



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

**Degree of Master of International Studies
(International Area Studies)**

**Viability of the Implementation of Green
Taxes in Guatemala**

August, 2016

Development Cooperation Policy Program
Graduate School of International Studies
Seoul National University

MARIA MERCEDES URRUTIA VALDERRAMOS

Viability of the Implementation of Green Taxes in Guatemala

A thesis presented

by

MARIA MERCEDES URRUTIA VALDERRAMOS

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Master of International Studies

**Graduate School of International Studies
Seoul National University
Seoul, Korea**

August 2016

The Graduate School of International Studies
Seoul National University

THESIS ACCEPTANCE CERTIFICATE

The undersigned, appointed by

Development Cooperation Policy Program

The Graduate School of International Studies
Seoul National University

Have examined a thesis entitled

**Viability of the Implementation of Green Taxes in
Guatemala**

Academic Advisor: Professor Ahn, Dukgeun

Presented by **MARIA MERCEDES URRUTIA VALDERRAMOS**

August 2016

Candidate for the Degree of Master of International Studies (International Area
Studies) that is worthy of acceptance

Signature
Committee Chairman


.....
Cheong, Young-Rok

Signature
Committee Vice-Chairman


.....
Song, Jiyeoun

Signature
Committee Member


.....
Ahn, Dukgeun

Abstract

Viability of the Implementation of Green Taxes in Guatemala

Maria Mercedes Urrutia Valderramos

International Area Studies

Graduate School of International Studies

Seoul National University

Recently, there is a lot of concern regarding the environmental challenges in encouraging to have less environmental pollution and degradation, and at the same time increase the preservation of the environment. It is an issue that concerns population, enterprises and States. As it is a public good, States should guarantee the best conditions for population regarding the environment. But the question is how can countries invest in environmental issues if they do not have the money or the willing to do that?

Guatemala, for example, is a country that has a lot of institutions and laws that control and try to protect the environment, but there is still a lack of commitment regarding the preservation and maintenance of it. From my perspective, Guatemala is losing natural resources due to some companies that take advantage of them, and do not pay or pay few amounts of money to the State, as incentives to protect the environment. But what can be done to create this enterprise environmental responsibility and at the same time increase the revenues of the State?

It is mentioned because Guatemala is a country with financial issues, every year the budget increases but there is still not enough revenues to cover the government's expenditure, creating a fiscal deficit and appealing to external financing to cover it. So my question is: Is there any chance to receive more income if we pay more attention to the environment?

My research intends to analyze the viability of implementing environmental taxes to increase the government revenues and also to preserve the environment in Guatemala, based on comparative analysis with other countries' experiences and some case studies, to provide policy implications.

By using the double dividend principle, it could be possible to win in both sides; the first one by increasing the government revenues, and the second one, by preserving the environment. Furthermore, at the end, answer the following research question: Would it be a viable alternative for Guatemala to apply green taxes as a source to preserve the environment and increase the government's revenues in the short term?

.....
Keywords: Green Taxes, Environmental Taxes, Guatemala, Ministry of Environment and Natural Resources, OECD, United Nations Environmental Program, UNEP.

Table of Contents

Abbreviations	iv
Introduction	1
I. Literature Reviewed	3
I.1 Toward the Implementation of a Green Growth	3
<i>I.1.1 Green Economy</i>	<i>10</i>
<i>I.1.2 Green Fiscal Policy.....</i>	<i>13</i>
<i>I.1.3 Green Taxes.....</i>	<i>15</i>
I.2 What has been written about Green Taxes in Guatemala.....	19
II. Countries Experiences Regarding the Implementation of Green Taxes	27
III. Analysis on the Considerations to Implement Green Taxes in Guatemala	39
III.1 <i>Legal Basis and Institutional Aspects</i>	40
<i>III.1.1 Legal Basis.....</i>	<i>41</i>
<i>III.1.2 Institutional Aspects.....</i>	<i>45</i>
<i>III.1.3 Analysis regarding legal and institutional aspects</i>	<i>49</i>
III.2 <i>Economic and Fiscal Aspects</i>	55
<i>III.2.1 Microeconomic and Macroeconomic effects</i>	<i>55</i>
<i>III.2.2 Public Finances and Public Budget in Guatemala from 2009-2014</i>	<i>62</i>
III.3 <i>Environmental Issues.....</i>	76
III.4 <i>Case Study</i>	80
<i>III.4.1 Mining in Guatemala</i>	<i>80</i>
<i>III.4.2 Environmental Impact of Mining.....</i>	<i>81</i>
<i>III.4.3 Financial Issues and Income Received by the State.....</i>	<i>85</i>
<i>III.4.4 Royalties comparison with some South American Countries.....</i>	<i>88</i>
<i>III.4.5 Conclusions and Personal Comments Regarding the Case Study</i>	<i>90</i>
IV. Policy Implications	93
V. References	100

Abbreviations

OECD	Organization for Economic Cooperation and Development
ECLAC	Economic Commission for Latin America and the Caribbean
UNEP	United Nations Environmental Program
LCD	Least Developed Countries
UN	United Nations
GDP	Gross Domestic Product
EU	European Union
GG	Green Growth
MENR	Ministry of Environment and Natural Resources

Introduction

Recently in Guatemala, there is a lot of concern about the environment. That is why the government's planning secretariat includes environmental issues in its sustainable development plan, which propose structural changes, considering environmental sustainability that is one of the pillars of national development and requires immediate and sustained social, economic and political actions, compared to current levels of degradation. It is very important to mention, because at least 70% of economic activity is directly dependent on the natural subsystems, so the growth of the economy in Guatemala has a direct correlation with the availability or depletion of natural assets.

From my perspective, the government has a huge challenge regarding these environmental issues, not just to preserve it, but also to take advantage of its natural resources and at the same time increase its revenues by implementing some economic measures for the use of natural resources that cause negative effects to the environment. That is why, my research tends to analyze the implications to consider the implementation of green taxes in Guatemala, as a source to preserve the environment.

First of all, it is important to know the efforts that international organization have been doing regarding environmental issues, what is the terminology that they are using concerning the environmental protection and what the trends are. That is why the first chapter will review literature related to Green Growth concepts, done by international organizations and others

authors. On the other hand, some studies regarding Guatemala's case, specifically on green taxes will be presented.

This research will also consider some countries' experiences, to know their process of implementation and also meet the progress and failures. Additionally, observe if Guatemala can use some of their experiences.

The main objective of my research is to propose a panorama of Guatemala, regarding institutional, legal, economic, fiscal, and environmental aspects. For this purpose, chapter III was divided in three parts, to analyze the relevant aspects found during the research. Furthermore, as there are several environmental issues in the country, a case study regarding the mining sector was selected to understand some facts. It is important because from my perspective, mining sector is one of the activities that cause a lot of damage not just to the environment, but also to some communities in the country.

It is important to mention that at the end of the research, it was concluded that and implementation of green taxes in Guatemala is not viable in the short term due to the arguments presented, but although I do not suggest the implementation, I suggest to pay more attention to the environmental issues in the country, and maybe after, consider a transition to use this fiscal tools.

I. Literature Reviewed

I.1 Toward the Implementation of a Green Growth

Green growth (GG) is a term to describe a path of economic growth that uses natural resources in a sustainable manner. It is used globally to provide an alternative concept to typical industrial economic growth. According to the United Nations (UN), the concept of GG has its origins in the Asia and Pacific Region.¹

At the Fifth Ministerial Conference on Environment and Development held in March 2005 in Seoul, 52 Governments and other stakeholders from Asia and the Pacific agreed to move beyond the sustainable development and pursue a path of "green growth". To do so, they adopted a Ministerial declaration (the Seoul Initiative Network on Green Growth) and a regional implementation plan for sustainable development. This commenced a broader vision of GG as a regional initiative of United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), where it is viewed as a key strategy for achieving sustainable development as well as the Millennium Development Goals. This approach adopted sought to harmonize economic growth with environmental sustainability, while improving the eco-efficiency of economic growth and enhancing the synergies between environment and economy.²

¹ United Nations Sustainable Development Knowledge Platform <https://sustainabledevelopment.un.org/>. Consulted 28/08/2015.

² Ibidem.

Also, in June 2009, Ministers from 34 countries signed a Declaration regarding Green Growth, which means fostering economic growth and development while ensuring that natural assets to continue providing the resources and environmental services which the welfare depends on. To achieve this, it must catalyze investment and innovation that underpin sustained growth and helps to achieve new economic opportunities.³ They emphasized that they were going to work in growth strategies as part of their answers to the crisis and more, recognizing that the environment and growth can be treated as one same issue. They supported the Organization for Economic Cooperation and Development (OECD) to create a strategy of green growth that considers economic, environmental, social, technological and development aspects in a complete framework.⁴

The United Nations Environment Program (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment. Its main encompasses are: i) Assessing global, regional and national environmental conditions and trends, ii) Developing international and national environmental instruments and iii) Strengthening institutions for the wise management of the environment.⁵ Researchers of this institution have been writing several documents regarding the Green economy, green fiscal policy and green taxes, and also have been working very hard to help some countries to implement green economy, to reach sustainable development.

³ Towards Green Growth: A summary for policy makers. Organization for Economic Co-operation and Development. May 2011. <http://www.oecd.org/greengrowth/49709364.pdf>. Consulted 28/08/2015.

⁴ Op. cit. Towards Green Growth.

⁵ United Nations Environment Program <http://www.unep.org/>

An essential element of GG is the adoption of policies that will foster economic development and simultaneously will protect environmental sustainability over the time. This implies the implementation of policies that either incrementally reduce source use per unit of value added or keep resource use and environmental impacts stable while the economy is growing overall. The concept double dividend effect can be used to refer to higher growth with lower environmental impact by improving the efficiency of resource use and increasing investments in natural and capital to drive economic growth.⁶

Several countries from the OECD have become an over-arching policy objective and all economic sectors are being scrutinized as to the extent to which they offer growth potential benefits considering environmental and social aspects. The experience of these OECD countries in developing and implementing policies to support green growth using a wide range of instruments and a variety of policy mixes are currently applied across them, mostly by the implementation of innovation and support for agricultural sector.⁷

In the case of developing countries, the OECD established that GG must support the structural transformation of the economy to achieve higher productivity and more value added. The emerging economies are the most enthusiastic about the opportunities offered by GG; many of them have access to the funds and technologies that can realize these opportunities. This approach is the chance for developing economies to leapfrog unsustainable and wasteful production and consumption patterns.⁸

⁶ OECD Green Growth Studies, Policy Instruments to Support Green Growth in Agriculture, 2013, P. 138.

⁷ OECD, Green Growth and Developing Countries consultation draft, Economic Co-operation and Development, 2012, P. 7-16

⁸ Ibidem, P. 7-16

Developing countries do not have the same share of global emissions compared to developed countries, although they face different and more difficult policy choices than developed countries in defining and implementing green growth strategies. Furthermore, they can have several opportunities for capitalizing on the synergies between the environmental and economic sustainability that are key to achieve global GG.⁹

The OECD suggested for developing countries a framework for making GG happen that includes: i) Green growth policy package of policy measures and regulation, ii) Investment, iii) Innovation, iv) Governance, and v) Capacity development at all levels. All of this implies some structural changes that must be done to implement them.¹⁰

Developing countries are the key to achieving global green growth in two major ways: i) the potential economic and social impacts of environmental degradation are particularly important. These countries are the most vulnerable to climate change and tend to be more dependent than advanced economies on the exploitation of natural resources for economic growth. In addition many of these countries face severe economic, social and ecological threats from energy, food and water insecurity to climate change and extreme weather risks. They also face risks from premature deaths due to pollution, poor water quality and diseases associated with a changing climate. All of these factors undermine their development. ii) Although, as it was previously mentioned, today most developing countries contribute only minor shares to global greenhouse gas emissions compared to the OECD and major emerging economies, they will increase their emissions if they follow conventional economic growth patterns. Increasingly developing

⁹ Op. cit. OECD , Green Growth and Developing Countries consultation draft, P. 7-16

¹⁰ Ibidem, P. 7-16

countries are becoming sources of global economic growth, emissions and, with these, more intensive use of natural resources.¹¹

The concept of GG is generating a diversity of political positions, from enthusiastic to cautious, reflecting variously a lack of clarity and experience, differential opportunities apparent to specific countries, and the risks of international GG policy regimes disfavoring a given country.¹²

A document presented by the OECD titled Green Growth and Developing Countries, suggests eight green growth policy instruments to tap green opportunities, these are mentioned below:

1. Certification of Sustainable Production and Trade: Green products in the marketplace have the potential to increase the market value and share for producers who are able to participate, thus contributing to economic growth while improving environmental practices and helping to ensure the long-term sustainability of the resource. It normally consists of the following elements: (i) agreement on what constitutes best/acceptable practice in a set of standards; (ii) an auditing process to assess compliance of production units with the standards; (iii) a tracing process to show that the final product in the market has come from sustainable sources; and (iv) labelling of the product to differentiate the product in the marketplace.¹³
2. Subsidy Reforms: Subsidies in the form in financial transfers, preferential tax treatment, and provision of services by government, aim to assist poor households to reduce prices for end users, to buffer shocks from global price spikes, or to promote development of

¹¹ OECD, Green Growth and Developing Countries, A Summary for Policy Makers, June 2012, P. 5-10.

¹² Ibidem, P. 5-10.

¹³ Op. cit. OECD, Green Growth and Developing Countries, P. 15.

certain productive sectors. The key to ensure subsidy reform could reach more inclusive outcomes for green growth is to make appropriate use of the money that is freed up by subsidy reform to both ease the transition for poor people and lead to improvements in the green growth capacity of the economy.¹⁴

3. Payments for Ecosystem Services: Are schemes that give cash and or in kind payments to farmers and other land managers as an incentive to conserve and enhance ecosystem services. These payments may be made by direct beneficiaries of the improvements in ecosystem services.¹⁵

4. Environmental Fiscal Reforms: A range of instruments are employed to raise revenue for governments, while furthering environmental goals when managing natural resources. They include taxes or royalties on natural resource extraction, user charges for services such as water supply and waste management to recover costs, and environmentally related taxes such as pollution charges. These instruments often form part of a package of reforms, making it difficult to distinguish the impact of the tax. Environmental taxes can increase efficiency in environmental management and use of natural resources. These instruments raise revenue which can be used for environmental and poverty reduction programs and/or to reduce the taxes imposed on labor and capital which have more negative distorting effects, the so called double dividend.¹⁶

5. Green Energy Investment Frameworks and Incentives: Green investment will require the development of a sound framework of fiscal, financial and legislative instruments.

¹⁴ Ibidem, P. 15.

¹⁵ Op. cit. OECD, Green Growth and Developing Countries, P. 16.

¹⁶ Ibidem, P. 16.

This is particularly the case in the energy market, which requires significant government support for renewable energy to establish an initial market share, to gain access to the national electricity grid and other energy infrastructure, and to attract investment.¹⁷

6. Inclusive Green Social Enterprise: Increasingly, social enterprises aim at achieving “triple bottom line” economic, social and environmental returns, and thus address many of the GG criteria that are important to developing countries. Social enterprises that focus on overcoming technological challenges or cost barriers contribute to innovation, an important driver of green growth.¹⁸

7. Sustainable Public Procurement: Sustainable Public Procurement (SPP) can stimulate demand and supply of products that contribute to social and environmental objectives. In light of the rapid urbanization developing countries are facing, by exploiting the power and scale of government purchasing, the state can lead markets in ways which are quicker and more certain than relying on market mechanisms.¹⁹

8. Green Innovation: As many developing and emerging economies are still in the process of establishing their infrastructure and developing manufacturing systems, there is an imperative to innovate towards greener solutions from the outset, both technological and institutional. Frugal, low-cost innovation makes products accessible for a larger share of the population in ways that are also often greener than those used for other products.²⁰

¹⁷ Ibidem, P. 17.

¹⁸ Op. cit. OECD, Green Growth and Developing Countries, P. 18.

¹⁹ Ibidem, P. 18.

²⁰ Ibidem, P. 19.

As it was observed, GG includes several aspects that can contribute to protect the environment and solve other problems by using some policies. It is also important to understand the concepts of green economy and green fiscal policy that are part of GG. They are described below, to have a broad view of their main concepts.

I.1.1 Green Economy

Sustainable development has been the overarching goal of the international community since the UN Conference on Environment and Development in 1992. Amongst numerous commitments, the Conference called upon governments to develop national strategies for sustainable development, incorporating policy measures outlined in the Rio Conference, held by the UN in June 2012, in which they proposed two main important issues: i) build a green economy to achieve sustainable development and to free the people from poverty, including support to enable developing countries to find a green path to development, ii) improve international coordination for sustainable development; and also Agenda 21.²¹

UNEP established that a Green economy is characterized by substantially increased investments in economic sectors that build on and enhance the earth's natural capital or reduce ecological scarcities and environmental risks. These sectors include renewable energy, low-carbon transport, energy-efficient buildings, clean technologies, improved waste management, improved freshwater provision, sustainable agriculture, forestry, and fisheries. These investments are driven

²¹ United Nations, RIO+20, Conferencia de las Naciones Unidas sobre el Desarrollo Sostenible, El Futuro que queremos, 2012, P. 1-16.

by, or supported by, national policy reforms and the development of international policy and market infrastructure.²²

Green economy is defined as one that results in improved human wellbeing and social equity, while significantly reducing environmental risks, ecological scarcities and that aims for sustainable development without degrading the environment. It is closely related with ecological economics, but has a more politically applied focus. It also has become a priority for many governments and it has caught the attention of several international organizations, mostly due to the opportunity to promote initiatives to support the environment's recovery, considering the ecosystem and as a mean to alleviate poverty in some countries. This concept sets new priorities for macroeconomic policy with growth being generated by economic sectors that are critical or highly material for greening the global economy.²³

José Antonio Ocampo presents some macroeconomic dimensions of green economic growth, highlighting some issues regarding the following:²⁴

1. Intertemporal welfare, considering the future generations regarding in current economic decision and the issue that is relevant for savings and investment decisions today, but has broader implications, as the social discount rate chosen should be used in cost-benefit analysis at the microeconomic and sectoral levels.

²² Sukhdev, Pavan; Stone Steven; Nuttall, Nick. Developing Countries Success Stories. United Nations Environmental Programme, 2010. P. 3-15.

²³ Ocampo, José Antonio. The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective. Division for Sustainable Development, UN-DESA. P. 3.

²⁴ *Ibidem*, P. 4-13.

2. The effects that the degradation of the environment has on aggregate supply, as well as the effects of environmental spending and protection policies on both, aggregate supply and demand.
3. The fact that economic growth is always a process of structural change, a fact that is highlighted by the significant changes in the patterns of production and consumption that must be put in place in the transition to the green economy, which in this regard can be characterized as no less than a new technological or industrial revolution.
4. How global initiatives in this area are going to be financed.

According to Ocampo, the implementation of this green economy represents several challenges and risks, particularly for developing countries, because their economic development becomes more demanding and the fear arises that the new concept could be used to reinforce protectionist trends, enhance the conditionality associated with international financial cooperation, and unleash new forces that would reinforce international inequalities.²⁵

The UN, calls for support to be given to developing countries in their efforts to achieve sustainable development and eradicate poverty. In this context, particular emphasis is placed on “green economy” policies, especially in Least Developed Countries (LDCs). Prioritizing government investment in green sectors can be conducive to inclusive growth and long term

²⁵ Op. cit. Ocampo, P. 3.

sustainability, also will need some external sources of finance to achieve green economy, through public funds and private investment, due to their fiscal condition.²⁶

Green fiscal policy is part of green economy concept, which will be described as follows.

I.1.2 Green Fiscal Policy

Fiscal policy plays a critical role in a green economy and their effective use is a prerequisite for transition to a green economy. Fiscal stimulus measures have played an important role during the crisis, including in many instances through specific measures to promote environmental protection activities. Some studies emphasize the merits of indirect over direct taxes, and the particular risk associated with levies on financial capital. Besides, it is a very sensitive issue to address because tax revenues that governments receive, comes from businesses and households, considering both consumption and investment decisions. Furthermore, how governments spends these revenues not only on recurrent cost, but also investments in public infrastructure or supporting technology development, plays a critical role in shaping the path of economic development.²⁷

Good fiscal policies generally favors environmental charges over green subsidies, that is due to the measures to raise the cost of pollution are likely to create more effective incentives for curbing

²⁶ International Labor Office, Greening the Economies of the Least Developed Countries: The Role of Skills and Training, 2014, P. 1-12.

²⁷ Sukhdev Pavan and Stone, Steven. Driving a Green Economy Through Public Finance and Fiscal Policy Reform. United Nations Environment Programme. Working paper V. 1.0. 2010. P. 2-34

inefficient demand than green subsidies, although tax reforms may be sensible precursor to implementing pollution charges.²⁸ Environmental measures have been a valuable part of fiscal stimulus packages, although their effects, some analysis suggests that environmental support programs could have strong multiplier effects, and may also appeal to policy makers to the extent that they foster domestic demand more than would, for example, general consumption or income support.²⁹

Some economic instruments of environmental policy can consist in penalize or reward economic agents for their environmental behavior. One clear example is the environmental taxation that can be defined as an instrument to encourage changes in the behavior from an environmental perspective. It is important to consider this environmental taxation, because the main objective is not collecting money, but mostly to change the behavior and do not scarify people who has not participated in environmental transactions and have to pay for that. For this issue, the “one who pollutes pays” helps that the allocation of the resources can be more efficient and at the same time paid by economic agents who are responsible.³⁰

Fiscal policy can provide critical set of instruments for building green economies by pricing environmental externalities and redressing social impact. Particularly, it can support the shift of investments towards clean and efficient technologies, natural capital and social infrastructure such as education, skills training, health care and social protection systems.³¹

²⁸ *Ibidem*, P. 2-34

²⁹ *Ibidem*, P. 2-34

³⁰ Jofra Sora, Marta; Puig Ventosa Ignasi, *Fiscalidad Ambiental e Instrumentos de Financiación de la Economía Verde*, January 2014, P.1-14.

³¹ United Nations Environmental Programme, *Fiscal Policy*, Briefing Paper P. 1-4

Some of the lessons learned from fiscal policy reforms can be: i) Increase transparency of fiscal reforms to build trust, ii) Communicate and engage with stakeholders, including the private sector, to raise awareness of the benefits of fiscal reforms, inefficiency of current practices and measures to address distributional effect in order to overcome opposition, iii) Reform other complementary regulatory measures in parallel, iv) Gradually introduce the price increase and phasing out of subsidies, v) Introduce targeted social programs to mitigate negative impacts on the poor.³²

Green taxes are part of the fiscal policy, and is the focus part of this thesis. Those are described below.

I.1.3 Green Taxes

Green taxes can also be called environmental taxes or pollution taxes, and are excise taxes on environmental pollutants or on goods whose use produces such pollutants. Economic theory suggests that taxes on polluting emissions will reduce environmental harm in the least costly manner, by encouraging changes in behavior by those firms and households that can reduce their pollution at the lowest cost.³³

Green taxes and charges are an essential element of policy frameworks to encourage the transition of green economy, for example, if there a relative increase in the cost of the polluting goods and services, environmental taxes can be a powerful policy tool for encouraging more sustainable economic behavior.³⁴ They can also increase the government revenues. Some environmental

³² Ibidem, P. 1-4

³³ Tax Policy Center, <http://www.taxpolicycenter.org>, consulted on 02/10/2015.

³⁴ Op. cit. Sukhdev Pavan, P. 2-34.

reforms implemented in several countries seems to have a very good impact and very effective, other countries are still on their way to consider the implementation of green taxes.

They have proven to be the most effective and efficient tool with the appropriate design, in addressing not only environmental externalities but also inducing green investment. Also, these tax reforms in several countries have been supported by broader fiscal reforms aimed at reducing overall tax burdens, increasing employment and addressing social concerns.³⁵

These taxes are one policy instrument that can be used to ensure that some of the externality costs, are internalized or priced into the decision making process. They can also raise the revenue, considering the country's fiscal position, existing tax distortions and evidence on efficiency gains from alternative tax mixes and the desire to guard the environment under the tax system.³⁶

According to the OECD, a broader use of environmental taxation or emission trading systems would be one of the most efficient and effective ways of promoting green growth. The OECD has been analyzing and promoting the use of market-based instruments for many years; for the last 15 years or so, under the auspices of the Joint Meetings of Tax and Environment Experts, where experts primarily from ministries of finance and of environment come together twice a year.³⁷

Some of the advantages of the implementation can be: i) effectivity cost, by achieving the objectives in a less costly way; ii) automatic adjustment, levels of emission automatically adjusts

³⁵ United Nations Environmental Programme, Fiscal Policy, Briefing Paper P. 1-4

³⁶ OECD, Environmentally Related Taxes in OECD Countries, Issues and Strategies, 2001, P. 21-25.

³⁷ OECD, <http://www.oecd.org/env/tools-evaluation/environmentaltaxation.htm>, consulted 03/09/2015.

to the tax; iii) generation of economic and environmental benefits, by receiving income and at the same time conserve natural resources; iv) integration of the environment in the sectoral policies, by automatically incorporating to all sectors, the costs that generates the ones who pollute.³⁸

In the report named Taxation, Innovation and the Environment, the OECD mentions important issues regarding the current use of environmentally related taxation, concluding that the revenues from environmentally related taxation form an important component of OECD countries' overall tax revenues, and these are mostly from taxes on motor fuels and motor vehicles, with taxes on all other environmental harmful activities accounting for only a small fraction of the total revenues. Also these countries have been expanding their use of taxes on other environmentally harmful bases, such as with specific emissions to air and water and taxes on waste disposal.³⁹

Developing countries are typically defined for having middle income economies, compared with the countries in the OECD, and also it is relevant to mention that they have limited human capital, incompletely developed legal systems and developing public administration systems. This features can affect the use of environmental policy and taxes in particular. At the same time, the author explains that there are at least two reasons developing countries and transition economies might want to use environmental taxes. i) taxes on environmentally harmful behavior are appealing, because they have the potential to raise revenues for governments that may substitute for taxation on good activities like labor, ii) environmental taxes can force markets to recognize

³⁸ Moreno Arellano, Graciela; Mendoza Sánchez, Paola; Ávila Forcada, Sara. Impuestos Ambientales, Lecciones de Países de la OECD y experiencias en México. P. 14-15

³⁹ Taxation, Innovation and the Environment, OECD Green Growth Strategy, 2010, P. 70-77.

the environmental costs they impose on societies as a result of their activities, potentially creating strong incentives for economic agents to do their best to reduce environmental damage.⁴⁰

In the case of LCD's, limited financial resources can be a constraint to government action, making it more crucial to prioritize spending in sectors and area that can promote sustainable social, economic and environmental gains to society. These governments can consider using green taxes and innovative economic instruments that can help them improve. For example, some low and lower-middle income countries have adopted environmental taxes or reformed subsidy programs for polluting activities, as in the case of Vietnam that passed its first law on environmental taxation and implemented it in 2012, and the case of Ghana, that in 2005 used the findings of a poverty and social impact analysis that demonstrated that petroleum subsidies go predominantly to higher income groups to initiate a public and parliamentary debate on reforming such subsidies.⁴¹

As it was observed, the concept of green growth is getting stronger and its implementation in several countries has helped to reduce environmental damage and increase the living condition of the population. In chapter II, several countries will be analyzed to understand how they did the transition into a green economy by the implementation of green taxes, the positive and negative consequences, and lessons to learn for Guatemala's case.

⁴⁰ Bluffstone, Randall A., Environmental Taxes in Developing and Transition Economies, Department of Economics of Portland State University, P. 143-146.

⁴¹ Why a Green Economy Matters for the Least Developed Countries. United Nations Environmental Program. May 2011. P. 4-28.

I.2 What has been written about Green Taxes in Guatemala

In Central America, economic instruments for environmental management and environmental taxation has been little explored. Although some countries in the region have been making great efforts in the implementation of environmental management, in so many cases, the answers have been circumstantial or isolated initiatives that are far from a comprehensive policy for managing the natural capital of the Central American nations.⁴²

The Central American Institute for Fiscal Studies has evaluated the necessity to incorporate the environmental variable in the expenditure discussions not just for governments, but also for private companies, institutions and homes. Due to the recognition of the strategic value of the natural environment as a key variable for development, since 2013, this institute has proposed studying the environmental aspects of fiscal policy, assuming that the environmental fiscal policy or green taxation relates to the use of economic instrument, such as taxes or subsidies, to increase revenues and at the same time allows to correct market failures in the management of goods and services provided by the environment.⁴³

Juan Pablo Castañeda and Juventino Galvez, in the report Guatemala's Environmental Profile 2010-2012, mention that in many countries of the world, raising efforts for environmental management, regularly focus on three routes of funding, considering the following: 1) credits, through international and regional organizations such as the World Bank (WB) agencies, the International Monetary Fund (IMF) and other regional development banks, 2) voluntary funds and donations, through contributions to international organizations for specific projects, such as

⁴² Central American Institute for Fiscal Studies, icefi.org, consulted 02/10/2015.

⁴³ Central American Institute for Fiscal Studies, icefi.org, consulted 02/10/2015.

financial resources administered by the UNEP, and 3) themselves or self-financing funds, which are linked to public finances of each country and the decisions as independent states. If the society considers the third one, it will be an ingredient of sustainability to the financial efforts of the environmental management.⁴⁴

Although it is the most complex, it is possible to consider them through the use of the following instruments: 1) Regulatory, whose main purpose is the setting of environmental conditions, 2) Administrative, which aims to promote prevention and mitigation processes, 3) Persuasive, intended to inform, educate and raise awareness to increase opportunities for participation and feedback processes of positive changes in terms of environmental management, and 4) Economic, it aimed at changing the behavior of economic agents.⁴⁵ Most of the instruments presented do not have a collecting purpose, but they need financial resources for their operation.

Economic instruments, can be the base to regulate the market regarding the consumption, and the responsibility that implies if you pollute, you pay for it, and not sacrifice all the population when they have the right to have a good environment. According Castañeda and Galvez, the economic instruments can be divided as follows: 1) Incentive function, which considers system charges, fees and royalties, market creation and property rights; 2) Financial function, which considers financial instruments, bonds and deposit return systems, responsibility systems; 3) Fiscal function, which considers fiscal instruments as taxes.⁴⁶

⁴⁴ Perfil Ambiental de Guatemala 2010-2012. Vulnerabilidad local y creciente construcción de riesgo. Instituto de Agricultura, Recursos Naturales y Ambiente (IARNA). Universidad Rafael Landívar. P. 250-266.

⁴⁵ Perfil Ambiental de Guatemala 2010-2012. Vulnerabilidad local y creciente construcción de riesgo. Instituto de Agricultura, Recursos Naturales y Ambiente (IARNA). Universidad Rafael Landívar. P. 250-266.

⁴⁶ *Ibidem*, P. 250-266.

They present some charts related to the purpose of the expenditure in Guatemala, using the three economic instruments previously shown, and it is observed that incentives are more related to cover environmental purposes rather than fiscal or financial instruments. Economic instruments with fiscal role, although not all of them have environmental fate, are managed by four institutions: the National Council for Protected Areas, the Ministry of Environment and Natural Resources (MENR), the Ministry of Energy and Mines and the Superintendency of Tax Administration. They evaluated seven instruments, the only ones with environmental fate are:⁴⁷

a) Charges for licenses for import of chemicals, whose resources are managed by the MENR and the environmental taxed good or service is the atmosphere and the environment in general.

b) Tax from leaving the country, administered by National Council for Protected Areas, environmental good or service is taxed Biodiversity and forest.

In their research they propose four instruments to reach the environmental sustainability: 1) analysis of the suitability of allocating the road tax surcharge on vehicle environmental management, 2) a municipal fee for wastewater discharge, 3) a municipal tax surcharge on single properties, and 4) a municipal charge for establishment of billboards. The first of these is the one that corresponds to the central government, while the other for the municipal government.

This topic has also been discussed in some thesis works, as in the case of Lesly Pineda, in her work titled Considerations for the Implementation of an Environmental Fiscal Reform in Guatemala, presents a legal analysis of the implementation of green taxes. The author mentions that environmental protection through ecological taxes that replace previous methods of

⁴⁷ Ibidem, P. 250-266.

obligations or prohibitions, essentially suggests the transformation of a state law enforcement, a form of collaboration and cooperation between the State and Guatemalan society to sustain the environment as by environmental tax reform is meant the association between tax changes and environmental protection.⁴⁸

It can imply some advantages, disadvantages, and some obstacles that can allow us to analyze its strengths and weaknesses, for example: ⁴⁹

Advantages:

- ✓ They represent the best option for cost-effectiveness because they allow achieving stated goals in a less expensive way, by equalizing the tax with the marginal cost of abatement.
- ✓ Its setting is automatic, as polluters reduce their emissions to the extent that the cost of the shares is equal to the cost of paying the tax.
- ✓ Integrate environmental considerations into sectoral policies. Generate economic and environmental benefits and provide a double benefit to society therefore encourage the reduction of pollutants and generate revenue for the state.
- ✓ Internalize the externalities, as they correspond to the polluter pays principle and thus be able to offset the damage that is caused.

Disadvantages:

⁴⁸ Pineda Santos, Lesly Anai, Consideraciones sobre la Implementación de una Reforma Fiscal Ambiental en Guatemala. Universidad de San Carlos de Guatemala. 2011, P. 83-107.

⁴⁹ Op. cit. Pineda Santos, P. 83-107.

- ✓ Difficulty of finding the damage function, which generates the process of trial and error to find the right level for determining the tax.
- ✓ Interaction between polluters and tax authorities.
- ✓ Generate perverse incentives to avoid contamination, considering the asymmetry of information between regulator and the companies involved.
- ✓ Complication in the choice of indicators that truly reflect emissions.
- ✓ The uneven distribution of air pollutants, so it should set a different tax, as the range of pollutants.

Obstacles:

- ✓ Elasticities of supply and demand of taxable goods and services. If these taxes on consumer goods are applied, can produce a regressive impact on income distribution.
- ✓ International competitiveness of economies that may be affected by the rising costs of employers. You can estimate for each economic sector, which one will be more or less affected by environmental taxes.
- ✓ Incidence and distributional effects, as these taxes produce sectoral and regional difference, because the subjects and activities are not evenly distributed.

As prior to the implementation of an environmental tax reform steps, the author suggests:⁵⁰

⁵⁰ Op. cit. Pineda Santos, P. 83-107.

- ✓ Revise the existing tax system, after introducing new environmental taxes, other fiscal instruments to incorporate environmental policy and make a smooth application.
- ✓ The review of the existing system aims to observe the same taxes in order to be able to introduce changes in direct taxation to reduce distortions; the most common modification is to lower labor costs.
- ✓ Adapt existing taxes to the new environmental issues, so that the effects of the proposed reform are not superseded by the provisions of the existing taxes.

The author concluded that taxes in Guatemala do not have environmental orientation, and they just focus on the fiscal collection, without incorporating in the price of goods and services the costs of the ecological detriment. Furthermore, an environmental fiscal reform implies the creation of ecological taxes, in addition to the compensation for the increase in revenue with reductions in other taxes. This allows to establish a tax system that do not overload the citizens and at the same time reduces the resistance to new taxes. The author also recommends that the State should be more aware of these environmental topics and incorporate laws to protect the environment, and also the MENR with the Tax Administration should propose some tax reforms that carry fiscal penalty of the productivity towards pollution and unsustainable use of natural resources, and create taxes for environmental resources.⁵¹

There is also other thesis titled Analysis of Guatemala's Fiscal System from an Environmental Perspective, written by Ana Paola Franco, who concludes that economic conditions such as low

⁵¹ Op. cit. Pineda Santos, P. 83-107.

economic growth and fiscal restraint, and social conditions such as unemployment, limit the possibility of implementing a favorable economic environment such as instruments to correct externalities; however, the accelerated level of environmental degradation and overexploitation of resources itself justify application of the same, mainly because the necessary measures are not established on time, and in a medium term it could jeopardize the capacity to generate income in countries like Guatemala, because a significant part of economic activities are linked to the use of natural resources and environmental services.⁵²

Some other efforts have been made by Guatemala's Central Bank, The Ministry of Finance, and other institutions, who are considering with some international organizations, the creation of Environmental Accounts, based on the Environmental and Economic Accounting System, promoted by the United Nations.

In November 2013, The German Cooperation Agency GIZ, in collaboration with the Ministry of Finance and the Deputy Minister of Internal Administration and Systems Development of Guatemala, carried out a workshop on Environmental Accounts and Environmental Tax Reform. Some of the discussions were regarding the Integrated Environmental Accounting System, highlighting its importance to measure the economy through market prices and production costs. One of the most comprehensive view of the economy, which is not integrated into environmental accounts, is through the depletion of natural capital and environmental degradation. The goal is to improve the relationship between economy and environment. Furthermore, it was stated that it is important to consider the decision of the State on how much to spend on the environment,

⁵² Franco Hernández, Ana Paola, *Análisis del Sistema Fiscal de Guatemala desde la Perspectiva Ambiental*, Universidad de San Carlos de Guatemala, 2010.

considering the public budget, the provision of tax expenditure, including green exemptions, and prioritization of sectors.⁵³

The main objective of the workshop of these topics is the implementation and execution of an environmental fiscal reform, not only for the conservation of natural resources of a country, but for the improvement of the quality of life of their inhabitants and future generations.⁵⁴

In the next chapter, some countries experiences will be analyzed, to observe the impact of this countries when they implemented green taxes.

⁵³ Inter-American Center of Tax Administrations <http://ciat.org/index.php/en/component/content/article/3029.html>, consulted 02/10/2015.

⁵⁴ Op. cit. Inter-American Center of Tax Administrations.

II. Countries Experiences Regarding the Implementation of Green Taxes

This chapter presents information about countries that have implemented environmental taxes and how where their experiences through the process.

OECD countries have been working in related environmental taxes for many years. Some of the lessons that they have experienced are presented in their report titled *Related Taxes in the OECD countries: Issues and Strategies*, done in 1999 to 2000. It mentioned that by that time countries were still experiencing environmental challenges, including protection of the ozone layer, local air quality, waste management, biodiversity, among others, but their highest concern is how to reduce the greenhouse gas emissions. Some of the instruments utilized were green tax reforms. Depending on design features, environmental taxes support the polluter pay principle under which the costs of pollution, prevention and control, should be reflected in the price and output of goods and services which cause pollution, as a result of their production and/or consumption.⁵⁵ This countries considered taxes, because are flexible policy instruments that can minimize control costs for achieving a given pollution target, provide incentives for technological innovation and a reduction in polluting emissions.

Green-tax reforms can be implemented by a series of complementary measures, such as introducing new taxes or restructuring existing taxes. It is also important to remove or adjust environmentally harmful fiscal provisions, such as tax exemptions or subsidies that have

⁵⁵ OECD, *Taxation and Environmental Policies, Environmentally Related Taxes in OECD Countries: Issues and Strategies*, <http://www.oecd.org/ctp/tax-policy/taxationandenvironmentalpolitics.htm>, consulted 02/11/2015.

detrimental effects on the environment, while giving due notice to the non-environmental objectives the provisions were meant to serve. There is growing evidence on the effectiveness of environmentally related taxes in OECD countries as a means to reduce damage to the environment.⁵⁶

Table 1 shows the number of instruments that OECD countries have used since 2009 to 2013, and how much money they have collected as a percentage of the GDP.

Table 1
OECD Countries
Number of Instruments Applied and as a Percentage of GDP
Period 2009-2014

Countries	2009		2010		2011		2012		2013	
	Inst.	%GDP								
Australia	6	1.49%	7	1.52%	5	1.36%	1	1.19%	1	1.15%
Austria	10	14.25%	10	2.41%	5	0.31%		0.00%		0.00%
Belgium	12	1.94%	10	2.67%	10	2.00%	8	1.88%		0.00%
Canada	8	0.23%	8	0.25%	1	0.02%		0.00%		0.00%
Chile	7	1.31%	7	1.34%	7	1.57%	7	1.48%	2	0.64%
Czech Republic	19	2.62%	19	2.62%	18	2.64%	15	2.53%		0.00%
Denmark	29	3.80%	28	3.87%	28	3.91%	28	3.70%	27	3.72%
Estonia	5	2.53%	4	2.56%	1	2.19%		0.00%		0.00%
Finland	12	2.55%	12	2.68%	1	1.97%		0.00%		0.00%
France	13	1.57%	13	1.52%	13	1.52%	13	1.49%	13	1.48%
Germany	5	2.20%	3	1.54%	1	1.49%	1	1.43%		0.00%
Greece	5	1.99%	5	2.60%	3	0.66%		0.00%		0.00%
Hungary	17	0.55%	18	0.52%	1	0.06%	1	0.06%		0.00%
Iceland	9	1.31%	9	1.65%	6	1.50%	6	1.87%		0.00%
Ireland	10	1.57%	8	1.69%	8	1.65%	8	1.62%	8	1.68%
Israel	7	3.18%	7	3.22%	6	3.17%	6	2.94%	6	2.78%
Italy	13	0.91%	13	0.89%	13	0.93%	10	0.92%	9	0.48%
Japan	11	1.67%	11	1.59%	11	1.58%	11	1.57%		0.00%
Korea	10	1.41%	9	1.14%			2	0.52%		0.00%
Luxembourg	2	0.01%	2	0.02%	2	0.02%	2	0.03%	2	0.03%
Mexico	4	0.24%	4	-0.23%	4	-0.86%	3	-1.26%	3	-0.49%
Netherlands	10	1.45%	10	1.48%	1	0.81%	1	0.80%		0.00%
New Zealand	6	1.26%	6	1.33%	3	0.02%	2	0.00%		0.00%
Norway	21	2.35%	20	2.41%	22	2.29%	20	2.17%	19	2.15%
Poland	3	1.73%	3	1.65%	2		4	2.02%	3	1.99%
Portugal	7	2.40%	6	2.39%	4	2.21%	4	2.03%		0.00%
Slovak Republic	7	1.68%	7	1.60%	7	1.59%	7	1.50%		0.00%
Slovenia	11	3.02%	11	2.96%	11	2.90%	11	3.24%		0.00%
Spain	34	0.06%	34	0.05%	34	0.06%	28	0.03%	28	0.00%
Sweden	16	2.68%	16	2.57%	15	2.39%	15	2.38%	14	2.34%
Switzerland	33	0.72%	33	0.81%	33	0.80%	33	0.81%	33	0.79%
Turkey	4	3.54%	4	3.95%	4	4.32%	4	4.65%	4	4.02%
United Kingdom	5	1.99%	5	2.00%	3	0.13%	3	0.12%	3	0.14%
United States	182	5.11%	137	0.40%	83	0.27%	32	0.26%	11	0.00%

Source: Own elaboration base on the OECD Database on instruments used for environmental policy
http://www2.oecd.org/eoconst/queries/Query_2.aspx?QryCtx=2, consulted on 21/10/2015.

⁵⁶ Op. cit. OECD, Taxation and Environmental Policies, Environmentally Related Taxes in OECD Countries.

Governments that are EU Member States have promoted several climate change programs and invested in research and development. They are supporting the expansion of renewable sectors by investing more in low-carbon energy production considering wind, solar, geothermal, hydro and nuclear power. They have also been doing research partnerships considering private sector to fund renewable energy investments.⁵⁷ Nowadays these countries are promoting environmental friendly energy.

The most relevant instruments the EU is utilizing are regulations, tax instruments and trading systems. Other countries have done Environmental Tax Reforms since the 1990s and have taken an active role in implementing green policies, for example Belgium, Czech Republic, France, Italy, the Netherlands, Spain, Sweden and the UK, more than 30 green policies. Also, have implemented taxes regarding the following: i) the Netherlands and the United Kingdom, on energy production or consumption; ii) Denmark, Greece and Luxemburg, on mineral oil production, sales and consumption; iii) Estonia, Denmark and Poland, on CO2 emissions, regarding air pollution; and iv) France, Romania, Germany, Ireland and Spain, Finland, Austria, Bulgaria and the United Kingdom, on transportation (vehicles registration, import duty, weight based, emission based, sticker tax on use of new, insurance, air transport). Also, subsidies and tax credits have been granted to enhance energy efficiency in a variety of areas.⁵⁸

⁵⁷ International Labour Organization, European Union, International Institute for Labour Studies. Green Policies in the EU: A review. EC-IILS Joint Discussions Paper Series No. 14. P. 1.

⁵⁸ *Ibidem*, P. 2-4.

Subsidies have also been a very popular tool in EU countries like Slovak Republic that has provided environmental subsidies since 1991; in Italy, the motor vehicle scrapping subsidy was introduced in 2007; in the Netherlands, subsidies were provided for generation of electricity.⁵⁹

According to the report Environmental Tax Reform in Europe: Opportunities for the future, the main focus on efforts until now have been in the areas of energy, transport and water, where all the EU Members have some environmental taxes, charges or levies. Energy taxes are applied to energy products used from transport and for stationary purposes including fuel oils, natural gas, coal and electricity. The rate varies significantly across different energy products, sectors and countries. Transport taxes are related to road transportation and designed to promote the purchase of low carbon vehicles. Water-related taxes and charges are applied on drinking water supply and consumption, wastewater discharges and effluents, as well as on water abstraction.⁶⁰

There are some key lessons from the experience that they present by analyzing some cases of environmental taxes and charges. They found the following:⁶¹

- ✓ Czech Republic: They implemented air pollution charges since 1992, with the objective to reduce emissions of major pollutants and increase the efficiency by inducing fuel switching at pollution sources.

⁵⁹ Ibidem, P. 17.

⁶⁰ Withana Sirini, Brink Patrick ten, Illes Andrea, Nanni Silvia, Watkins Emma. Environmental Tax Reform in Europe: Opportunities for the future. Institute for European Environmental Policy. May 2014. P. 6.

⁶¹ Ibidem, P. 10-11.

- ✓ France: Introduced tax on polluting activities in 1999, with the aim to implement the polluter-pays principle and provide a price signal to discourage polluting activities. The tax covered the disposal of waste, atmospheric industrial pollution and air traffic noise. After that, it was extended to cover washing products, insecticide products, waste storage and incineration, and single use plastic bags. They also introduced in 2007 the bonus-malus system, regarding the vehicle acquisition, to encourage more fuel efficient vehicles.

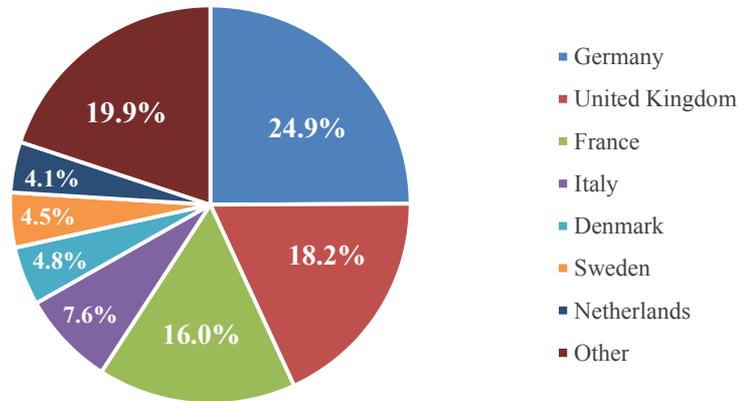
- ✓ Sweden: It was one of the first countries in introducing the CO2 tax in 1991, as a part of a wider fiscal reform package that included reductions to personal income taxes and environmental taxes. The tax has changes, its current focus is more environmental protection.

- ✓ Latvia: Tax implementation regarding the extraction of natural resources, waste disposal, air pollutants, among others. The tax aims to promote resource efficiency, reduce negative impacts, promote environmentally-friendly technologies and raise revenues.

According to the Database on instruments used for environmental policy⁶², provided by the OECD, from 1994 to 2013, the EU has received plenty of revenues raised by environmentally related taxes for EU countries. Figure 1 shows the total amount of money that they have received in that period.

⁶² OECD Database on instruments used for environmental policy
http://www2.oecd.org/ecoinst/queries/Query_2.aspx?QryCtx=2, consulted on 21/10/2015.

Figure 1
Environmentally Related Taxes
Percentage of the Total Revenues Received by
European Union Members States
Period 1994-2013



OECD Database on instruments used for environmental policy
http://www2.oecd.org/econst/queries/Query_2.aspx?QryCtx=2, consulted on 21/10/2015.

In the figure it is observed that the countries that have received a higher amount of revenues due to environmentally related taxes from the EU Members States are Germany, which represents the 24.9% of the total EU environmental income, and received US\$1,094,754.8 during 1994 to 2013, being the most representative 2007 to 2009, when it raised more than US\$74 million. United Kingdom represents 18.2% of the total environmental income, received \$800,126.1 during that period, and the most representative year was 2007, with US\$67,175.7 million; and France, that represents 16.0% of the total EU environmental income, received US\$704,032.8, and the most representative year was 2008, with US\$45,192.0 million.⁶³

⁶³ Op. cit. OECD Database on instruments used for environmental policy.

Germany, for example, has taxes on aviation, motor vehicle and nuclear fuel; and duties on electricity, duties on mineral oils, being the last one the most representative. United Kingdom, has climate change and aggregate levies; and duties on vehicle excise, air passenger, and hydrocarbon oils, being the last one the most representative.⁶⁴

According to the database, France has 13 environmental taxes. Some of them are CO2 related malus system for motor vehicle registrations, domestic tax on electricity final consumption, domestic tax on natural gas, mineral oils tax, and general tax on polluting activities.⁶⁵ Some of the environmental taxes in Italy are energy tax, forestry fund tax land protection and noise abatement levy, water fund tax, water pollution and air pollution levy.

Referring other OECD countries, it was very interesting to observe that United States has the higher amount of environmental taxes, and that is because they divide them according to its different states, so the collection can vary. The United States government has a long history of exploring the imposition of environmental taxes on environmentally damaging activities. When the United States placed environmental protection on its policy agenda in the late 1960s and early 1970s, U.S. scholars and policy analysts were global leaders in exploring how to utilize Pigou's⁶⁶ theory and translate it into environmental taxes designed to address specific environmental problems. In the early 1970s, President Nixon proposed taxes on lead additives to gasoline and

⁶⁴ Op. cit. OECD Database on instruments used for environmental policy.

⁶⁵ Ibidem.

⁶⁶ In 1920, A.C. Pigou quietly launched the effort to use tax systems to address environmental problems with his statement that it is "possible for the State, if it so chooses, to remove the divergence in any field [between trade and social net product] by 'extraordinary encouragements' or 'extraordinary restraints' upon investments in that field."

sulfur dioxide emissions, and although unsuccessful, his efforts represented one of the early attempts to try to harness tax systems for environmental protection.⁶⁷

The use of environmental taxation instruments in the United States is inevitably shaped by the nature of tax systems at different levels of government. The federal government relies on income taxes, excise taxes, estate taxes, and social security taxes, the first three of which are adaptable vehicles for environmental taxation instruments.⁶⁸ Table 2 shows the type of Federal taxes, collected from 2009 to 2012.

Table 2
United States Federal Taxes Collected
Period 2009-2013
Million of USD

Environmental Taxes	2009	2010	2011	2012
Aviation fuel tax	390.0	389.0	386.0	394.0
Diesel fuel tax	9,269.0	8,645.0	8,894.0	8,893.0
Gas guzzler tax	99.0	85.0	69.0	73.0
Gasoline tax	25,073.0	25,069.0	24,849.0	24,767.0
Heavy highway vehicle use tax	933.0	967.0	1,019.0	1,058.0
Heavy truck and trailers tax	1,673.0	1,860.0	2,576.0	3,533.0
Highway-type tires	306.0	357.0	425.0	390.0
Inland waterway fuel tax	75.0	80.0	81.0	84.0
Non-commercial aviation gasoline	33.0	34.0	31.0	
Oil spill liability	464.0	510.0	510.0	503.0
Other fuel tax	22.6	26.0	32.0	37.0
Ozone depleting chemicals tax	5.2	9.0	7.0	4.0
Special (other) motor fuels	2.0	2.0	3.0	
Total	38,344.8	38,033.0	38,882.0	39,736.0

Source: Own elaboration based on the OECD Database on instruments used for environmental policy http://www2.oecd.org/economics/queries/Query_2.aspx?QryCtx=2, consulted on 21/10/2015.

⁶⁷ Milne, Janet E., Environmental Taxation in the United States, The Long View, P. 418

⁶⁸ Ibidem, P. 424

Although several countries from the OECD have been implementing Green taxes since a lot of time, developing countries still have a long way to go regarding these taxes.

According to a study titled *Eco Tax Reform in Selected Developing Countries*, the authors evaluated several developing countries to determine what have been the actions that countries have been doing, so they analyzed 14 countries focusing on: i) taxes on natural resources extraction such as fisheries and forests, ii) cost recovery and pricing measures to improve basic services on water and energy, iii) taxes and subsidy reforms on the use of environmentally damaging products, and iv) taxes and fees to control harmful industrial pollution and waste. They could identify that some of these countries at least have initiatives regarding these issues.⁶⁹

The countries that they included in the survey appeared to have taken some initiatives, most of them focusing in fishery, mining and forestry, regarding natural resources extraction, some other have implemented waste and water usage fees.⁷⁰

For example, in Africa, countries like Algeria, The United Republic of Benin and Tanzania, have faced environmental problems, so they started considering fiscal instruments for the promotion of environmental protection. Since 2002, Algeria formally recognized the importance of establishing green taxes based on the polluter-pays principle for the country's environmental legislative framework. The United Republic of Benin, has begun to develop a legislative framework over the past 20 years. Although this country is one of the poorest countries in Africa, their lay on finance in 2004 considered environmental taxes on polluting activities. Also, taxes

⁶⁹ Van Kerckhoven, S., Bécault, E. & Marx, A. (2014). *Eco Tax Reform in Selected Developing Countries*. KLIMOS-Policy Brief 3, KLIMOS, Leuven, P. 1-4.

⁷⁰ *Ibidem*, P. 1-4.

and fees were imposed to forestry and fishery sectors. The problem with this country is that their implementation still needs further attention, due to the lack of reliable information, and due to the collection and distribution of taxes. They have to work harder in these issue because they still have low concrete environmental impact, because of the distribution, and have no direct link with the environment.⁷¹

Since 1992, Tanzania's Government has been engaged in developing an environmental legislative framework to promote sustainable use of environment, mostly to promote growth and also to reduce poverty. Despite this country is also one of the poorest countries in the world, they have been doing a lot of efforts to use environmental fiscal and economic instruments, although they are facing many challenges due to the capacity to enforce environmental laws and limited collection capacity.⁷²

Countries like Mali, Morocco and Mozambique, have had little progress with environmental tax reforms. Mali's taxation system for forestry sector still remains too inefficient to provide revenues for the environmental protection and also to reduce poverty. One of their problems is that sometimes the costs of management are higher than the ones that are collected.⁷³ In the case of Morocco, little progress has been made, although they had a national environmental strategy and also an environmental action plan. Mozambique has a problematic situation regarding the drafting and ratifying environmental laws and policies. The natural resources of this country are abundant, and according to the author they have a good potential to promote the environmental

⁷¹ Op. cit. Van Kerckhoven, P. 1-4.

⁷² Ibidem, P. 1-4.

⁷³ Ibidem, P. 1-4.

fiscal reform, but there is still lack of infrastructure and institutions to install protective measures. It currently relies on donors to help its development.⁷⁴

In the case of South American countries, it is observed that Bolivia has strongly intervened in the natural resources sector. They have increased the number of environmental measures, including the Law on the Rights of Mother Earth, which emphasizes “the right to maintain the integrity of the systems of life and the natural processes that sustain them, as well as the capacity and conditions for their regeneration”. It aims to ensure “the integrity of natural systems and the processes that sustain them”, by preserving equilibrium and allowing for the possibility of restoration, but does not suggest that there must be total conservation of natural systems.⁷⁵ They nationalized oil and gas wells are rather carried through in order to achieve of geopolitical and revenue objectives.⁷⁶

In the case of Argentina, they have their national sustainable development plan, which includes instruments that support the construction of it. Some of them are the General Law on the Environment that “provides the necessary conditions to ensure ecological system dynamics, maintain the carrying capacity of ecosystems, and, in general, to protect the environment and ensure sustainable development”. Also the Law for Minimum Budgets for the Protection of Native Forests created the National Fund for Enrichment and Conservation of Native Forests.⁷⁷

⁷⁴ Op. cit. Van Kerckhoven, P. 1-4.

⁷⁵ UNEP, Development strategies of selected Latin American and Caribbean countries and the green economy approach A comparative analysis, Green Economy Discussion Paper, 2013, P. 14.

⁷⁶ Op. cit. Van Kerckhoven, P. 1-4.

⁷⁷ Op cit. UNEP, Development strategies of selected Latin American and Caribbean countries and the green economy approach, P. 14.

Many countries in Asia started without lack of political unwillingness for the transition to green economies. Political pressure, corruption, and rent-seeking investments have led to political indecisiveness, when it comes to dealing with removal of harmful fossil fuel subsidies and promoting renewables that are some of prerequisites for transitioning to a green economy. Also weak enforcement, poor property rights regime and low accountability have contributed to the poor adoption of the use of fiscal instruments in Asian countries.

The Republic of Korea is at the forefront in the adaptation of fiscal instruments. They began the transition of green economy with the initiative done in 2008. Part of their commitments to this GG is reduce the CO2 emissions, promote renewable energy resources, low carbon vehicles, water and waste management, among others.

China announced its green stimulus package using fiscal instruments to facilitate its transition to a green economy, for example, they have excise tax, acquisition tax, small and energy saving vehicle subsidy and some other instruments used to contain growing externalities.

There are some other countries that have been working on these environmental issues, and they have been having positive results. The most common aspects observed, were the national plans that were focused on environment and also the role of the government that was a key feature in this green policy implementation.

Next chapter will present some issues regarding Guatemala, mostly based on institutional, economic and environmental issues.

III. Analysis on the Considerations to Implement Green Taxes in Guatemala

Some definitions have been made in the previous chapters about the Green Growth, driven by the United Nations, with the objective to achieve a sustainable economic growth utilizing natural resources. The UNEP is in charge to lead the topics of the global environmental agenda, with the aim to achieve assessing condition trends, developing international and national environmental instruments and strengthening institutions for the wise management of the environment. To do so, it is important and necessary to create consistent and substantial policies to achieve the desired objective.

Several economists and institutions agree that one of the ways to achieve this green growth may be related to the fiscal policy, for this specific case, using the green taxes. Economist Lawrence Goulder calls such taxes “corrective taxes”, because they correct the distorting price signals given to resource depletion.⁷⁸ The OECD states that these taxes can directly address the failure of markets to take environmental impacts into account by incorporating these impacts into prices and that environmental pricing through taxation leaves consumers and businesses the flexibility to determine how best to reduce their environmental footprint. By doing this, it can be also consider as an incentive for innovation.⁷⁹ Additionally with the objective to increase the government’s income and also to achieve the environmental objective in the management of natural resources.

⁷⁸ Morris, David. Institute for Local Self-Reliance. Green Taxes. 1994. P. 1.

⁷⁹ OECD, Environmental Taxation, A Guide for Policy Makers. September 2011

Between the taxes that can be considered are included taxes or royalties on natural resource extraction, user charges for services such as water supply and waste management to recover costs, and environmentally related taxes such as pollution charges. It is also important to consider that these taxes can lead to the environments investment.

In Guatemala there are not environmental taxes yet and it is needed some guidance and studies in respect to this taxes type and the impact that could have the implementation of them in the Guatemalan context. However, there are many environmental studies that have been proposed by some specialized institutions which could serve as instrument to explore the environmental surrounding and thus to apply financial instruments for environmental care.

The objective of my research is to propose a panorama of Guatemala, regarding institutional, legal, economic, fiscal, and environmental aspects, and at the same time review how other countries are progressing, to meet some of the lessons learned and finally determine the feasibility to implement this taxes in Guatemala. For this purpose, this chapter will be divided in three parts, to analyze the relevant aspects found during the research. It is important to mention that the results are author's criteria, based on previous chapters and additional information that will support them.

III.1 Legal Basis and Institutional Aspects

It is important to mention some legal and institutional aspects, to know the laws and institutions that protect the environment. Later on, I will present an analysis on both issues.

III.1.1 Legal Basis

First, I would like to present some of the legal basis in Guatemala that are important to consider due to the value that environment has. There are several laws, rules and institutions that promote the environmental protection. These are mentioned below:

III.1.1.1 Politic Constitution of the Republic of Guatemala

Guatemala's environmental legislation is relatively recent. With the entry into force of the Constitution of the Republic of Guatemala, it begins a new era under Guatemalan law. For the first time, environmental issues were regulated, as a result, laws that did not exist before, such as the Law on Protection and Improvement of the Environment, Decree 68-86; Law of Protected Areas, Decree 4-89; and the Forest Law, Decree 101-96, were created.⁸⁰

The Politic Constitution of the Republic of Guatemala presents some articles regarding the environment protection, as a public good, meaning that the government should regulate this issue to guarantee people's better way of living.

Article 97 establishes that the state, Local Governments and the inhabitants of the country are required to promote social, economic and technological development that prevents environmental pollution and maintain ecological equilibrium. Norms will be dictated to ensure all the necessary measures to guarantee that the utilization of fauna, flora, land and water, are made rationally, avoiding predation.

⁸⁰ Batlle Rio, Fred Manuel. Compendio de Legislación Ambiental. República de Guatemala. 2010. P. 1.

Also, citizens have the right to request their rights to live in a healthy country, and it is of public interest that the State can guarantee this right. Article 93 establishes the right to Health. The enjoyment of health is a fundamental human right, without discrimination. The health of the inhabitants of the Nation is a public good. All persons and institutions are required to ensure their conservation and restoration.

There are some articles that are also important to mention in this thesis, regarding the protection of the environment and the management of resources:

- ✓ Article 27: Water regime. All waters are public property, inalienable and imprescriptible. Their exploitation, use and enjoyment, are given in the form prescribed by law, in accordance with the public interest.

- ✓ Article 64: Natural heritage. It is declared of national interest the conservation, protection and enhancement of the natural heritage of the nation. The State shall promote the creation of national parks, reserves and sanctuaries, which are inalienable. A law shall guarantee their protection and the wildlife in there.

- ✓ Article 125: Exploitation of non-renewable natural resources. Declared of public utility and necessity, the technical and rational exploitation of hydrocarbons, minerals and other non-renewable natural resources. The state shall establish and favor the appropriate conditions for exploration, exploitation and marketing.

- ✓ Article 126: Reforestation. It is declared of national urgency and social interest the reforestation of the country and conservation of forests, the law will determine the form and requirements for the rational exploration of forest resources and their renewal. Forests and vegetation on the rivers and lakes, and near water sources, shall enjoy from special protection.

III.1.1.2 Other Environmental Laws

There are other laws created to protect the environment, and can be classified in different sectors, some of them are going to be mention just to have an idea of the laws that each sector includes:⁸¹

1) Forestal Sector

- ✓ Forestry Law
- ✓ Regulation of the Forestry Law
- ✓ Regulation of the Forestry Incentives Program
- ✓ Forest Regulation in Guatemala

2) Energy, Oil and Mining

- ✓ Electricity Law
- ✓ Hydrocarbons Law
- ✓ Mining Law

3) Natural Resources

⁸¹ Op. cit. Batlle Rio, P. 1.

- ✓ Law on Plant and Animal Health

4) Environment (Approximately 26 including laws and regulations)

- ✓ Law on Protection and Improvement of the Environment
- ✓ Law for the Promotion of Environmental Education
- ✓ Law to Promote the Spread of Environmental Awareness
- ✓ Regulations on Environmental Management Framework Policy
- ✓ Regulations for the Evaluation, Control and Environmental Monitoring
- ✓ Regulation of Discharge and Reuse of Wastewater and Sludge Disposal

4) Biodiversity and Protected Areas (Approximately 32 including laws and regulations)

- ✓ Iximche National Park
- ✓ Silvino Caves National Park
- ✓ Law of Protected Areas
- ✓ Regulations of the Law of Protected Areas
- ✓ The Mayan Reserve Protected Area

5) Water Sector

- ✓ Law Creating the Authority for the Sustainable Management of the Basin and the Amatitlan Lake
- ✓ Protected Area Law Declaring All-Purpose Reserve Basin of Atitlan Lake
- ✓ Law Creating the Authority for the Sustainable Management of the Basin of Izabal Lake, the Dulce River and its basin

6) Municipal Sector and others

- ✓ Municipal code
- ✓ Land Use Plan of the Municipality of Guatemala

III.1.2 Institutional Aspects

The Ministry of Environment and Natural Resources is the public sector entity specialized in environmental and natural goods and services that corresponds the protection of natural systems to develop and give sustenance to life in all its forms and expressions, fostering a culture of respect and harmony with nature and protecting, preserving and rationally using natural resources in order to achieve a transgenerational development, coordinating the institutional, economic, social and environmental work, with the aim of building a competitive, supportive, equitable, inclusive and participatory country.⁸²

This Ministry is the leading agency to promote the environmental management and protection, although there are a lot of other environmental institutions created by law and other Ministries that help the MENR, to reach its purpose. The institutions that help directly are the National Council for Protected Areas that formulates policies and strategies of conservation, protection, and improvement of natural heritage. The National Forestry Institute, which is in charge of sustainable forestry production, management and forest plantations. Furthermore, protects and develops the watersheds and manage licenses of use of forest products. Also, the Bureau of Reserve Areas of the State, is responsible for implementing and applying legal sanctions that regulate the areas of land reserves in Guatemala.⁸³

⁸² Ministry of Environment and Natural Resources. <http://www.marn.gob.gt/paginas/Institucion> consulted 09/10/2015.

⁸³ Instituto de Agricultura, Recursos Naturales y Ambiente –IARNA-, Desarrollo nacional de la legislación ambiental, P. 352

Additionally, the Ministry of Public Health and Social Assistance, is in charge of propose the rules of environmental sanitation and the Ministry of Agriculture, Livestock and Food, work together with the MENR regarding the formulation and implementation of agricultural development policy, aquatic resources, propose rules of productive activities, considering always the environment protection and define the policy of national land use.⁸⁴

The institutions that help indirectly are the National Institute of Tourism that takes care of the necessities of national tourism, considering the respect of the environment; the Land Fund institution, which facilitates de access to the land and conditions for the rural integrated development trough productive, agriculture, forestry and hydro biological projects. The Ministry of Energy and Mines encourages the use of new and renewable sources of energy, and also, inspects and ensures that oil operations do not harm the environment.⁸⁵

It is also important to mention that municipal corporations participate in environmental activities as environmental protection and cultural heritage, ensuring the development of the municipality, programs promoting health and sanitation, solid waste treatment, and meet project development with environmental impact studies. Furthermore, the regional councils of urban and rural development that have to promote economic, social and cultural development in the region, always supporting the environmental conservation.⁸⁶

The Secretariat of Planning and Programming of the Presidency is the State's planning agency, and it was established as an institution to support the functions of the Presidency of the Republic.

⁸⁴ Op. cit. Desarrollo nacional de la legislación ambiental, P. 352

⁸⁵ Ibidem, P. 353

⁸⁶ Ibidem, P. 353

This institution contributes to the formulation of Government's general development policy and evaluates its implementation and impact.⁸⁷ They presented a document titled Strategic Guidelines of Policy from 2012-2014, which includes the environmental issue in Guatemala. It states that a balanced development cannot be conceived without and adequate environmental protection.⁸⁸

This Secretariat also worked on the National Development Plan titled K'atun 2032 that includes environmental aspects to reflect in long term. It considers the Millennium Development Goals, which includes environmental practices, and also other ones that are important to reach a sustainable development.⁸⁹ That means that the country is looking forward to preserve the environment in the long run, although there is still a lot to do, not just plan it, but work with commitment on this topic.

Roberto Cáceres Estrada with the Economic Commission for Latin America and the Caribbean (ECLAC), presented a study regarding Guatemala's environmental status. He stated that public policies regarding the environment must be efficient and have to be defined and stable, with clear rules, with a State that can facilitate the instruments and also with the international community responsibility. Also environmental institutional norms, human resources, available resources, incentives, and so on. A consideration of policies and institutional normative and economic instruments should work as a complement, considering as an actor the incorporation of the civil society and the private sector, by requiring the Institutional actor to define policies, norms, sanctions, and economic instruments that can incentive the market actor. This market actor will

⁸⁷ Secretariat of Planning and Programming of the Presidency. www.segeplan.gob.gt. Consulted 20/08/2015.

⁸⁸ Strategic Guidelines of Policy from 2012-2014, Secretariat of Planning and Programming of the Presidency. February 2011. P. 25.

⁸⁹ Secretaria de Planificación y Programación de la Presidencia. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032. Guatemala. Conadur/Segeplan. 2014. P. 63.

provide information and feedback, and with the environmental improvement, the civil society will enjoy life quality, creating that way a “Virtuous Circle”.⁹⁰

According to Cáceres, the factors that have influenced the environmental situation are the following:

- ✓ The strong and growing demand, pressure and impacts on the environmental space and natural resources determined by high population growth and chaotic spatial distribution and production, high levels of extreme poverty persist.
- ✓ The low use of environmental quality criteria in the design and development of macroeconomic stability and adjustment, social and sectoral concomitant compensation, especially the main productive sectors.
- ✓ The weak rule of law of environmental and natural resources institutions. The insufficient coordination, efficiency and dynamism of the current system of Environmental Management and Natural Resources.
- ✓ Low levels of social participation and performance of the few and emerging policies and national, sectoral, cross-sectoral, regional and local environmental strategies.

⁹⁰ Desafíos y propuestas para la implementación más efectiva de instrumentos económicos en la gestión ambiental de América Latina y el Caribe. Comisión Económica para América Latina y el Caribe. May 2002. P. 232-233.

- ✓ The lack of economic valuation of environment and natural resources, as well as the emerging and low coverage of the use of economic instruments of environment, which do not allow compensation of negative externalities in production functions.
- ✓ The increasing use of technologies and production processes, transportation relatively obsolete and high negative impacts on the environment and natural resources.⁹¹

When the author analyzed the environmental management as a whole, he perceived that institutions and normative do not constitute a system, meaning that this cannot deal with the challenges that the environment requests, so a reform for modernization is needed. Based on a project, he presented the most relevant issues and mentioned the necessity of an environmental management concept, compliance with international treaties, provide technical consistency and improvement of environmental legislation as a whole, strengthen the participation of society in the design and promote greater institutional efficiency.

III.1.3 Analysis regarding legal and institutional aspects

When analyzing the countries that have implemented environmental tax reforms, it was observed that one of the key factors is that they have been supported by their governments, which have raised this issue as priority for environmental protection and the generation of economic resources. OECD countries are the ones that have used this type of reform, and as a result, have been able

⁹¹ Op cit. Desafíos y propuestas para la implementación más efectiva de instrumentos económicos en la gestión ambiental de América Latina y el Caribe, P. 233-234.

to achieve substantial changes in people's behavior with respect to environmental care. These countries, have already some years using this type of economic instruments.

In Guatemala, it can be observed the need that the government can be more involved and grant priority to the environmental topics, although, a considerable step has been made since 2014, when the Secretariat of Planning and Programming of the Presidency focused its efforts to consider environmental issues in the Guatemala's National Plan, titled K'atun 2032, which includes sustainable development issues, and considers environmental long term goals. Some of the main objectives are: i) Understanding the strengthen in addressing environmental priorities and the consolidation of a system that links the various factors that surround it, ii) Have institutions capable of ordering interventions, avoiding overlaps and gaps in care, and iii) Strengthen regulatory role of institutions versus negative externalities on the environment and natural resources.⁹²

This document is very important because countries have started with this plans before using economic measures, as in the case of South American countries, and this gives a whole view of the environmental necessities and the areas that need to be protected. Additionally, it implies that State institutions are required to ensure the integrity of public policy, avoiding overlaps, filling gaps and eliminating perverse incentives that generate negative externalities to the environment

⁹² Secretaria de Planificación y Programación de la Presidencia. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032. Guatemala. Conadur/Segeplan. 2014. P. 63.

and natural resources, as it was observed, there are a lot of institutions working on this topic but few results.⁹³

One of the important things to consider is that natural subsystem in Guatemala provides renewable and non-renewable resources such as timber and fuelwood from forests, water, flora and fauna, subsoil resources and soil for the production and maintenance of the different natural resources land uses. The economic subsystem, meanwhile, demands and use these resources. At least 70% of economic activity is directly dependent on the natural subsystem, so the growth of the economy has a direct correlation with the availability or depletion of natural assets. However, the use and exploitation of the resources from this subsystem are given in an unsustainable way, because their renovation and use capabilities are exceeded. In short, it appears that the environmental problems that arise in the country stem from the relationships between the natural subsystem and the economic and social subsystems. This increases environmental degradation due to institutional weakness, evident in the lack of capacity to regulate, monitor and evaluate the management of the environment and natural resources.⁹⁴

The non-adoption of environmental policies, could lead to long-term costs that may outweigh the costs of adoption themselves, and that among them are environmental degradation and overexploitation of natural resources, basic livelihoods of all forms of life and therefore, the same economic system as mentioned in the previous paragraph.⁹⁵

⁹³ Op. cit. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032, P. 239.

⁹⁴ *Ibidem*, P. 240.

⁹⁵ Yacolca Estares, Daniel Irwin, Reforma Fiscal Verde para Sudamérica, Edición de la Beca del Investigador, 2013, P. 53.

It was observed that the Political Constitution of the Republic states the importance of the good environment to guarantee people's better way of living. Also there are other laws that address environmental issues, specifically for each case. It was previously mentioned that the MENR is the rector of the environmental policy, and also the local governments and other institutions created with environmental purposes support the MENR directly or indirectly, and play a very important role in the environmental care in the capital city, different departments and towns. Although there are many institutions and laws that regulate that topic, there are still many deficiencies and incoordination to accomplish environmental objectives.

The MENR has been also working in the National Policy of Environmental Education, where citizen participation, universities, research centers and government are important to carry out the work of caring for the environment. The overall objective of this policy is to promote in the Guatemalan population, building an environmental culture through the transmission, application of knowledge, formation of values and attitudes that lead to sustainable development. Some of the specific objectives of this policy are i) to incorporate environmental education as a central focus in the curriculum of studies at levels that make up the national education system, ii) develop in Guatemalan society a sense of responsibility, valuation, equity, solidarity and participation in environmental issues, iii) guide the development of environmental education according to environmental, social, cultural, political, economic, and infrastructure of the country, among others.⁹⁶

⁹⁶ Ministerio de Ambiente y Recursos Naturales. Política Nacional de Educación Ambiental, P. 13-14.

The Congress of the Republic also plays an important role, because they promote laws and also approve them. From my perspective, they should strongly follow up the environmental issues and concerns, providing support to the proposed laws initiatives for the environmental care. Table 3 shows an example of some law initiatives that up to this date, have not been approved. Like this, there are approximately more than 60 initiatives related to the environment, based on the revision done and shown by the Congress web page.

Table 3
Environmental Initiatives
Congress of the Republic of Guatemala

Initiative No.	Date recognized by the Congress	Name of the Initiative
3331	13/09/2005	Law of Tax on Plastic Products
3702	26/09/2007	Law of sustainable use and management of water resources
4221	03/08/2010	Law of Incentives for Environmental Management
4240	13/09/2010	Management of Waste
4264	29/09/2010	Social and Environmental Responsibility of the Tourism Industry
4267	28/09/2010	Protective Law of Life and the Environment in Mining
4468	20/03/2012	Law of General Hunting
4469	20/03/2012	Law of Biodiversity and Protected Areas
4871	19/08/2014	Law of Sustainable and Solid Waste Management to Avoid the Increase of the Greenhouse Gases that cause Climate Change.

Source: Own elaboration based on Congress database <http://old.congreso.gob.gt/Legislacion/iniciativa1.asp>

Additionally, there are other institutions that work supporting the government agencies as it is the Institute of Agriculture, Natural Resources and Environment, that belong to Rafael Landívar's University that have done a lot of research about Guatemala's environmental profile.⁹⁷ Another important aspect that was found in the investigation was that from March 2014, it became official the Integrated Environmental and Economic Accounting System of Guatemala, whereby,

⁹⁷ Universidad Rafael Landívar, Instituto de Agricultura, Recursos Naturales y Ambiente IARNA, http://www.url.edu.gt/PortalURL/Principal_01.aspx?s=51 consulted in 06/11/2015.

environmental resources can be counted, supported by this institution and some government agencies.⁹⁸

Also the institution named “Legal, Environmental and Social Action Center in Guatemala” works on environmental policy issues and developing actions that look forward to strengthen governance and environmental justice in Guatemala. In addition to that, they create political debates to discuss topics related with the national environment problems, and participate in national processes that may affect environmental management. One of its aims is to monitor government’s activity that is in charge of environment and natural resources and extractive industries using tools for citizen participation.⁹⁹ This kind of institutions could be really helpful in the process to determine and implement financial instruments to protect the environment.

It is necessary to mention that each year, natural resources have been deteriorated more and more, and that doesn’t allow to meet the needs of the population to live in a free pollution environment. Other factors that have influenced that the country can be in that situation are, as mentioned by Cáceres, that there is strong growing demand, pressure and impact on the environmental space, due to the high population growth, weak rule of law of environmental and natural resources and institutions, low levels of social participation, lack of economic valuation of environment and natural resources, among others.

The search for a model of development itself, in which there is an appropriate balance between economic, social and natural areas, from a sustainable livelihoods approach, must be a sustained priority for national public policy. Therefore, efforts with a different vision of development, must

⁹⁸ Tuy, Héctor, The Guatemalan Environmental Accounts, development and use, IARNA, February, 2015.

⁹⁹ CALAS- Centro de Acción Legal Ambiental y Social de Guatemala http://www.calas.org.gt/index.php?option=com_content&view=article&id=94&Itemid=129

be made to build capacities and ensure resilience to climate change and its impact at national, regional and local levels.¹⁰⁰

From my perspective, public policy is very important to set the rules to led country and the government decisions, as it was presented in this case, to reach sustainable development in Guatemala in the long term.

III.2 Economic and Fiscal Aspects

This part will cover important economic aspects based on the implementation of green taxes and what would be its microeconomic and macroeconomic impacts. Additionally, an analysis of the budget and the public finances is going to be presented, to understand the government's financial structure in Guatemala, its revenues and expenditures, and also, the activities related with the environment. It is very important because the budget is the economic expression of the government plans, so by analyzing this issues, it would be defined how much importance the government provides to the environment and which is its financial situation.

III.2.1 Microeconomic and Macroeconomic effects

When talking about taxes it is important to consider that is a sensitive issue, how to know if the amount to be paid is fair or not or if countries that pay more have better living conditions or not. Some aspects to be taken into account before implementing a tax are considered in this section,

¹⁰⁰ Secretaria de Planificación y Programación de la Presidencia. Orientaciones Estratégicas de Política para 2012-2014, February 2011. P. 25.

to determine the impact of the implementation of green taxes on the economy of a country. According to Daniel Yacolca in his document for South America Green Tax Reform, he establishes that environmental taxes generate environmental, economic and distributional effects, which are complex. These effects are related to the tax design, with the magnitude of the taxable facts and the types used.¹⁰¹

In the case of the microeconomic effects, Yacolca states that environmental taxation might represent changes in behavior that stems from the use of environmental policy instruments by correcting prices. Environmental taxation requires polluters to react to changes in relative prices they face, producing a profit of economic efficiency by correcting market failure. It is necessary to consider that a bad design can make tax agents not directly related to the controlled emissions, suffer the impact of the tax and change their behavior resulting in a loss of economic efficiency. This could be achieved by changing the habits of consumption of goods that are harmful to the environment by companies and consumers. The purpose of the tax is to reduce the consumption of a certain pollutant, by doing that, the changes in behavior will be greater when the higher the tax transfer prices and the higher the price elasticity of demand. The magnitude of this elasticity is related to the presence of substitutes and the time horizon considered. Also, the use of clean technology represents a technically, economically and environmentally appropriate option that contributes to sustainable development of enterprises.¹⁰²

¹⁰¹ Yacolca Estares, Daniel Irwin, Reforma Fiscal Verde para Sudamérica, Edición de la Beca del Investigador, 2013, P. 51-52.

¹⁰² Ibidem, P. 51-52.

In regards to macroeconomic factors, environmental taxation can generate effects on key macroeconomic variables, for example by altering the price level in the economy. That change in prices can be explained by the corrective nature of environmental taxes, but the social costs of economic activity could be inflationary in the short term. It is convenient to introduce environmental taxes gradually and prevent their translation into prices. It also indicates that environmental taxation may affect the growth path of the economy, so some economists suggest induced competitiveness and employment changes. It is possible that the cost internalization processes that lead to the reduction of certain economic sectors output for the loss of competitiveness with other activities or against foreign producers. According to Yalcolca, macroeconomic activities are those that have more braking processes to achieve environmental taxation, and this is due to fear of loss of economic growth, competitiveness and employment.¹⁰³

Environmental taxation is usually introduced in a neutral way, replacing progressive direct taxes by indirect taxes. Therefore, measures to eliminate or minimize the regressive effects of environmental taxation are required. These measures can make more feasible the application of environmental taxes, and allows to respect the objectives of social justice sought by public policies.¹⁰⁴

According to the OECD, to design environmental taxes, it is important to consider the following aspects:¹⁰⁵ i) Environmental tax bases should be targeted to the pollutant or polluting behavior, with few (if any) exceptions; ii) The scope of an environmental tax should ideally be as broad as the scope of the environmental damage; iii) The tax rate should be commensurate with the

¹⁰³ Op. cit. Yalcolca Estares, P. 52-53.

¹⁰⁴ Ibidem, P. 54.

¹⁰⁵ OECD, Environmental Taxation, A Guide for Policy Makers. September 2011

environmental damage; iv) The tax must be credible and its rate predictable in order to motivate environmental improvements; v) Environmental tax revenues can assist fiscal consolidation or help to reduce other taxes; vi) Distributional impacts can, and generally should, be addressed through other policy instruments; vii) Competitiveness concerns need to be carefully assessed; coordination and transitional relief can be effective responses; viii) Clear communication is critical to public acceptance of environmental taxation; ix) Environmental taxes may need to be combined with other policy instruments to address certain issues.

In regards to the implementation of a tax rate in Guatemala, it is necessary to perform a law initiative that comply with the constitutional tax principles and subject to the tax State activity. Are considered constitutional limits of tax power of the State of Guatemala the ones describe below:

- ✓ Principle of Legality: Consists that no state organ can take an individual decision that does not belong to a previously issued general provision. Can be also considered in formal sense, that in addition to be a law from the material point of view, the rule that precedes the individual act must also have the character of a law from a formal point of view, it means, it should be a provision issued by the power under the constitutional system and usually responsible to form laws. It is contained in the Politic Constitution of the Republic of Guatemala, article 239, which indicates that corresponds exclusively to the “Congress of the Republic of Guatemala”, to declare ordinary and extraordinary taxes, excise, special contributions, based on the State needs and according to tax fairness and justice, as well as determine the collection basis, especially the following:
 - i) Tax relationship, ii) Exemptions, iii) Tax payer and several liability; iv) Tax base and

tax rate; v) Deductions, discounts, rebates and surcharges, and vi) Tax violations and penalties.¹⁰⁶

- ✓ Principle of Affordability or Tax Capability: It means the set of subjective and objective assessments that serve to appreciate the outward manifestation of a taxable economic event and provided by law. It is laid down in Article 243 of the Constitution of the Republic, which stipulates that the tax system must be fair and equitable. For this purpose the tax laws will be structured according to the principle of capacity to pay. Confiscatory taxes and internal double or multiple taxation are prohibited.¹⁰⁷

- ✓ Principle of proportionality and equity: The contribution to which is required should be proportionate and equitable manner, as provided by law.¹⁰⁸

The objective nature of the tax is to be a financial resource for the state and thus achieve the financial means necessary for the development of their activities. The tax is differentiated from other state resources to be coercive and is the effect relationship between two subjects, disciplined by law.¹⁰⁹ Guatemala's Tax Code defines it as the amount of money that people must pay to the State. Article 9 of this Code establishes the concept of tribute as "taxes are commonly benefits in money the state requires in exercising their powers of taxation, in order to obtain resources for the fulfillment of its purposes". They can be used for the needs of the population, such as health, education, infrastructure, among others.

¹⁰⁶ Rodríguez Lobato, Raúl. Derecho Fiscal. Harla, S.A. de C.V., 2da Edición, México, P. 43.

¹⁰⁷ Ibidem, P. 43.

¹⁰⁸ Ibidem, P. 43.

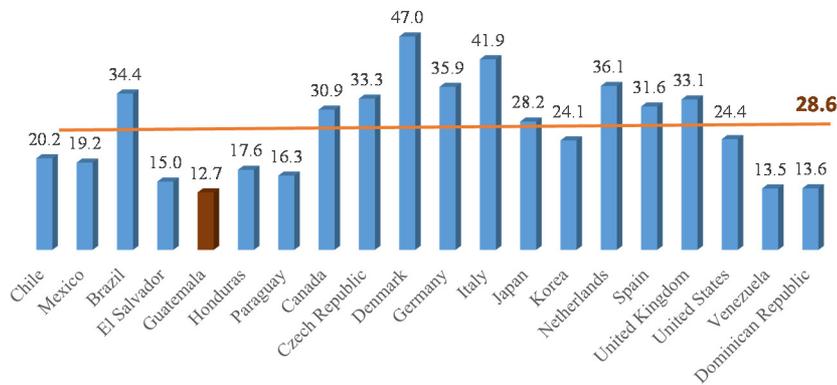
¹⁰⁹ Jarach, Dino, El Hecho Imponible, Teoría General del Derecho Tributario Sustantivo, Buenos Aires, Segunda Edición, P. 9-12.

Regarding Guatemala's performance, according to the Executive Secretariat of the Central American Monetary Council, it states that for the third quarter of 2015, Guatemala has maintained a moderate fiscal deficit, a stable monetary policy, credit growth in the volumes of exports and improvements in tax collection in the flexibility of fiscal policy. However, there are still some challenges such as maintaining macroeconomic and financial stability, improve fiscal performance, among others. The document mentions that public finances in Guatemala still show structural weaknesses, even though there has been sustained reduction in the deficit. Public spending is low and rigid, limiting the government to cope with social needs and there is low public investment in infrastructure, human capital weaknesses, among other issues, limiting the potential GDP growth in the country.¹¹⁰

To understand a little more the tax situation and revenue levels, I wanted to compare Guatemala with Latin America and OECD countries. The results are shown in Figure 2.

¹¹⁰ Secretaría Ejecutiva del Consejo Monetario Centroamericano, Informe Riesgo País, III Trimestre 2015, P. 6-7.

Figure 2
Tax Revenues
OECD and Latin American Countries
Percentage of the GDP
Period 2008-2013



Source: Own elaboration based on the Revenue Statistics from the OECD Data Base, <https://stats.oecd.org/Index.aspx?DataSetCode=REV>.

It was quite interesting to note that in an average of six years, Guatemala is the lowest country with tax revenues as a percentage of GDP represented with 12.7%, considering that 28.6% is the average of all OECD countries and Latin America. It was also seen that Latin American countries have low tax revenue collection, as stated by Camargo, part of the problems of Latin American countries by low tax collection is due to tax evasion, and it is mostly due to four common causes: “i) Lack of tax awareness, which is motivated by the image that the citizens have of the State and the perception of spend and investments, ii) Lack of a transparent tax system. It is mentioned that the appreciation of a weak tax system, it is reflected in the lack of definition in the tax functions and tax administration, iii) Inflexible tax administration, consider that the tax administration should be attached to the deep and constant economic, social and political changes, iv) Low risk

of being detected. When the taxpayer know that is not controlled, is tempted to evade tax contribution, this causes destabilization between the citizens who comply the tax obligation.”¹¹¹

Part of what has affected the country's fiscal situation, from my point of view, is not only tax evasion or the corruption, but also the tax culture of Guatemalans. As it was mentioned at the beginning of this section, when we talk about taxes, it becomes a rather sensitive issue for the population, and that stems from the lack of services and benefits that they receive. Somehow the efforts of the Tax Authority should be strengthen with its tax culture program, for people to change their perception of what paying taxes is and that the country needs to have them in order to sustain their operations.

In the case of the implementation of environmental taxation in the country, I think that the creation of an ecological consciousness for companies and individuals who have to pay those taxes, so they can see it not as a cost but also make it look like helping to improve environmental conditions in the country.

III.2.2 Public Finances and Public Budget in Guatemala from 2009-2014

For the exercise of their duties, the State requires the financial means to carry them out properly. The common good cannot be achieved without the necessary funding for the implementation of its activities. The concept of public finances refers to everything related to economic resources. In addition to this, includes all the economic aspect of public bodies, which results in the activity

¹¹¹ Camargo Hernández, D.F. (2005) Evasión fiscal: un problema a resolver Edición electrónica a texto completo en www.eumed.net/libros/2005/dfch-eva/

corresponding to the collection, management and use of resources available to the State, as mentioned above carry out its activities and fulfill its purposes.¹¹²

The management of resources obtained by the State is effected by the various bodies that make up the public administration, always subject to the provisions governing the legality of their actions.¹¹³

Public finance as a subject of study, have led to a series of concepts and principles related to the processes of production, management and implementation of economic resources available to the State to accomplish its purposes. This knowledge is systematically structured in a science, which is called the Science of Finance or Treasury. Additionally, it is the area of research that studies regarding revenues and expenditures of the state, which consists of four divisions:¹¹⁴

1. Revenue: Are the resources used by the state to function and provide goods and services to the population. This includes the collection of taxes and other revenues that it perceives.
2. Public Expenditures: These are expenses that include both ordinary and extraordinary expenses and social spending. With them is performed spending plan that governments performed annually.

¹¹² Delgadillo Gutiérrez, Luis Humberto, Principios del Derecho Tributario, Editorial Limusa, México, 1998, P. 21-22.

¹¹³ Ibidem, P. 21-22.

¹¹⁴ Ibidem, P. 21-22.

3. Public Debt: Includes all kinds of debt that can assume the government of a country and the Public Credit.

4. Fiscal Policy: Includes all fiscal and tax system of a country as well as financial management.¹¹⁵ The state as a guarantor of economic and social stability of the nation, has fiscal policy as a set of economic instruments to participate in productive and distributive processes through taxation and public spending, focusing on equity and the common good. The implications of fiscal policy on social welfare can be significant to the extent that tend to improve the levels of economic growth and generate employment, reduce the impacts of adverse shocks to domestic economic dynamics (anti cyclical policy) and promote distributional effects, meeting basic needs such as health, education, housing and security, among others.¹¹⁶

III.2.2.1 Revenues of the Central Administration

Public resources in Guatemala are regulated by budget revenues, which are divided into current revenue, capital resources and financial sources.¹¹⁷

Current revenues are formed by tax revenues and non-tax revenues. Tax revenues are comprised of taxes, which have the characteristic of being mandatory contributions, without consideration, not recoverable and originate in the power of each State to tax the community, in order to obtain

¹¹⁵ Monterroso de Morales, Gladys Elizabeth, Derecho Financiero Parte I, Finanzas Públicas, Editorial Litográfica Print Color, S.A., P 1.

¹¹⁶ Programa de las Naciones Unidas para el Desarrollo, Guatemala: hacia un Estado para el desarrollo humano, Informe nacional de desarrollo humano, 2009-2010, primera edición, 2010, P 91.

¹¹⁷ Manual de Clasificaciones Presupuestarias para el Sector Público de Guatemala, Acuerdo Ministerial No. 291-2012, Ministerio de Finanzas Públicas, 5ta. Edición.

financial resources for the fulfillment of its purposes. These revenues also include interest collected in respect of late payment of taxes and fines levied for non-payment or late payment of taxes¹¹⁸.

Non-tax revenues include the consideration the income from fees, charges, rental of buildings, equipment and facilities, contributions to social security and welfare, selling goods and services of public administration, property income, and some fines, current transfers of the private sector and current grants.¹¹⁹

Capital resources includes entries due to the sale of fixed capital assets, such as land sales and land, buildings, machinery and equipment; by loan recovery short and long term; from sale of shares and equity. Only these two accounts should be recorded as capital resources, when financial investments are in compliance with policy objectives of the Central Government and entities without corporate purposes.¹²⁰

Financial sources include the placement of bonds, loan disbursements, cash and bank balances, loan recovery and long term and short selling of shares and capital recovery; these two accounts are located within financial resources when resources are generated in the sector non-financial public enterprises and financial public sector.¹²¹

¹¹⁸ Op. cit. Manual de Clasificaciones Presupuestarias para el Sector Público de Guatemala

¹¹⁹ Ibidem.

¹²⁰ Ibidem.

¹²¹ Ibidem.

Table 4 presents the revenues of the State, from the period 2009 to 2014, to analyze the trend and determine some relevant facts:

Table 4
Revenues of the Central Administration
From 2009-2014
Millions of Quetzales

Description	Millions of Quetzales					
	2009	2010	2011	2012	2013	2014*
Total Revenue	34,037.2	37,425.1	43,154.0	45,873.8	49,259.1	52,224.2
Tax Revenue	31,811.7	34,772.0	40,292.2	42,819.8	46,335.5	49,096.9
Direct Taxes	9,715.3	10,329.8	12,710.5	13,453.7	16,052.8	17,768.0
Income Tax	7,198.8	7,743.5	10,063.3	10,595.3	12,775.4	14,206.9
On Buildings and Other on Equity	9.5	10.6	14.2	9.1	11.5	15.7
Commercial and Agricultural Enterprises	1.8	2.0	8.0	0.3	2.7	2.7
Extraordinary and Temporary Support the Peace Accords	676.5	43.8	53.6	4.2	20.6	9.2
Solidarity Tax	1,828.6	2,530.0	2,571.5	2,844.7	3,242.8	3,533.5
Indirect Taxes	22,096.5	24,442.1	27,581.7	29,366.1	30,282.7	31,328.9
Value Added Tax	15,015.5	16,980.4	19,472.2	20,912.9	21,873.9	23,152.9
Customs Duties on Imports	2,138.8	2,367.7	2,532.6	2,310.9	1,965.0	2,043.6
Distribution of Oil and its Derivatives	2,184.2	2,178.7	2,125.4	2,103.2	2,297.5	2,445.1
Stamp Tax	594.8	571.6	637.7	877.3	429.6	358.7
Vehicle Circulation	467.5	505.1	558.3	573.1	835.8	572.4
IPRIMA				330.6	694.1	747.1
Oil Royalties and Shareable Hydrocarbons	592.8	687.9	1,145.3	1,053.7	868.4	619.1
Leave the country	225.6	224.4	219.5	231.8	239.9	251.5
Beverage Distribution	435.1	477.2	523.6	554.3	589.6	629.4
Tobacco	339.9	346.7	259.4	312.4	385.2	404.5
Cement Distribution	98.7	98.7	104.1	102.4	99.9	100.5
Other	3.6	3.6	3.6	3.5	3.9	4.0
Non-tax Revenue	2,214.2	2,625.4	2,849.0	3,035.3	2,914.8	3,120.2
Non-tax Revenue, Fees, Rates and Others	403.0	474.7	562.8	533.4	551.4	694.9
Contributions to the Welfare and Social Security	921.9	1,069.1	1,214.4	1,273.6	1,427.4	1,617.2
Sale of Goods and Services of the Public Administration	234.8	289.4	338.5	372.2	349.7	346.8
Property Income	161.4	243.2	145.5	357.3	157.9	197.6
Current Transfers	493.1	548.9	587.8	498.8	428.5	263.7
Capital Inflows	11.3	27.8	12.9	18.7	8.8	7.2

Source: Own elaboration based on the data provided by the Ministry of Finance in Guatemala. www.minfin.gob.gt

* Preliminar data, consulted 25/09/2015

Note: Differences may exist due to rounding

As it is observed, since 2009, tax revenues have shown an increase. The difference of growth from 2009 to 2010 is Q2,960.3; 2010 to 2011, Q5,520.2; 2011 to 2012, Q2,527.6; 2012 to 2013, Q3,515.7; and from 2013 to 2014, Q2,761.4; millions of Quetzales¹²², being more representative, the increase from 2010 to 2011.

Non-tax revenues, have shown an increase, except in 2013, when it was reduced. Capital Inflows have been variable each year, being more representative 2010.

Furthermore, two of the most representative incomes of the government are part of the Tax Revenues. In the six years analyzed, the Income Tax that is part of the direct taxes, has been continuously growing. It represented 22.6% of the tax revenue and 21.1% of the total revenue that the government perceived in 2009 and it has been continuously increasing until it reached 29.9% of tax revenues and 27.2% of the total revenue that the government perceived in 2014. These are taxes on income, profits or net earnings from public and private companies, whatever their legal form and the natural or physical persons, the family unit and in some cases, the undivided estate.¹²³

On the other hand, the Value Added Tax, that is part of the indirect taxes, was the highest tax collected, and it represents more than 47% of the tax revenues and more than 44% of the total revenue of the government considering the total tax revenues for the six years evaluated. These includes sales tax on goods and services in general, contract works, technical and professional

¹²² Name of the country's national currency.

¹²³ Op. cit. Manual de Clasificaciones Presupuestarias para el Sector Público de Guatemala.

services, with the particularity that its tax base includes only the value added at each stage of the economic cycle of the goods or service, it does not matter their way of perception.¹²⁴

In the case of Income Tax, among the reforms introduced by Decree No. 10-2012, it was considered some amendments to the income tax regimen. Regarding net income of individuals as employees, they must make a direct payment of 5% and 7% percent, according to the range of their taxable income.

As for the corporate income tax, the Simplified Income from Profitable Activities Optional Regime, for 2013 was 5% and 6% and for 2014 and beyond it will be 5% and 7%, depending on the range of taxable income which is obtained on a monthly basis. These increases in the tax rate would represent an improvement in tax revenue from this tax for the coming years. Utilities Regime on Nonprofit Activities set for 2013, a tax of 31%; for 2014, 28%; and by 2015, 25%, which could create an incentive for foreign investment in Guatemala, derived from a lower rate of income tax on profits.

By reviewing the revenues, it can be said that Guatemala mostly has regressive taxes, considering that it does not matter the income amount, the citizens will have to pay 12% of Value Added Tax, which is the most representative, uniformly. This hits harder to lower income individuals, making it more unequal and they sacrifice more economic resources.

By analyzing the revenues, it was observed that the government receives taxes from activities that I consider environmental, and that can apply for the classification of environmental taxes, but this laws have a specific destiny to this taxes, some of them are for the Ministry of Public

¹²⁴ Op. cit. Manual de Clasificaciones Presupuestarias para el Sector Público de Guatemala.

Health and Social Assistances, or for infrastructure, for example. The only one that can be consider as an environmental purpose is tax from leaving the country, administered by National Council for Protected Areas, environment good or service is taxed and it goes to biodiversity and forest. But the other ones, even though they have low or high impact on the environment, do not have environmental retribution purpose.

III.2.2.2 Expenditures from the Central Administration

It is the total amount of money that the public sector utilizes to acquire goods and provide services. The main destination of the government expenditure is to satisfy the necessities of the population. It also includes all the money that the government not only the expenditures but also investments, for example, in infrastructure. The expenditures usually responds to the government's plan, meaning that they are going to divide the budget in the areas that they are more interested in, or somehow will help the country according to what they have previously reviewed and analyzed.

In the Table 5, it can be observed all the expenditures that Guatemala's government considers, divided by each ministry, from 2009 to 2014.

Table 5
Public Expenditure of the Central Administration
From 2009-2014
By Entity
Millions of Quetzales

Description	2009	2010	2011	2012	2013	2014*
Total	43,708.8	48,385.4	53,511.0	55,319.6	58,269.0	60,818.7
Presidency of the Republic	188.3	197.2	206.3	194.8	206.3	217.9
Ministry of Foreign Affairs	282.4	283.4	299.0	308.2	345.2	364.4
Ministry of Interior	2,476.2	2,629.6	2,967.6	3,081.5	3,640.0	4,067.9
Ministry of National Defense	1,203.1	1,278.0	1,537.1	1,757.6	1,962.3	1,899.6
Ministry of Public Finance	209.1	225.8	234.4	292.9	290.5	278.6
Ministry of Education	8,043.7	9,162.6	9,959.0	9,593.3	10,217.1	11,302.1
Ministry of Public Health and Social Assistance	3,235.6	3,586.6	3,976.9	4,227.5	4,935.5	5,065.6
Ministry of Labour and Social Welfare	494.8	554.0	576.9	558.7	578.3	609.9
Ministry of Economy	169.3	260.8	224.2	232.7	278.2	295.8
Ministry of Agriculture, Livestock and Food	543.6	806.3	786.2	1,415.9	1,227.8	1,726.1
Ministry of Communications, Infrastructure and Housing	4,377.9	4,981.6	6,929.6	5,241.9	5,357.2	5,234.9
Ministry of Energy and Mines	44.3	113.3	70.7	200.1	106.7	92.5
Ministry of Culture and Sports	290.9	317.3	313.2	299.2	301.3	359.8
Secretaries and other Executive Agencies	2,526.8	2,683.3	1,994.1	1,456.0	1,359.6	1,315.6
Ministry of Environment and Natural Resources	73.4	84.5	134.5	102.8	119.0	116.0
Obligations of the State in Charge of the Treasury	15,128.6	16,230.0	17,769.4	19,175.8	19,718.3	19,639.9
Public Debt Service	4,374.2	4,939.6	5,475.7	6,022.3	6,569.0	6,583.2
Ministry of Social Development				1,100.4	994.2	1,586.1
Attorney General's Office	46.6	51.5	56.2	57.8	62.5	62.7

Source: Own elaboration based on the data provided by the Ministry of Finance in Guatemala. www.minfin.gob.gt

* Preliminary data, consulted 25/09/2015

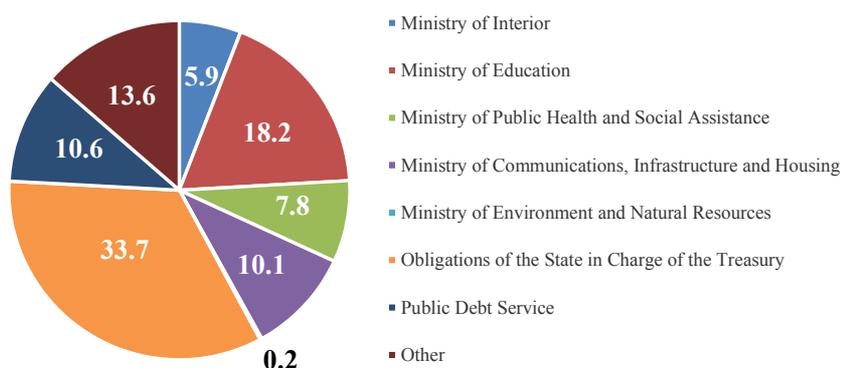
Note: Differences may exist due to rounding

In six years, the government expenditures have increased 17,109.9 million of Quetzales. It was shown that way, because it can be observed which ministries and activities are more relevant to the government's policy.

Figure 3 shows the distribution of the expenditures, considering the most relevant expenses, by each ministry. It is important to mention that although the MENR is not so high, it was considered in this distribution, to notice that the amount of money received by this ministry is relatively low, compared to the highest ones. I would say that it seems that for the country's policy, environmental issues are not be very important, as other issues according to the government's

plan. Only 0.2% of the average budget for the years 2009 to 2014, was intended to attend environmental conservation and protection.

Figure 3
Government Expenditures
Divided by the Most Representative Ministries
Percentage of the Average for the Years 2009-2014



Source: Own elaboration based on the Government's Integrated Accounting System, <https://sicoin.minfin.gob.gt/sicoinweb/login/firmlogin.htm>

The highest amount of expenditure, representing 18.2% of the government's budget for the years previously mentioned, goes to the Obligations of State in Charge of the Treasury that includes some not assignable items to programs contained in ministries, and sometimes considered as transfers such as institutional contributions, contributions to Local Governments, contributions to Departmental Development Councils, civil State passive classes, and other Obligations as incentives and environmental protection.

The second highest is the Ministry of Education, which represents 13.6% of the government's budget. It includes as its function education, textbooks, food, training teachers and parents,

among others. Then, the Public Debt Service, which represent 10.6%, and considers interest, discounts, commissions and amortization of the public debt.

Ministry of Communications, Infrastructure and Housing represents 10.1%; Ministry of Public Health and Social Assistance, 7.8%; Ministry of Interior, 5.9%; and the rest are grouped in the Other classification that represents 33.7%.

It is considered important to know how much was the amount of money that Guatemala's spent on conservation and environmental protection. That is why Table 6 is prepared according to a specific purpose and function report of the Ministry of Finance. It contains disaggregated data from other institutions that in addition to the MENR, responds to environmental protection.

Table 6
Environmental Protection Expenditure
Period 2010-2014
Millions of Quetzales

Description	2010	2011	2012	2013	2014*
Total	304.1	559.9	570.5	567.5	660.0
Ministry of Public Health and Social Assistance	7.1				
Ministry of Economy			10.0		
Ministry of Agriculture, Livestock and Food		0.1			
Ministry of Communications, Infrastructure and Housing	3.3	41.9	26.8	0.3	0.5
Ministry of Energy and Mines	0.9	1.0	1.3	1.2	1.2
Secretaries and other Executive Agencies	64.7	123.3	65.6	128.2	166.4
Ministry of Environment and Natural Resources	79.8	102.0	78.6	100.4	110.2
Obligations of the State in Charge of the Treasury	148.2	291.7	388.2	337.3	368.6
Ministry of Social Development					13.1

Source: Own elaboration based on the Government's Integrated Accounting System,
<https://sico.in.minfin.gob.gt/sico/web/login/fmlogin.htm>

* Preliminar data, consulted 09/10/2015

Note: Differences may exist due to rounding

As it is shown in the table, there are other ministries that have disbursements related to environmental protection. These expenses, compared with the total amount of the budget for those years, represents a very small portion. It is important to mention that 2009 was not considered, because at that time, there was not an environmental protection distribution in the consulted report.

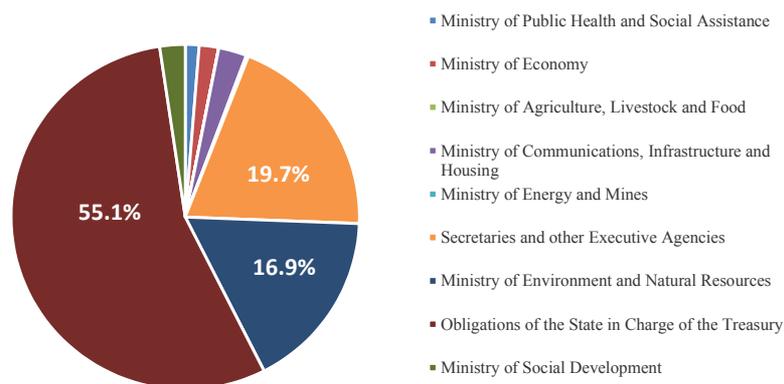
Figure 4 complements the table by indicating that 55.1% of the average disbursement is made by Obligations of the State in Charge of the Treasury. Some of the environmental activities that are supported are water and environmental sanitation, drinking water supply and basic rural sanitation, among others. As it was previously mentioned, this obligations consider the contributions to Local Governments and Departmental Development Councils. It also includes incentive programs as the one called by its name in Spanish “Programa de Incentivos Forestales para Poseedores de Pequeñas Extensiones de Tierra de Vocación Forestal o Agroforestal –PINPEP-”. (Forestry Incentives Program for Owners of Small Tracts of Land for Forests or Agroforestry). This incentives were established in Decree Number 51-2010, as a Law. Some of the objectives of them are involve owners of small tracts of forestry or agroforestry, in the benefits of economic incentives in forestry vocation; promote forest biodiversity; promote the improvement of living standards of communities, enhance and secure goods and services from the forest to meet the need for firewood, housing and food; and Contribute to the socio-environmental and land management for mitigation and adaptation to the effects of climate variability and change, strengthening the resilience of forest ecosystems to support national efforts on food safety, civil protection, water management, integrated rural development and risk reduction to natural disasters.¹²⁵

¹²⁵ Decreto 51-2010, Ley de Incentivos Forestales para Poseedores de Pequeñas Extensiones de Tierra de Vocación Forestal o Agroforestal (PINPEP)

The Secretaries and other Executive Agencies represents 19.7% of the average disbursement. Some activities considered are socio environmental production, prevention and control of forestal fire, reforestation and forest protection, water sanitation, environmental control and education, waste management and pollution control, and some projects related to environmental activities.

An the MENR, that as it was mention is the responsible for the environmental protection, represents 16.9% of the average spending for those years. Some of the activities provided by this ministry are environmental coverage and information, control and supervision, environmental evaluation, climate change, biodiversity coverage, citizen participation, among others.

Figure 4
Environmental Protection Expenditure
Average Period 2010-2014
Percentage of Environmental Disbursement



Source: Own elaboration based on the Government's Integrated Accounting System, <https://sicoin.minfin.gob.gt/sicoinweb/login/fmlogin.htm>

As a conclusion, the budget is the monetary expression of the government's plan. This indicates that the activities the government considers most important, it will provide a higher expenditure budget than other activities. This will depend on the conditions of the country, the population necessities and some other relevant aspects.

III.2.2.3 Financial Situation of the Central Administration

The revenues and expenditures from the Central Administration were previously analyzed. In Table 7 it can be observed the performance of revenues and expenditures, reflecting a fiscal deficit for the six years analyzed. Here the financing component, to which the government must appeal to support their spending is incorporated.

Table 7
Financial Situation of the Central Administration
Period 2009-2014
Millions of Quetzales

Concept	2009	2010	2011	2012	2013	2014*
Total Revenues	34,037.2	37,425.1	43,154.0	45,873.8	49,259.2	52,224.3
Current Revenues	34,025.9	37,397.3	43,141.1	45,855.1	49,250.3	52,217.1
Tax Revenues	31,811.7	34,772.0	40,292.2	42,819.8	46,335.5	49,096.9
Direct Taxes	9,715.3	10,329.8	12,710.5	13,453.7	16,052.8	17,768.0
Indirect Taxes	22,096.5	24,442.1	27,581.7	29,366.1	30,282.7	31,328.9
Non-Tax and Transfers	2,214.2	2,625.4	2,849.0	3,035.3	2,914.8	3,120.2
Capital Inflows	11.3	27.8	12.9	18.7	8.8	7.2
Total Expenditures	43,708.8	48,385.4	53,511.0	55,319.6	58,269.0	60,818.7
Current Expenditures	31,160.5	34,656.6	38,774.2	42,307.5	45,555.3	47,471.2
Capital Expenditures	12,548.3	13,728.7	14,736.8	13,012.0	12,713.7	13,347.4
Results in the Current Account	2,865.4	2,740.7	4,366.9	3,547.6	3,684.6	4,745.8
Budget Results	-9,671.7	-10,960.3	-10,357.0	-9,445.7	-9,020.2	-8,594.4
Total Financing	9,671.7	10,960.3	10,357.0	9,445.7	9,020.2	8,594.4
Net External Financing	4,117.3	5,109.7	378.2	5,743.0	6,364.5	122.5
Net Internal Financing	5,554.4	5,850.6	9,978.8	3,702.8	2,655.7	8,471.9
Change in Cash (+) decrease (-) increase	1,166.0	-320.4	1,673.4	2,019.5	276.3	248.7

Source: Own elaboration based on the data provided by the Ministry of Finance in Guatemala. www.minfin.gob.gt

* Preliminary data, consulted 25/09/2015

Note: Differences may exist due to rounding

Table 8 presents the results of the financial situation as a percentage of the GDP.

Table 8
Financial Situation as a Percentage of GDP
Period 2009-2014

Concept	2009	2010	2011	2012	2013	2014*
Total Revenues	11.1%	11.2%	11.6%	11.6%	11.6%	11.5%
Total Expenditures	14.2%	14.5%	14.4%	14.0%	13.8%	13.4%
Budget Results	-3.1%	-3.3%	-2.8%	-2.4%	-2.1%	-1.9%
Nominal GDP	307,966.6	333,093.4	371,011.6	394,723.0	423,106.6	454,211.8

Source: Own elaboration based on the data provided by the Ministry of Finance in Guatemala. www.minfin.gob.gt

* Preliminar data, consulted 25/09/2015

Note: Differences may exist due to rounding

Nominal GDP: Data from Guatemala's Central Bank

In general, public expenditure is higher than revenues, meaning that the government needs to appeal to external and internal financing to support its expenses. It could also find a way to make some fiscal reforms to increase its revenues, although this is more complex.

III.3 Environmental Issues

Regarding the environmental issues, I will roughly present some facts that were considered important, just to have an idea on what actions have to be consider in Guatemala's environmental case. I would not analyze very deeply this issue, due to the lack of experience in this field.

Studies in Guatemala have also shown that some of the natural resources have been deteriorated and often exhausted, causing a decrease in the possibilities to satisfy people's needs. This is because the environment and public health are related, so the government has to guarantee good

environmental conditions for the citizens. In that sense, it is necessary to move from a development model based on the exploitation of natural resources, to another sustainable, that recognizes and optimizes national environmental wealth as a source of capital, preserving its existence and improving conservation.¹²⁶

Climate change is a very interesting topic in Guatemala's case, because this country is one of the most vulnerable countries, as it is affected by multiple types of extreme weather events. Climate change can be considered as a change of climate resulting directly or indirectly from human activities that alter the overall composition of the atmosphere and in addition to natural climate variability observed over comparable periods. It is not limited to the increased incidence and intensity of weather phenomena; it is reflected in the increase of diseases, the decreasing availability and quality of water resources, reduced food production and quality, and effects on basic infrastructure and services, causing serious socio economic and environmental impacts.¹²⁷

Nowadays, climate change is one of the greatest challenges facing humanity. According to the National Policy on Climate Change prepared by the MENR the impacts of climate change in Guatemala endanger the life quality and the media that support it. Therefore, actions should be considered for the adaptation of climate change, primarily focused on reducing these effects, according to the MENR:¹²⁸

- ✓ Reducing the availability, quality and depletion of water sources.

¹²⁶ Secretaría de Planificación y Programación de la Presidencia. Orientaciones Estratégicas de Política para 2012-2014. February 2011. P. 25.

¹²⁷ Secretaría de Planificación y Programación de la Presidencia. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032. Guatemala. Conadur/Segeplan. 2014. P. 241.

¹²⁸ *Ibidem*, P. 241.

- ✓ Incidence and changes in the geographical and temporal distribution of pests, vectors, diners, predators and diseases.
- ✓ Changes in spatial areas of life and under normal weather conditions.
- ✓ Alterations and blockages in the food chain of terrestrial and coastal marine systems.
- ✓ Increased forest fires due to droughts.
- ✓ Destruction of infrastructure due to floods and landslides.
- ✓ Loss of crops and increased food insecurity.
- ✓ Loss of natural areas and habitats.
- ✓ Environmental and socioeconomic impacts, mainly in agriculture, livestock and fisheries sectors, among the most important.

With regard to the mitigation of greenhouse gases, it is worth mentioning that Guatemala is a country with significant emissions of this type; therefore it is not included in Annex 1 of the Kyoto Protocol and as a country, is excluded from reduction commitments of these gases. However, the commitment to join the global mitigation efforts through initiatives to achieve a clean development was acquired.¹²⁹

Just to have an idea of how the environmental issues are in Guatemala, Table 9 shows the long term climate risk index, in which Guatemala is number 10 of the list of the most affected countries from 1994 to 2013.¹³⁰

¹²⁹ Op. cit. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032, P. 241.

¹³⁰ S. Kreft, D. Eckstein, L. Junghans, C. Kerestan and U. Hagen, Global Climate Risk Index 2015, Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2013 and 1994 to 2013, P. 6.

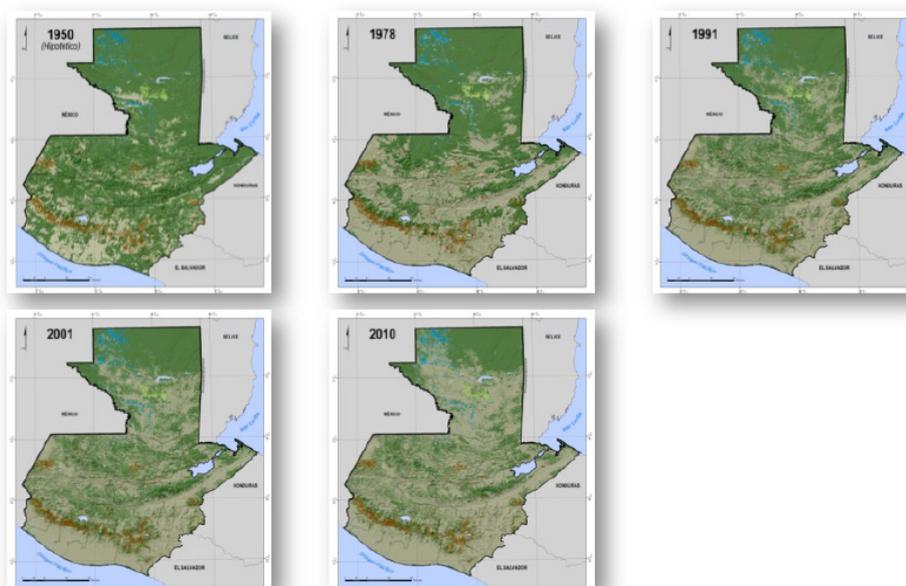
Table 9
Long Term Climate Risk Index (CRI)
Top 10 countries most affected from 1994 to 2013 (Annual Averages)

CRI 1994-2013	Country	CRI score	Deaths per 100,000 inhabitants	Total losses in million US\$ PPP	Losses per Unit GDP in %	Number of Events (total 1994-2013)
1	Honduras	10.3	4.6	813.6	3.3	69
2	Myanmar	14.0	14.8	1,256.2	0.9	41
3	Haiti	16.2	3.4	261.4	1.9	61
4	Nicaragua	16.7	3.0	301.8	1.7	49
5	Phillip ines	16.7	1.1	2,786.3	0.7	328
6	Bangladesh	20.8	0.5	3,128.8	1.2	228
7	Vietnam	23.5	0.5	2,918.1	1.0	216
8	Dominican Republic	31.0	2.4	274.1	0.4	54
9	Guatemala	31.2	0.7	477.8	0.6	80
10	Pakistan	31.5	0.3	3,988.9	0.8	141

Source: S. Kreft, D. Eckstein, L. Junghans, C. Kerestan and U. Hagen, Global Climate Risk Index 2015, Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2013 and 1994 to 2013, P. 6.

In the case of deforestation, figure 5 shows how it has been increasing in 60 years, from 1950 to 2010, approximately 3.5% annual.¹³¹

Figure 5
Deforestation from 1950 to 2010



¹³¹ Source: Tuy, Héctor, The Guatemalan Environmental Accounts, development and use, IARNA, February, 2015.

From my perspective, environmental issues need to be consider very important, due to the significance it has and because most of the economic activities rely on it.

III.4 Case Study

As it is quite difficult to focus in all the environmental issues that Guatemala has, this case study is presented to evaluate some relevant aspects that mining sector has in Guatemala.

III.4.1 Mining in Guatemala

This case study will develop topics regarding royalties collected on mining in Guatemala, and will analyze legal, tax and environmental aspects. It will serve to make a specific comparison with tax application in South America countries, environmental law and how much money Guatemala's Government has collected over the last 5 years as royalties. Guatemalan Mining Legal Framework, Decree No. 48-97, Mining Law, provide a guideline of recognition, exploration, exploitation and in general, mining operations that are carried out within the national territory. The Ministry of Energy and Mines is the organ of the State that is in charge to perform and coordinate the Government policies, plans and programs in the mining sector, to process and solve all administrative matters to comply with the legal laws. This law consider royalties as economic compensation that is paid to the State for the exploitation of mining products or construction materials, not considered as a tax.

The Politic Constitution of the Republic of Guatemala, article 121 letter e) establishes, that are State good: ... e) The ground, hydrocarbon deposits, and minerals, as well as any other organic substance or inorganic substance of the subsoil. On the other side, article 125 establish to declare utility and public need the technical and rational exploitation of hydrocarbons, minerals and other nonrenewable natural resources.

Within the context of environmental protection, Decree No. 68-86, Protection and Improvement of the Environment Law, article 12, establishes that are specific law objectives the following: i) the protection, conservation and improvement of the natural resources of the country, as well as preventing deterioration, misuse or destruction of the environment in general, ii) The prevention, regulation and control of all activities that can cause environmental degradation and pollution of ecological systems and exceptionally, the prohibition in cases attending the quality of life and the common good and qualified prior to scientific and technical reports issued by coherent organisms.

III.4.2 Environmental Impact of Mining

The implications and environmental consequences of mining are many and occur in different intensities throughout the mining Project. Some of them affect the natural capital, as well as the water, air, ground and ecosystems.¹³²

Water resource is significantly affected, and can show relevant aspects in water capital that can be: i) the acid mine drainage and leaching contaminants; ii) the soil erosion and mine wastes into surface waters; iii) impacts caused by dams, waste rock and heap leach and lifters ; and iv) impacts

¹³² Op. cit. La Minería en Guatemala, P. 31.

from mine dewatering. Air quality is also affected due that when the materials are or not in movement, the batteries or waste dumps contain small particles that can be easily dispersed by the wind. Agricultural activities and the ecosystems are affected by pollution and also habitat loss, due to the damage caused by mining.

Guatemala has the highest rates of material extraction per unit area: 8.3 tons per hectare, per year. This exceed the average for countries with similar economic indicators, which is 4.8 tons per hectare, per year. Agricultural extractive activities, livestock, and mining are responsible for the overuse in at least 15% of the country. Extractive industries, in total, induce a potential erosion level approximately in 3.4 tons of lost ground per each ton of biomass extraction.¹³³

For this case study, will be presented how some areas of the country (departments) have been affected and also its people, as a result of mining.

Case Study: Mina Marlin in San Marcos

In San Marcos, has been approved 22 licenses or mining approvals. Marlin's Project I is the only activity of mining metallic operation that has a license granted by the General Mining Direction (November 29th, 2003) and belongs to the mining company named Montana Exploradora de Guatemala, S.A.

Marlin's I Project has 20 square kilometers of distance for the exploitation of gold, silver, zinc, lead, iron, copper, and mercury for a period of 25 years and with an estimated useful life of 10

¹³³ Op. cit. La Minería en Guatemala, P. 91.

years. Uses mixed technology for underground excavation and chemical for metals. The 87% of Montana's operations are concentrated in San Miguel Ixtahuacán and a 13% in Sipacapa, San Marcos.

Relations between the communities and the mine company have been tense since the exploration phase began. For that reason, this last group mentioned, had presented many claims and protests. Additionally, it is attributed to this mine, the potential environmental problems and the risks in case of extreme natural disasters. However, the surrounding communities to the Mina Marlin, were benefited by precautionary measures issued by the Inter-American Commission on Human Rights¹³⁴.

Case Study: Mina El Escobal, Santa Rosa:

El Escobal Project, operates through San Rafael mining and has 40 square kilometers of distance to explore high purity silver, gold, lead, zinc, and other metals, it is an área localized between San Rafael Las Flores, Santa Rosa, and other towns of Mataquescuintla and San Carlos Alzatate, Jalapa. El Escobal has recoverable reserves of 71.7 million ounces of silver of 271 g/t and is waiting to produce in average 20 million ounces per year, at a cost less than US\$3 per ounce.

In the town of San Rafael Las Flores, poverty affects the 71% of population and extreme poverty, 26%. In Mataquescuintla town, poverty involves 75% of the population and 30% with extreme poverty, including Xinca¹³⁵ population. In the town of San Carlos Alzatate, which its population

¹³⁴ Op. cit. La Minería en Guatemala, P. 40-42

¹³⁵ Xinca people or Xinca ethnicity is an Amerindian ethnic group, almost extinct, which was located in Central America, in what is now Guatemala and El Salvador.

origin is from the Pueblos Pipil and Poqomam, extreme poverty affects 60% of the population. The neighbors groups affected are farmers, ranchers, and coffee growers, which had presented opposition to the environmental impact study, as well as civil and criminal resources against the company operations. The project will affect community land use, especially Xinca and Indigenous communities.¹³⁶

Case Study: Mina el Tambor, Guatemala

El Tambor Project operates through the mining company “Exploraciones Mineras de Guatemala S.A.”, subsidiary for the transnational Kappes, Cassidy & Associates, with 20 square meters of distance, was authorized in November 2011 to exploit gold and silver, located in the towns of San Pedro Ayampuc and San José del Golfo, Guatemala. In both towns is registered a poverty incidence of 30% in average.

The affected neighbor groups are farmers, and medium agricultural entrepreneurs, which have located resistance in La Puya, name of the place that is located at the entrance of the mine. There is 1% of indigenous population, particularly the Kaqchikel¹³⁷ group.¹³⁸

In all the cases presented, can be observed that the mining affects the environment, and can also affect population, in this case to the indigenous populations of the country, that have suffered the consequences. Mining production has been accompanied by controversies mainly related with

¹³⁶ Op. cit. La Minería en Guatemala, P. 40-45.

¹³⁷ Kaqchikel is one of the indigenous Maya peoples of the highlands of Guatemala Midwest.

¹³⁸ Op. cit. La Minería en Guatemala, P. 45.

the mining benefits, community consultations and respect the values, identity, traditions, customs, and rights of the indigenous and peasant population. Regarding the environment, there have been concerns focused mainly on the potential of water pollution and the negative impact on the livelihoods based on agriculture and traditional livelihoods. Therefore, it is indisputable that this issue should be resolved through conciliation by local and national interests.¹³⁹

On the other hand, it is important to mention that the State of Guatemala ratified the Agreement 169 on Indigenous and Tribal Peoples in Independent Countries of the International Labor Organization, which supports indigenous communities to decide their forms of development. It states that consultations are the result of processes of citizen participation and consensus building in communities, for the definition of local development policies.¹⁴⁰

III.4.3 Financial Issues and Income Received by the State

According to the provisions of the Secretariat of Planning and Programming of the Presidency, the revival of the metal mining industry has been favored by the combination of three factors: i) an economic policy aimed at trade liberalization and export promotion; ii) the increase in mineral prices in international markets; iii) technological innovation that has allowed the exploitation of deposits that, in earlier times, were classified with low profitability.¹⁴¹

Mining projects must be economically viable, but above all must ensure a balance between the social, natural, economic and institutional aspects. According to Iarna, the debate on

¹³⁹ Op. cit. de Desarrollo Nacional K'atun: Nuestra Guatemala 2032, P. 269.

¹⁴⁰ Op. cit. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032. P. 269.

¹⁴¹ Ibidem, P. 269.

sustainability in mining identifies the institutional weakness of the developing countries is a factor that reduces the potential benefits of mining.¹⁴²

Given this situation, it is necessary to promote metal and nonmetal mining focused on the reduction of impacts during extraction, in the proper handling post-extraction and generating economic benefits for the population.¹⁴³

According Decree 48-97 of the Congress of the Republic of Guatemala, establishes the following articles, specifically to determine the income that could be received:

Royalties: (Articles 61 – 65)

Royalties should be paid by the representatives of the exploitation licenses to:

- ✓ The State: for the extraction of mining products.
- ✓ Municipalities: by the extraction of mining products within their jurisdiction. In case that the extraction is located in more than one municipal jurisdiction, the royalty should be distributed in the different municipalities in proportion to the mining products extracted in each jurisdiction.

Royalties will be determined by a declaration based on the mining product commercialized volume, according the amount of the quote for the product in domestic or international stock markets. Therefore, the generation of revenue to the State is primarily influenced by the value of

¹⁴² Ibidem, P. 269.

¹⁴³ Ibidem, P. 269.

sales of domestic mine production. Therefore, the generation of revenue to the state is influenced primarily by the value of sales of domestic mine production.

Regarding percentages for exploitation of minerals, royalties should be paid as one-half percent to the State and half percent to municipalities; and the ones who exploit materials referred on Article 5, will pay a one percent to the respective municipalities. Royalties are settled and paid annually, within 30 days following the end of each calendar year, to the State and the respective municipality.

In addition to this, the Ministry of Energy and Mines, can sign contracts with the mining companies that operate in the country, to establish mutual agreement with a voluntary contribution, which varies depending each company. The agreement establishes that these resources have to be used to mitigate damage in case of natural disasters in the country. Within these secondary agreements, it is economically beneficial to the Ministry of Energy and Mines and the MENR, who have a percentage of the participation for those resources, not only the State and the Municipalities of the country where mining happens.¹⁴⁴

Table 10 shows what the State received as mining royalties, in which it can be observed that the received amounts are low, if compared with the total income. Percentages show that from the 100% only receive what is shown in the table for the years, respectively. This figures only consider the amount received as royalties, without considering other tax benefits received by other taxes related with mining companies. It would be very useful to compare the amount of

¹⁴⁴ Acuerdo Gubernativo 105-2012 aprueba el Acuerdo Marco de Entendimiento suscrito entre la República de Guatemala y la Cámara de Industria de Guatemala.

money that companies receive regarding they commercialized volume, but the information was confidential and not possible to find.

Table 10
Royalties Perceived compared with the Total Tax Revenue
Period 2010-2013
Millions of Quetzales

Year	Royalties Income	Total Tax Revenue	Percentage
2010	260.7	37,425.1	0.7%
2011	246.6	43,154.0	0.6%
2012	441.3	45,873.8	1.0%
2013	384.7	49,259.1	0.8%

Source: Own elaboration based on the Government's Integrated Accounting System

III.4.4 <https://sico.in.minfin.gob.gt/sicoinweb/login/frmlogin.htm>

Table 11 displays a comparison of the mining tax and environmental law, which presents the variation of the countries on the issue of royalties. In some countries they are consider as taxes, in some other as economic benefits and in other countries, they do not have.¹⁴⁵

¹⁴⁵ Panorama Minero, Derecho y Legislación Comparada, suplemento especial, Edición No. 353, Marzo de 2009.

Table 11
Comparative Analysis of Tax and Environmental Law in South America and Guatemala

Country	Tax Law	Environmental Law
Argentina	<p>Mining Investment Law established that the provinces adhere to the regime and perceive royalties may not charge more than 3% of value "Boca de Mina" percentage. In 1995, a conflict arose between the province of Catamarca and operator of Bajo de la Alumbrera project in relation to the definition of "Boca de Mina value", which is the calculation base for the application of provincial mining royalties. At that time, the province sought to apply the tax on the value of mineral exports, while the company sought to deduct the value of any expenses incurred after the extraction.</p> <p>Nowadays, except Chubut has established a royalty of 2% of the value of "Boca deMina" the other provinces receive a value of 3% of the value of "Boca de Mina".</p>	<p>There are several laws regulating mining under environmental prevention. The institutional framework consists on the National Law, technical assistance of Environmental Management Units and Provincial and Undersecretary's Mining Office.</p> <p>In the administrative order, the effective implementation of the National Law, the following environmental management instruments are established: Environmental Impact Reports, required to be filed by the holders of mining activities prior to commencement of operations and Environmental Impact Statement issued by the Authority for the report's approval.</p>
Bolivia	<p>The Mining Law of this country establishes that those who carry out mining activities shall be subject to royalty payments. The calculation is made on the gross value of the sale. Such royalties may be credited against the Company Profits income tax, only when the official listing of each metal or mineral at the time of settlement is less than the minimum prices fixed.</p> <p>In cases in which contributions are equal to or higher than the minimum set mining royalty it is not creditable against the tax, they have to be paid both independently. The amount of mining royalties effectively paid will be considered as a deductible expense in determining taxable profits income tax only in tax proceedings in which the discrediting occurs.</p>	<p>The National Environment Law is the cornerstone of the national environmental policy of the Republic of Bolivia, establishing a set of principles for the protection of the environment as a whole. In addition to this provision there are six regulations, all concerning environmental regulations.</p> <p>Environmental regulations for mining activities expressly indicate the need for integrated environmental management in mining since its inception, from the exploration phase to closure and abandonment of mining activities.</p>
Chile	<p>Mining activity is subject to an additional tax, called "Tax on the operating income of the Metal Mining Activity" which is known as the "Mining Rights". The Mining Royalty applies to the Mining Explorer operating income, which is defined as any natural or legal person to extract mineral substances and sell grantable character in any productive state in which they are.</p> <p>The royalty rate is determined by forming the estimated annual sales volume in metric tonnes. Revenues from mining activities are taxed at the First Category Tax, whose rate is currently 17%.</p>	<p>The General Environmental Framework of the Republic of Chile is made by the National Law called the Law on General Principles on Environment. In addition where legislation has established a number of instruments for environmental management, as well as legal provisions and definitions, the instruments of environmental management, responsibility, among others.</p>

Country	Tax Law	Environmental Law
Uruguay	No royalties or tax payment are established for mining activities.	<p>The Law on Environmental Impact Assessment states that before starting the implementation of activities, structures or works that are involved in the extraction of minerals and fossil fuels, those interested in carrying them out must obtain prior authorization from the Ministry of housing, Spatial Planning and Environment.</p> <p>There are no regulations in the country that specifically consider environmental protection as a result of mining activity undertaken in its territory.</p>
Guatemala	Mining activity is regulated by the Mining Law, Decree 48-97 of the Congress of the Republic of Guatemala, and is considered as an economic compensation paid to the State for the exploitation of mining products. The percentage to be paid is half percent to the state and half percent to the municipalities of the country where the mine is exploited.	<p>It is established in Article 5 of Decree 48-97, Mining Law, that people who exploit superficial clays, sands, rocks and other materials directly to the construction, excluding decorative rocks, that are exempt from obtaining operating license, because it is considered not done for commercial and industrial purposes, must comply in any case with the requirements of the Law on Protection and Improvement of the Environment.</p> <p>However, when these materials are associated with minerals in exploitable concentrations, they must obtain a license.</p>

Source: Own elaboration according to the document Mining Panorama, Law and Comparative Law, special supplement, Issue No. 353, March 2009, Pages 14-17.

III.4.5 Conclusions and Personal Comments Regarding the Case Study

This issue personally caught my attention, because several discussions are observed regarding this. Some in favor of mining companies, as the union of extractive industries¹⁴⁶, indicating that they are the supporters of the country's economy, providing not only royalties and voluntary contributions, but also other taxes and contributing to protecting the environment. On the other hand civil society and environmental experts refer to the pollution generated by these companies, the few benefits received by the government and municipalities arguing that the benefits received from such companies are not invested in the country, and that generally are moved to other countries.

¹⁴⁶ Gremial de Industrias Extractivas <http://www.gremiext.com/sala-de-prensa/comunicados-de-prensa/>

It was observed that in the country there are laws that protect natural resources. With regard to environmental issues, the case of mining is quite delicate because the soil, water, air, and others suffer damage and several families living in those communities where some mines are being exploited, have no quality of life or enjoy the constitutional rights mentioned during the investigation, and what is also important that these communities have much historical value within the country.

Regarding the amount of 1% royalties received by the state, it seems to me that it is very little compared to the sales volume and international prices that these companies may have received. It would have been great to compare the amount of sales volume of such companies, since there is derived tax, to observe what percentage represented to them, but the information was not available due to confidentiality. Despite this and as an example, according to CentralAmericaData.com¹⁴⁷ website that provides information about business in Central America, mentions that for 2010, Guatemala exported gold and silver, approximately US\$ 528 million dollars when the government received royalties for approximately US\$ 32.5 million.¹⁴⁸ This is just considering gold and silver, but there are other minerals that are exploited.

In 2014, the government, through the Ministry of Finance, introduced a measure of fiscal adjustment in the proposed budget for fiscal year 2015-2017, suggesting a reform to Decree No. 48-67 to increase values shown in the economic part in the case study. Royalties would increase from 1% to 10%, 9% would be destined for the common government fund and 1% for local governments. In addition to this, cement tax was also increased from Q1.50 to Q5.00, under the

¹⁴⁷ Central America Data. Com <http://www.centralamericadata.com> consulted on 05-11-2015

¹⁴⁸ Exchange rate for 2010 8.01358 according to the Guatemala's Central Bank <http://www.banguat.gob.gt/inc/ver.asp?id=/pim/pim02&e=115109&e=115265>

tax measure. I also mentioned the increase of the cement to the tax, because I believe that this type of industry could be taxed with environmental taxes. Although a tax for each bag of cement sold is received, it has no environmental fate, but to infrastructure. The collected royalties, for example, have no environmental fate, except voluntary contributions to mitigate the damage if there are natural disasters.

These fiscal measures were considered when the budget for fiscal year 2015 was approved, however, were declared unconstitutional by the Constitutional Court, leaving without effect, as mining industries filed petitions to declare the illegality of such reforms. Precisely I used the case of royalties and, being considered in the same law, the tax on cement, because from my point of view may be displayed as one of the cases that could happen if environmental taxes were raised in the country at this time. As mentioned in the previous analysis, there is still lack of tax culture, and to understand the need for the state to collect taxes for their operation and thus provide basic services for the population to improve their quality of life. The problem is, in my opinion, due to the poor financial decisions by some government officials, corruption, lack of services received by the population, among others. There is still reluctance to pay taxes in general.

A comparison was also made regarding mining and mining tax law and environmental law, where it can be observed that some countries in South America consider royalties as taxes and have specific laws for this, other countries such as Uruguay, for example, do not even have royalties. As for environmental issues, we can see that the countries have various forms of protection for the environment, giving importance to it.

IV. Policy Implications

Assessing the environmental, economic and fiscal management in the case of Guatemala was very interesting. In the previous chapter some positive and negative aspects were shown for Guatemala's case, which could influence the implementation of green taxes. From my perspective, in the short term I do not suggest the implementation of environmental taxes, for the reasons and observations described in the following paragraphs:

International Aspects

- It was noticed that international organizations, especially the United Nations, through its environmental program, has been working hard and supporting several countries to make their transitions to green economies. Some advanced countries have achieved positive results regarding this issue, other developing countries are still trying to make substantial changes in their policies to implement them.
- OECD countries are the leading countries on the implementation of green taxes, and they are supporting policy makers for the implementation of these taxes in developing countries and least developing countries.
- Through the years, OECD countries have been observing results on the environment, and also have created changes in the population's behavior. It is considered very

important, because part of the environmental protection must come from people, to reach better results.

Institutional Aspects in Guatemala

- One of the important aspects found during the research was that Guatemala is making big steps to consider establishing a national plan, not just government plans to achieve sustainable long-term development. As part of this sustainable development, it is important to consider environmental issues, to ensure the welfare of the population and comply with constitutional principles. Moreover in 1999, with Decree 23-99 Guatemala approved the Kyoto Protocol to the UN Framework Convention on Climate Change.
- I believe that to implement such a tax, first it is important to know which are the environmental needs that the country is facing and it was good to find that institutions such as the Institute of Agriculture, Natural Resources and Environment and other state agencies have worked hard to comply the required by the United Nations regarding the Integrated Environmental and Economic Accounting System of Guatemala, and thus serve as a powerful tool for, in long-term, assess these resources and establish them as taxes. This is because this system allows an accountancy of environmental resources and determine what their situation is. I recommend using this system in case the government wants to propose an environmental tax reform, as it can be a very specific and targeted.
- The MENR, which is the governing body of the country's environmental policy, in conjunction with the Secretariat of Planning and Programming of the Presidency and

other related institutions should work together to achieve the objectives of the Plan. In addition to this, I recommend the segmentation of the powers of each of the institutions involved in environmental care in Guatemala, because there are several institutions and laws, but the results are still deficient.

- I found it interesting MENR initiative regarding environmental education from schools, this in order to change people's consciousness about the environment, and I recommend to apply it in all the schools and to evaluate the programs.

Economic and Fiscal Aspects in Guatemala

- It is important to consider that the MENR receives few economic resources from the state, and that's part of what should be adapted to meet the plan. Financially there is a need to increase the State's resources to environmental issues because this ministry is very few money and it limits it to fulfill its core functions. In addition to this, institutions that also have activities for the protection and conservation of the environment, must be aligned with the directions of the MENR to avoid double efforts and achieve greater impact. The financial issue is quite difficult, because as noted, the government has financial deficits as its incomes are lower than the expenditures, required to meet the needs of the population and the money is very limited, since it must meet all constitutional obligations, wages, taxes for specific purposes, among others, leaving little available to other activities.

- When talking about taxes, as previously mentioned, it is a very sensitive subject, because generally people do not like paying taxes, but more important is to know what benefits or consequences would take effect thereof. As for the macroeconomic aspects that would have to consider if environmental taxes are applied in Guatemala, may be to discourage investment in the country. Authorities should be clear about their policy, if they wish to support the development or growth of the country and somehow not sacrificing the population. It was seen that, for example, recent law reforms incentivized the economy, a reduction of tax rates for companies were conducted.
- It is important to correct some flaws and assess the tax system in Guatemala, as it was observed that is one of the countries in Latin America that collects the least amount of taxes. In addition to this, there are still some challenges as maintaining macroeconomic and financial stability, improve fiscal performance, among others. Also, public finances still show structural weaknesses.
- The changes in prices can be explained by the corrective nature of environmental taxes, but it is important to consider that social costs of economic activity could be inflationary in the short term. Environmental taxes can affect the grow path of the economy.
- Some of the actions that can be done is to review the tax legislation, because from my point of view there may be environmental taxes, however, already have a specific target for other activities like health or infrastructure. Only a tax is designed to respond to environmental needs and is leaving the country tax.

Other Important Aspects to Consider

- As a fundamental issue it was observed the need for substantial reforms related to the environment and also with the tax issue. The authorities must put more effort into this kind of actions to improve. As mentioned by Cáceres, there is still weak rule of law of environmental and natural resources, lack of coordination, and resource management. Also low levels of social participation.
- Although an analysis to know what actions other countries have done was made, it should be understood that "no one size fits all" and each country has been making reforms depending on the government priorities, so the country should make an assessment of its own system to determine what would be the best actions to take in order to implement these taxes.
- Also important to consider that there is a need to create a corporate environmental responsibility, and where companies should support the environmental protection if they contribute with negative effects to the environment.

Although I do not consider feasible imposing green taxes in the short term, but gradually according to the national plan, I suggest to provide more importance to environmental issues. I think maybe use economic instruments not as taxes, but as a payment for environmental services, for example. It may be as an incentive to create awareness in people regarding the use of natural resources, rather than as a subsidy because I think it would not help improve the situation. As an

example, I want to show a case of a project that took place in Guatemala, which could work as a guide for the gradual implementation of environmental taxes.

Project Tacaná of the International Union for Conservation of Nature

A document prepared by Victor Rodas Ramos and Byron Godínez Cifuentes, regarding a Proyecto Tacaná de la Unión Internacional para la Conservación de la Naturaleza (UICN), by its name in English (Proyect Tacaná of the International Union for Conservation of Nature), titled Manual for the Implementation of Payment Mechanisms for Environmental Services, made specifically in San Pablo and Tacaná that are towns of San Marcos, department of Guatemala, they have implemented payments for environmental services, quite different than taxes, but still works.

It is a mechanism of monetary compensation or flexible and adaptable compensation to different conditions, pointing to a direct payment or compensation for maintenance or provision of an environmental service by users which is intended to suppliers. It is also said that payments for environmental services or payments for ecosystem services are based on the service users make a payment to providers, so that they preserve and / or rehabilitate ecosystems that provide such services.¹⁴⁹

These payments for environmental services are defined by them as government driven schemes in which public agencies can participate and include user fees, land purchase and granting of rights of using the natural resources as well as fiscal mechanisms based on taxes and subsidies.

¹⁴⁹ Rodas, Victor; Godínez, Byron. Manual para la Implementación de Mecanismos de Pago por Servicios Ambientales (PSA), basado en la experiencia del Proyecto Tacaná de la Unión Internacional para la Conservación de la Naturaleza. San Marcos, Guatemala. February 2012. P. 18.

Besides, each transaction will be unique, depending on the environment and the needs of stakeholders. But they all have certain characteristics in common. For example, because the benefits related to water derived from land management are local (upstream and downstream) watershed services are usually limited to localized markets. Furthermore, the benefits must be measurable, significant and directly attributable to the actions to protect watersheds and costs must not exceed the value of the evaluated positive impacts. They intended to compensate for the increase in the quality and quantity of environmental services, and is not a payment for environmental resources themselves.¹⁵⁰

They mention that in Guatemala there is no existing legislative and institutional framework to regulate or specify aspects related to payments for environmental services, including the main laws related to the management and conservation of natural resources such as the Law on Protection and Improvement of the Environment (Legislative Decree 68 -86), the Forest Law (Legislative Decree 101-96), the Protected Areas Law (Legislative Decree 4-89) and its subsequent amendments (legislative decrees 18-89 and 110-96) and the Law Regulating Areas Territorial Reserves of the State of Guatemala (legislative Decree 126-97), make no mention in any of his articles about this topic. They also mention that the decentralization law in force in Guatemala, open opportunities for Local Governments to implement payment mechanisms for environmental services, as this set on two of its principles the autonomy of Local Governments and the restoration and preservation of the environmental balance and human development.¹⁵¹ These payments are mostly presented as incentives to protect the environment, by paying every time consumers use the services.

¹⁵⁰ Ibidem, P. 19.

¹⁵¹ Op. cit., Rodas, P. 26.

V. References

1. Batlle Rio, Fred Manuel. Compendio de Legislación Ambiental. República de Guatemala. 2010. P. 1.
2. Bluffstone, Randall A., Environmental Taxes in Developing and Transition Economies, Department of Economics of Portland State University, P. 143-146.
3. CALAS- Centro de Acción Legal Ambiental y Social de Guatemala
http://www.calas.org.gt/index.php?option=com_content&view=article&id=94&Itemid=129.
4. Camargo Hernández, D.F. (2005) Evasión fiscal: un problema a resolver Edición electrónica a texto completo en www.eumed.net/libros/2005/dfch-eva/
5. Central America Data. Com <http://www.centralamericadata.com> consulted on 05-11-2015
6. Central American Institute for Fiscal Studies, icefi.org, consulted 02/10/2015.
7. Decreto 51-2010, Ley de Incentivos Forestales para Poseedores de Pequeñas Extensiones de Tierra de Vocación Forestal o Agroforestal (PINPEP).

8. Delgadillo Gutiérrez, Luis Humberto, Principios del Derecho Tributario, Editorial Limusa, México, 1998, P. 21-22.
9. Desafíos y propuestas para la implementación más efectiva de instrumentos económicos en la gestión ambiental de América Latina y el Caribe. Comisión Económica para América Latina y el Caribe, ECLAC, May 2002, P. 232-233.
10. Franco Hernández, Ana Paola, Análisis del Sistema Fiscal de Guatemala desde la Perspectiva Ambiental, Universidad de San Carlos de Guatemala, 2010.
11. Gremial de Industrias Extractivas
<http://www.gremiext.com/sala-de-prensa/comunicados-de-prensa/>
12. Inter-American Center of Tax Administrations
<http://ciat.org/index.php/en/component/content/article/3029.html>, consulted 02/10/2015.
13. Instituto de Agricultura, Recursos Naturales y Ambiente (IARNA), Desarrollo nacional de la legislación ambiental, P. 352.
14. Instituto de Agricultura, Recursos Naturales y Ambiente (IARNA), Perfil Ambiental de Guatemala 2010-2012, Vulnerabilidad local y creciente construcción de riesgo, Universidad Rafael Landívar, P. 250-266.

15. International Labor Office, Greening the Economies of the Least Developed Countries: The Role of Skills and Training, 2014, P. 1-12.
16. International Labour Organization, European Union, International Institute for Labour Studies. Green Policies in the EU: A review. EC-IILS Joint Discussions Paper Series No. 14. P. 1.
17. Jarach, Dino, El Hecho Imponible, Teoría General del Derecho Tributario Sustantivo, Buenos Aires, Segunda Edición, P. 9-12.
18. Jofra Sora, M. and Puig Ventosa, I., Fiscalidad Ambiental e Instrumentos de Financiación de la Economía Verde, January 2014, P.1-14.
19. Manual de Clasificaciones Presupuestarias para el Sector Público de Guatemala, Acuerdo Ministerial No. 291-2012, Ministerio de Finanzas Públicas, 5ta. Edición.
20. Milne, Janet E., Environmental Taxation in the United States, The Long View, P. 418.
21. Ministerio de Ambiente y Recursos Naturales. Política Nacional de Educación Ambiental, P. 13-14.
22. Ministry of Environment and Natural Resources.
<http://www.marn.gob.gt/paginas/Institucion>, consulted 09/10/2015.

23. Monterroso de Morales, Gladys Elizabeth, Derecho Financiero Parte I, Finanzas Públicas, Editorial Litográfica Print Color, S.A., P 1.
24. Moreno Arellano, G.; Mendoza Sánchez, P. and Ávila Forcada, S., Impuestos Ambientales, Lecciones de Países de la OECD y experiencias en México. P. 14-15.
25. Morris, David. Institute for Local Self-Reliance. Green Taxes. 1994. P. 1.
26. Ocampo, José Antonio. The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective. Division for Sustainable Development, UN-DESA. P. 3.
27. OECD Database on instruments used for environmental policy http://www2.oecd.org/ecoinst/queries/Query_2.aspx?QryCtx=2, consulted on 21/10/2015.
28. OECD, Environmental Taxation, A Guide for Policy Makers. September 2011.
29. OECD, Environmentally Related Taxes in OECD Countries, Issues and Strategies, 2001, P. 21-25.
30. OECD <http://www.oecd.org/env/tools-evaluation/environmentaltaxation.htm>, consulted 03/09/2015.

31. OECD, Green Growth and Developing Countries, A Summary for Policy Makers, June 2012, P. 5-10.
32. OECD, Green Growth and Developing Countries consultation draft, Economic Co-operation and Development, 2012, P. 7-16.
33. OECD Green Growth Studies, Policy Instruments to Support Green Growth in Agriculture, 2013, P. 138.
34. OECD, Taxation and Environmental Policies, Environmentally Related Taxes in OECD Countries: Issues and Strategies, <http://www.oecd.org/ctp/tax-policy/taxationandenvironmentalpolicies.htm>, consulted 02/11/2015.
35. Pineda Santos, Lesly Anaí, Consideraciones sobre la Implementación de una Reforma Fiscal Ambiental en Guatemala. Universidad de San Carlos de Guatemala. 2011, P. 83-107.
36. Programa de las Naciones Unidas para el Desarrollo, Guatemala: hacia un Estado para el desarrollo humano, Informe nacional de desarrollo humano, 2009-2010, primera edición, 2010, P 91.
37. Rodas, Victor; Godínez, Byron. Manual para la Implementación de Mecanismos de Pago por Servicios Ambientales (PSA), basado en la experiencia del Proyecto Tacaná

- de la Unión Internacional para la Conservación de la Naturaleza. San Marcos, Guatemala. February 2012. P. 18.
38. Rodríguez Lobato, Raúl. Derecho Fiscal. Harla, S.A. de C.V., 2da Edición, México, P. 43.
39. S. Kreft, D. Eckstein, L. Junghans, C. Kerestan and U. Hagen, Global Climate Risk Index 2015, Who Suffers Most From Extreme Weather Events? Weather-related Loss Events in 2013 and 1994 to 2013, P. 6.
40. Secretaría de Planificación y Programación de la Presidencia. www.segeplan.gob.gt. Consulted 20/08/2015.
41. Secretaría de Planificación y Programación de la Presidencia. Orientaciones Estratégicas de Política para 2012-2014, February 2011, P. 25.
42. Secretaría de Planificación y Programación de la Presidencia. Plan de Desarrollo Nacional K'atun: Nuestra Guatemala 2032. Guatemala. Conadur/Segeplan. 2014. P. 63.
43. Secretaría Ejecutiva del Consejo Monetario Centroamericano, Informe Riesgo País, III Trimestre 2015, P. 6-7.
44. Sukhdev, P.; Stone, S.; Nuttall, N., Developing Countries Success Stories, United Nations Environmental Program, 2010, P. 3-15.

45. Sukhdev, P., and Stone, S., Driving a Green Economy Through Public Finance and Fiscal Policy Reform. United Nations Environment Program. Working paper V. 1.0. 2010. P. 2-34.
46. Taxation, Innovation and the Environment, OECD Green Growth Strategy, 2010, P. 70-77.
47. Tax Policy Center, <http://www.taxpolicycenter.org>, consulted on 02/10/2015.
48. Towards Green Growth: A summary for policy makers. Organization for Economic Co-operation and Development. May 2011.
49. Tuy, Héctor, The Guatemalan Environmental Accounts, development and use, IARNA, February, 2015.
50. UNEP, Development strategies of selected Latin American and Caribbean countries and the green economy approach A comparative analysis, Green Economy Discussion Paper, 2013, P. 14.
51. United Nations Environmental Program, Fiscal Policy, Briefing Paper P. 1-4.
52. United Nations Environmental Program, Why a Green Economy Matters for the Least Developed Countries, May 2011, P. 4-28.

53. United Nations Environment Program <http://www.unep.org/>
54. United Nations Sustainable Development Knowledge Platform
<https://sustainabledevelopment.un.org/> Consulted 28/08/2015.
55. Instituto de Agricultura, Recursos Naturales y Ambiente IARNA, Universidad Rafael Landívar, http://www.url.edu.gt/PortalURL/Principal_01.aspx?s=51 consulted in 06/11/2015.
56. Van Kerckhoven, S., Bécault, E. & Marx, A. (2014), Eco Tax Reform in Selected Developing Countries, KLIMOS-Policy Brief 3, KLIMOS, Leuven, P. 1-4.
57. Withana Sirini, Brink Patrick ten, Illes Andrea, Nanni Silvia, Watkins Emma. Environmental Tax Reform in Europe: Opportunities for the future. Institute for European Environmental Policy. May 2014. P. 6.
58. Yacolca, E. and Daniel, I., Reforma Fiscal Verde para Sudamérica, Edición de la Beca del Investigador, 2013, P. 53.