank's senior management to Green Banking practices and environmental sustainability, also a commitment to assuming a holistic sustainability approach within its business lines, environmental risks, eco-efficiency, etc.
- Environmental Risk Management: banking tools to manage the environmental risks of their clients and mitigate the transfer of these risks to the bank itself.
- Internal Eco-efficiency Practices: actions and initiatives to reduce and/or mitigate its environmental footprint and/ or optimize the use of resources through its own facilities and networks, or through its suppliers and customers.

Sustainable Banking, Green Finance and climate finance are just some of the terms given to practices related to climate change financing and the reallocation of financial cPAital towards environmentally conscious practices. It is essential to homogenize and show these definitions to deepen their development, influencing their acceleration and growth. Table 3 shows different concepts.

Table 3. Definitions for the financial sector-environment relationship

Term	Description
Conservation Finance	They are a mechanism through which a financial investment in an ecosystem is made directly or indirectly through an Intermediary, and which aims to preserve the values of the ecosystem in the long term.
Finance for Sustainable Development	Short-term investments for long-term sustainable development to achieve a green economy. A green economy and poverty eradication require major structural and technological changes in key sectors such as infrastructure, industry, agriculture and transport.
Green Finance	Mobilization of investments in environmentally sensitive areas such as agriculture, forestry, energy, mining and waste.
Green Banking	A green banker is not an individual, but a unit or a group or a team. Green or Sustainable Banking is not limited only to internal green activities, but extends to the facilitation of green financing. Environmental risk management guidelines are part of Green Banking to evaluate environmental risks and not to restrict investment; rather it is for Green Finance
Ethical banking	An organization that offers banking products that combine financial profitability with ethical aspects (social and environmental factors). Its main characteristic is that all products are ethical, although they are not focused on developing a specific sector of the economy. Its selection is based on the classification of products into positive and negative, excluding the latter. It emphasizes social inclusion, the gender struggle, the participation of interest groups and transparency.

Source: Latin American Green Finance Report (2017)

The United Nations Environment Program - Financial Initiative (2019) and Valls Martínez et al. (2019) when analyzing the sustainability of banking institutions, they recognize that there is no uniform application and that the total operations still have a limited scope because sustainable finances still do not have a priority order.

Funds

The Funds began to become widespread in the 90s. Some of the Issues that have been subject to financing are the coverage of recurring expenses of parks and PA, biodiversity conservation activities and use sustainable of the resources natural and strengthening of the institutions local people involved in environmental conservation. From an operational perspective, Environmental Funds can be seen in four areas of action: 1) search and catchment of resources, 2) processes of driving of the briefcase of investment, 3) operative mechanics of the funds and 4) execution of activities in the field.

Environmental Funds are appropriate when existing agencies cannot drive in an effective way the amount of funds and the activities necessary for treating the problem, when there is a need for new procedures or a new institution that count with the stake and be responsible in view of the parts interested.

To the long of the past decade, environmental funds have been established in many countries as a way to provide long-term financing for conservation of the biodiversity and others environmental activities. Generally, Environmental Funds are created and managed by private organizations and are capitalized through of subsidies of the governments and of agencies donors, of Profits of exchanges debt-nature and with the taxes and dues assigned specifically for the conservation. The funds seek to provide stable financing for the parks national and others PA, either good, subsidize organizations private and groups community for Projects that expand the comprehension of the conservation of the biodiversity using resources of manner further sustainable.

The three most common types of trust funds are: 1) Endowment funds: they spend only the interest generated while maintaining or increasing capital; 2) Sinking funds: they liquidate all their assets in a given period of time (for example, international projects or grants) and 3) Revolving funds: they are designed to receive regular replenishments often from various sources.

Environmental insurance

Environmental Insurance is no different from other types of conventional financial insurance except for the fact that it is oriented towards the protection of companies or other organizations against the risk of any ecological accident, pollution or natural disaster that causes environmental damage. In this case, the object of the insurance is a common and freely accessible property, which functions as a means to guarantee the cost of environmental recovery in the event that a phenomenon of this type occurs.

The provision of Environmental Insurance guarantees the availability of savings funds to face risks and compensation claims in the event of environmental contamination. It is, therefore, an IE to protect both the natural environment and nearby communities from negligence on the part of business owners in the conduct of their business and daily activities.

Unlike other types of EI for environmental protection, insurance has an ex-post effect, that is, it functions as a mechanism to finance environmental recovery once damage has occurred. However, it could also have preventive incentives due to additional associated costs, for example, the evaluation of the magnitude of the damages occurred and the processing of the legal process for payment by the insurer that is usually taken to court. This is without counting the loss of corporate image and moral and social prestige that may be generated depending on the magnitude of the event and the reaction of the media.

Among the actors that are involved with Environmental Insurance are, first of all, enterprises, both private and state, and whether they act as owners or operators of the area. These are the key economic actors who can contract Environmental Insurance and who benefit from it since it covers environmental liability risks (financial risk associated with environmental pollution) and natural catastrophe risks (risk of significant damage in relation to the occurrence of natural disasters).

In addition, there are insurers, entities that protect companies from unforeseen losses in exchange for insurance premiums. The greater the development of financial markets in the country in question, the greater the diversification of insurance policy offers. Consultancies or other types of institutions capable of carrying out environmental risk and damage assessments are also important actors, both in estimating the insurance premiums to be paid and in the amount of compensation once the disaster occurs.

Legal institutions also play a fundamental role since they regulate Environmental Insurance and define the guidelines from a contractual point of view. Conflict resolution in courts to obtain payment from insurers in the event of ecological accidents is common. Therefore, a solid legal system is needed for this IE to be viable. Environmental advocacy groups, international aid agencies, local governments, nearby communities and the media are also key actors who can influence the terms and conditions around Environmental Insurance.

In short, not all risks are insurable, while many are insurable only under certain parameters. These basic conditions are: that the risks must be distributed, that they must be reasonably well defined, be limited in time and be measurable, they must also be calculable from historical data or available information, there must be mechanisms to overcome moral hazard and adverse selection, in addition to the fact that any contract must be enforceable (Hidalgo Chávez & Rendón Schneir, 2021). However, it should not try to overvalue them; issues such as biodiversity and climate change cannot be insured.

There is a legal-institutional framework that advocates and expands the use of IE in the country. Environmental policy places them on different deadlines given the complexity and need for changes that these require. The IE range covers an important sectorial range with a view to enabling each individual economic development policy to catalyze synergies between them and where the environmental dimension is the transversal one that guides the development of the country towards sustainability. The feasibility of applying each one rests on different elements that impose challenges on the design of environmental policy and its link with legal aspects and economic policies. The success of design and implementation depends on the gearing.

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Conflict of interest

Authors declare that they have no conflicts of interest.

Authors' contribution

Yusimit Betancourt Alayón: Originated the idea of the article, compiles information, analyzes, studies and reflects on the EI for environmental management, debates on the advantages and disadvantages of these for the case of Cuba. Particularizes on Fiscal Instruments and Funds.

Laura Sánchez Monteagudo: Gathers information and conducts a study on EI for environmental management (with particular emphasis on Payment for Ecosystem Services, Carbon Market and Green Banking), the conditions Cuba has to develop them within its regulatory frameworks and capacities for responsible environmental management.

Raúl Rangel Cura: Gathers information and conducts a study on EI for environmental management, methodological and conceptual aspects, the conditions Cuba has to develop them within its regulatory frameworks and capacities for responsible environmental management.

Beatriz Ubieta Fernández: Gathers information and conducts a study on EI for environmental management (particularly on Environmental Insurance), the conditions Cuba has to develop them within its regulatory frameworks and capacities for responsible environmental management.

Fátima María Dorado Corona: Gathers information and conducts a study on EIs for environmental management (particularly on Concessions), the conditions Cuba has to develop them within its regulatory frameworks and capacities for responsible environmental management.

ANNEXES

IE	Áreas de aplicación	Ventajas	Limitaciones	Combinación con otros tipos de instrumentos
PSA o PSE	Terrenos marginales con moderados costos de oportunidad para laconservación. Áreas de actividad agrícola, forestal, cuencas hidrográficas.	Fomento del desarrollo rural y de la economía regional. Detener la degradación del capital natural. Promotor de la inversión en el capital natural. Permite alianzas entre diversos sectores de la sociedad.	Mecanismo sujeto a filtraciones (desplazamiento inadvertido de actividades destructivas a otras áreas). Inexistencia de un marco legal que incentive la creación y funcionamiento de estos esquemas. Deficiente capacidad para realizar valoraciones económicas de los servicios ambientales involucrados.	Con instrumentos de educación y formación, instrumentos de mercado y los de tipo voluntarios.
Mercado de Carbono	Áreas de actividad agrícola, forestal, en la industria energética, eltransporte. Bueno en contaminación del aire.	Aplicable cuando hay muchos contaminadores y no se saben los costos marginales. Flexibilidad cuando se fija un nivel máximo de contaminación.	Cuestionables resultados efectivos de la reducción de emisiones. Utilización por grandes industrias y países para acceder a recursos. Utilización marginal para países del tercer mundo.	Con instrumentos de educación y formación, instrumentos de mercado y los de tipo voluntarios.
Instrumentos fiscales	Áreas de actividad turística, la industria. Se aplican sobre el uso de recursos naturales, los niveles Contaminantes que se descargan, sobre productos dañinos.	Inducen un mejor desempeño y fomentan la innovación. Permiten incorporar los costos sociales. Se usan por un lado para recaudar, y por otro para desincentivar prácticas inadecuadas.	Ausencia de una plataforma jurídico- institucional operativa. Espacialmente las unidades de gestión integrada no coinciden con las estructuras jurídico-institucionales. De antemano no siempre se sabe la capacidad de respuesta del regulado (elasticidad).	Con instrumentos de Comando y Control.
Conce-siones	Áreas de actividad turística, forestal, pesquera.	Fomenta el empleo. Iniciativas rentables por el concesionario.	Conflicto de intereses si la política ambiental no está bien definida.	Con instrumentos de Comando y Control.
Banca Verde	El área de oportunidades no lo es solo para la banca, sino que, además, siendo negocio sostenible, le permite diferenciarse, innovar y alinearse con un mundo que, inevitable y afortunadamente, apunta a ser más sostenible.	La implementación de buenas prácticas internacionales de gestión de riesgos ambientales y sociales que buscan minimizar este tipo de riesgos en el financiamiento proporcionado por la banca. La creación de productos y servicios sostenibles dirigidos a apoyar una mayor eficiencia, productividad y, competitividad de sus clientes.	Se requiere de estrategias bien pensadas para ir migrando y adoptando de una manera paulatina las operaciones del banco hacia un sentido ambiental y social, manteniendo sus operaciones diarias y creando oportunidades de negocio.	Con instrumentos de Comando y Control y otros de mercado.
Fondos	Áreas protegidas donde sea necesario tazar el valor de los recursos naturales. Conservación y la biodiversidad de los recursos ambientales.	Bajo costo mientras que se mantiene una máxima objetividad y "espacio para maniobrar" por parte del fondo. El beneficiario es exclusivamente "responsable" de los resultados con el consiguiente incentivo adicional (en algunos casos).	Algunos beneficiarios pueden no tener la habilidad para dar un seguimiento adecuado sin apoyo. El beneficiario puede estar menos dispuesto a ser abierto/transparente con el fondo, temiendo un impacto negativo en el financiamiento. No pueden alcanzar el éxito sin el apoyo activo del gobierno y una amplia participación de una comunidad de agencias y organizaciones que puedan trabajar juntas, aunque difieran.	Con instrumentos de Comando y Control y otros de mercado.
Seguros Ambientales	Planificación de proyectos, preferiblemente en la creación de Parques y Áreas Protegidas. Nuevas empresas y edificaciones en actividades de riesgo.	Se establecen normas y sanciones para las empresas que podrían incurrir en un daño ecológico. Se garantiza obtener recursos para la recuperación ambiental luego de un desastre natural. Es beneficioso también para las empresas, las cuales se ahorrarían en multas por reparación de daños.	Es necesario que el país en cuestión posea un sistema legal sólido que garantice el pago de las indemnizaciones por parte de las aseguradoras, y de un desarrollo mínimo de los mercados financieros. No establece un sistema de monitoreo que fortalezca los incentivos a no contaminar o a no sobreexplotar los recursos naturales.	Con instrumentos de Comando y Control y otros de mercado.

Figure 1. Synthesis of applicability of the IE identified in national environmental management

Source: Prepared by the authors

Translated from the original in Spanish