

# **Strategic Tax Plan for the Company Ecopetrol, in Accordance with the Colombia Tax Reform 2022**

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# ZADÁNÍ DIPLOMOVÉ PRÁCE

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## Zásady pro vypracování

### Introduction

Define the objectives and the application methods used in the master thesis.

#### I. Theoretical Part

- Compile literature review of the Colombian tax system and its application on the oil business sector.

#### II. Practical Part

- Analyze the impact of the tax reforms on the Ecopetrol Company.
- Identify the current financial situation of the Ecopetrol Company and its tax liability.
- Propose strategies to carry out the strategic plan based on the optimization of financial resources.
- Develop a comprehensive strategic tax plan in compliance with the tax obligations, based on the 2022 tax reform.

### Conclusion

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## **ABSTRAKT**

Tento výzkum si klade za cíl stanovit strategický daňový plán na základě zákona 2277 z roku 2022, který určuje změny týkající se kolumbijského daňového systému. Navrhovaný projekt je kontrolním nástrojem ke snížení daňové zátěže způsobené neplněním daňových povinností společnosti Ecopetrol, které mají zásadní roli v ekonomice země prostřednictvím výběru daní. Tento nástroj je založen na ústavě, zákonech, normách, nařízeních, dohodách, usneseních a dalších přílohách v daňových záležitostech platných pro vypracování této práce. Nedodržování daní je problém, který se přímo dotýká státu kvůli zdrojům potřebným k uspokojení potřeb komunity. Proto tento výzkum vede k vytvoření strategií pro optimalizaci daňových aktivit a zvýšení a zlepšení vnitřní kontroly prostřednictvím efektivního daňového plánu, aby se zabránilo placení penále, úroků a pokut.

Klíčová slova: daň, Ecopetrol, daňová reforma, plán, strategický

## **ABSTRACT**

This research aims to determine a strategic tax plan based on Law 2277 of 2022, which determines the changes regarding the Colombian tax system. The proposed project is a control tool to reduce the tax burden caused by non-compliance with the tax obligations of the Ecopetrol company, which have an essential role in the country's economy through tax collection. This tool is based on the constitution, laws, norms, regulations, agreements, resolutions, and other annexes in tax matters in force to develop this work. Tax non-compliance is a problem that directly affects the State due to the resources needed to meet the community's needs. Therefore, this research leads to the establishment of strategies to optimize tax activities and increase and improve internal control through an efficient tax plan to avoid paying penalties, interest, and fines.

Keywords: tax, Ecopetrol, tax Reform, strategic tax plan

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Gustavo Eduardo Garcia Becerra

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## INTRODUCTION

Tax planning is considered an essential tool for any individual or company that wants to optimize their financial resources when complying with their obligations as a taxpayer to the government. It also reduces and prevents penalties incurred for non-payment of taxes established by entities in charge of collecting taxes. Therefore, it is necessary to evaluate, analyze and restructure the procedures that the company carries out in terms of taxes. As a result, the company will have timely and effective procedural standards that lead to the reduction of liquid assets destined for fiscal responsibility allowing timely compliance with the payment of taxes which triggers maximizing the profitability of the shareholders.

The importance of this concern is due to the constant changes in the Colombian tax statute, taking into account the last tax reform carried out and approved by the Congress of the Republic of Colombia in 2022, which entails substantial changes in tax obligations affecting companies in the country's hydrocarbons sector that are involved in their financial and investment processes. Another critical factor is that many companies need to be made aware of the importance of proper tax management and the economic impact they can cause at different levels of organizations.

Due to the broadness of the subject, this research has been limited to a specific sector, in this way better results can be obtained from the analysis that will be carried out on the Ecopetrol company, which is one of the most relevant companies in the hydrocarbon sector of the country. Although the sector dedicated to the extraction and exploration of natural resources has been one of those that have remained in motion and has even shown an increase in its transactions, the Colombian economy has been hit by the effects of the Covid-19 pandemic that started in 2021; the country has recorded high levels of inflation, reported in February 13,28% by Departamento Administrativo Nacional de Estadística (2023).

For the reasons mentioned above, this research consists of developing a tax tool that contains strategies and updated information that allows for improving the level of compliance of the Ecopetrol company but also serves as tools for other companies in the sector based on theoretical concepts. And previous research that supports the ideas raised.

Moreover, the study includes the proposal, a Strategic Tax Plan to optimize the level of compliance and internal control for the company Ecopetrol; this chapter has developed a background, justification, and general and specific objectives. The proposal is structured in five phases which begin with the collection and analysis of historical data, analysis of the tax reform, description of the optimization of resources, implementation of the plan, and

finally, an internal control plan. In each of the phases, the main items of Law 2277 of 2022 that affect the company in tax matters are taken into account, as well as the best way in which the company can respond to the changes proposed by the government. Taking into account the strengths of the company.

The research ends up with detailed conclusions and recommendations to point out the results obtained from the study, in addition to providing suggestions for the users of the tax plan.

## **OBJECTIVES AND METHODS OF THE MASTER THESIS PROCESSING**

### **Objectives of the Study**

The main objectives of the research is to define a strategic tax plan based on the analysis of the latest tax reform in order to face the constitutional changes proposed by the government to the hydrocarbon economic sector. Particularly, the study has the following specific objectives:

1. Analyze the impact of the tax reforms 2022 on the Ecopetrol Company.
2. Identify the current financial situation of the Ecopetrol Company and its tax liability.
3. Propose strategies to carry out the strategic plan based on the optimization of financial resources.
4. Develop a comprehensive strategic tax plan in compliance with the tax obligations, based on the 2022 tax reform.

The result of this study will be valuable to the company as well as the economic sector related to companies which its main function is based on the extraction of coal al oil, as a tool for decision-making in the daily growth and expansion of the company.

### **Problem Statement**

Generally speaking, tax reforms is based on the principles of the Colombian Tax System mentioned on the Tax Status, which considers equity in terms of all citizens should contribute to the tax system according to their ability to pay.

The tax processes are related to the internal control of the entity since the calculation of the taxes is made based on the accounting information available to the companies regarding their purchases and sales. The organization's members must be committed to correctly recording the information. The accounting and tax data contained in the accounting systems, a product of the registry, must be reliable and timely to establish a base that allows decision-making.

Despite this fact, In this context, the current situation is observed that the taxes regimes are dynamic. They change according to international trends in the economy. Therefore, regional, national, and global markets face the demands of greater competitiveness and quality; the continuous change in the market forces leads governments to restructure the tax system based on international trends. A clear example of this is the effort of nations to reduce the

effect of global warming through new energy sources. Therefore, the research tends to address the following questions:

## **METHODOLOGY**

The primary research method for this study is literature review and conceptual approach. Identification of the main point in the tax reforms that concerns to oil business, and tax classification through a structured approach is the very first step toward a comprehensive analysis. This study will first review the current financial situation of the company Ecopetrol as well as the economic sector itself. in construction and their characteristics. Based on this understanding, a classification method will be developed to categorize the main taxes in regards to primary economic sector and its tax liability.

The second stage of this study aims to establish a strategy plan in order to integrate different accounting, tax, and legal concepts that allow the highest optimization of burden taxes within the framework of the law. For the analysis phases, historical data of the taxes paid by the company in the last 14 years will be collected from primary sources, such as the income statement reports published by the company in the official website. The statistical model of linear regression will be applied, which will later be evaluated and analyzed for the creation of the strategic tax plan. Analysis based on a comprehensive review of current industry practices and academic researches. Finally, once the classification and categorize techniques are identified, an interpretation of the results will be necessary to address a conceptual framework in order to develop strategies and advise the company in the incidence of the tax reform in the economic situation of the corporate.

## **I. THEORY**

# 1 INTRODUCTION TO TAX SYSTEM

Taxes have been a tool to build societies and establish solid economic systems throughout history. However, the function and objective of the taxes have been modified depending on macroeconomic variables, and the use of taxes has varied. Thus, it is necessary to define the general concept of tax and the elements that make up a tax system.

Each country has a specific tax system, which frames the different taxes and contributions imposed on individuals and legal entities, regulated under the principles of equity, certainty, effectiveness, and convenience, which will be explained in more detail later on.

## 1.1 Definition of Tax

Taxes are considered a mandatory contribution that governments collect from citizens with the premise that they do not receive any direct benefit from paying the tax. In general, taxes are part of the public budget and mainly aim to finance public spending in sectors such as education, health system, road network, and infrastructure, which are for the use and access of all citizens. Nevertheless, taxes can also meet other purposes, such as discouraging certain consumption dynamics, in what is usually considered internal protection mechanisms (Spies-Butcher & Bryant, 2023).

## 1.2 Elements of a Tax System

A tax system is composed of different elements that allow a tax to comply with the principles mentioned above and, at the same time, build the legal tax framework of the nation:

- **Passive Subject:** Alm, Martinez-Vazquez, & Wallace (2005) define the passive subject in a tax system as the individual or legal person on whom the tax obligation falls. Likewise, two types of taxpayers can be identified: the first is the taxpayer with the obligation to pay the tax. On the other hand, the taxpayer is designated by the state as an intermediary to collect the tax and make the payment.
- **Taxable event:** The taxable event is defined as the event or fact for which payment must be made of a legal or economic nature. The tax statute is designed to establish the tax rate for the specific event. Therefore, this aspect is considered an element of the tax whose realization originates the main tax obligation, in other words it is the tax payment (Direcotrate of National Taxes and Customs, 2022).

- **Tax Base:** The taxable base is the amount in which the payment capacity of an individual or a company is measured to generate the tax. In this sense, the payment amount is determined. It must be said that the tax base is used to calculate the tax rate based on the corresponding tax act (Alm, Martinez-Vazquez, & Wallace, 2005).
- **Tax Rate:** Shapir-Tidhar, Malul, & Rosenboim (2023) refer to two types of tax rates. It can be fixed or a percentage. Therefore, the portion or percentage that is levied on the tax base is considered to determine the payment amount. Regarding specific taxes, they are fixed amounts that taxpayers must pay on a taxable basis, for instance, the price that taxpayers must pay in tolls for the use of a highway. On the other hand, percentage tax rates are applied to a monetary tax base. For example, the taxpayer income is the tax base to calculate the percentage of the tax income.

### 1.3 Type of Taxes

Taxes can be classified according to the object that is taxed since, as well as, the capital of the income can be levied, or on the other hand, the act of consumption could be an object to be taxed on the price of a good or access to a service.

- **Direct taxes:** for many economist and tax experts consider this taxes are based on the ability to pay and can be progressive, meaning they become higher as the individual r entity earns more income a good example of direct tax is the oncome tax. Another characteristic of such taxes are directly imposed on individuals or entities ( Castro , Velásquez, Beltrán, & Yamada, 2022).
- **Indirect taxes:** Indirect taxes levied on goods and services, and are often included in the price of the product or service. Excise taxes, sales taxes and value-added tax are considered indirect tax. Something relevant to take into consideration about indirect tax is that these taxes are regressive meaning they may disproportionately affect low-income earns, as they are applied equally to all customers regardless of their levels (Saez, 2004).

### 1.4 Function of taxes in the economy

Nowadays, tax procedures involve the private sector, known as the taxpayer, and on the other hand, the entity that is in charge of the procedural acts. Based on the argument Pistone (2020), the interdependent relationship between the two parties affects the government



revenue and the effective participation of the affected person. Therefore, the vision of the tax function addresses protecting the person's rights in balance with adequate procedures to secure tax collection. Consequently, in the modern economy, taxes have a relevant impact that can be seen clearly through the tax function.

- **Stabilization of the Economy** :The investment that governments finance in health care services, improvement of infrastructure, social and cultural projects, and education systems come from collecting taxes, considering the primary sources to achieve a sustainable and equitable social system (Dabla-Norris & Lima, 2022). Therefore, the impact of taxes on the economy depends on the tax base and tax rate policy, considering the government spending. Therefore. Public administration influences the country's economy through the administration and management of state resources.

Different fiscal policy decisions can be made depending on the country's needs. For instance, if the inflation rate increases because of excess aggregate demand, the government tends to control inflation by increasing the tax rate. The opposite is during the period of fiscal strain when the economy is declined, or the unemployment rate is high; governments aim to increase public spending and reduce the tax rates to collect more resources.

- **Allocation of Resources** Public revenue comprises different tax forms such as income tax, value-added tax (VAT), environmental tax, etc. In return, government spends in Public goods and services like street lighting, roads and railways, defense, and even education. Therefore, the administration of funds is the design of an efficient tax system that would be fair, equitable, and simple to understand (Xu, Sendra-Garcia, Gao, & Chen, 2020). Hence, the implication of the tax policy aims to provide resources that enable the country to address sustainable economic growth. One of the main strategies applied by countries are the implementation of innovation and technological progress that promote the transformation of economic growth to quality and efficiency type, and achieve sustainable economic growth. Therefore, the roll of public administration is to distribute the resources collected from taxes where the society needs are demanded.
- **Redistributive effect**: Based on the principle of equality, in a tax system some consumers pay higher taxes rate while others receive subsidies and are sponsor by those with higher income. Hence, the redistributive process aims to reduces income

inequality through the contributions paid by high-income consumers. The redistributive effect of the tax system can only be found by considering the net effect of all taxes; the redistributive effect of government intervention must take into account all transfers and taxes (Ohno, Sakamaki, Kojima, & Imahori, 2021). Hence, government aims to ensure a fair and equitable tax system that balance the taxation effectiveness, increasing revenue, sustainable growth, but on the other hand, considering the relative taxation among taxpayer taking into account the ability to pay and reducing the cost of collection taxes.

## 1.5 Tax principles

In the eighteenth century, the economist Adam Smith postulated four main principles in the tax system of any nation. The main objective of this postulate is to generate a tax system based on justice and the country's development (Tresch, 2023). To better understanding about Adam Smith's postulate, it is relevant to consider that in the past, taxes were created to maintain sovereignty, effectiveness, stability, and financial management from the collection of funds from its citizens. Therefore, the present chapter will discuss the four principles the economist Adam Smith proposed.

- Principle of Equity: the principle of equity considers the individual situation of each taxpayer in terms of the financial capacity it possesses to respond to the financial obligation. Thus, taxpayers must contribute according to their income, capital, and assets. On the other hand, the principle aims to treat individuals with similar social, economic, and legal situations equally (Tresch, 2023). In the same way, it determines if there is an inequality between taxpayers at the time of collecting the tax. Thus, the tribute fails to meet the principle of tax equity of the tax system because there would be inequality among the taxpayers with low profitability or loss. Compared to those with higher incomes.

As part of the function of the principle of equality, is to assume that the tax burden is distributed among all people with the ability to pay, but it goes further by setting criteria to set the distribution of tax burdens and how the government should be carried out the collection of the tax, depending on the contributive capacity of the subjects. In doing so, tax equity has been understood by economists and experts as a *“criteria based on which the distribution of burdens and benefits or the imposition of taxes among taxpayers is weighted to avoid excessive burdens or exaggerated benefits. The*

*tax burden is unreasonable, or a benefit is exaggerated when the ability to pay of the taxpayers is not taken into account due to the nature and purposes of the tax in question”* (Constitutional Court of Colombia, 2016).

- Principle of Certainty: this principle points out that all taxes must be based on elements established in a framework and characteristics, with the aim of avoiding arbitrary acts on public management. In other words, each individual must pay the tax based on clear and precise parameters regarding the amount to be paid, the collection time, and the form of payment. Since uncertainty gives rise to corruption in the tax system (James, 2010). Therefore, to comply with this principle, the tax law must determine who is the subject of the tax, the object to be recorded, the collection rate, the means of payment, and the payment period. The objective of complying with the abovementioned elements is to avoid uncertainty and benefit any parties involved in the collection process.
- Principle of Convenience: regarding the principle of convenience, Samia (2015) argues that if the payment of the tax does not maximize the comfort of the taxpayer, the government must ensure that the tax policy should be clear, straightforward, and simple to understand. Doing so enables the convenience of paying the tax and maximizes the efficiency of tax collection. Therefore, public management must set favorable and advantageous dates for the taxpayer to make his payment. Hence the primary function of the principle is to provide that all taxes must be collected at the time and in the manner that is most convenient for the taxpayer, which means that the deadlines and dates must be set so that it is practical and suitable for taxpayers to comply with the tax obligation.
- Principle of Effectiveness: Some authors suggests that *“the cost of collecting tax should be the minimum so that a major part of collections may bring to the Government treasury. If the administration expenses in the collection of taxes consume a major portion of tax revenue collected; it cannot be said to be a good tax system”* (Oyedokun, 2019, p. 19). Taking into account the Oyedokun’s premise, this principle considers that government should set up the contributions received from citizens in such a way that there is a slight difference between the amounts that come out of the taxpayer and those that enter the public treasury. Therefore, for a tax to justify its

existence, it must be productive and of excellent yield, for which the difference between the sum that is collected and the collection cost must be as small as possible.

In this regards, if the difference between the amount of money collected and the amount that the nation's budget receive is high, one of the following causes must be considered:

- Collection incurs high human resource costs, such as salaries and fees of public workers.
- The tax payment demotivates the taxpayer to present the tax return of such tax.

## 2 STRATEGIC PLANNING

Many authors consider strategic planning as an effective tool in the definition and implementation of corporate objectives that enables the articulation of all the areas that make up a company for the execution of such objectives, consequently achieving the proposed goals in the short, medium, and, long term ( Ebabu Ejigu & Abebe Desalegn, 2023).

Strategic planning is designed to mitigate the risks to which the company is exposed from internal and external factors. For this, it is essential to draw a navigation route that involves each of the processes and areas that give added value to the product or service offered by the company.

Through strategic planning, an organization benefits in different ways, from the understanding of the current situation of the organization by all the members that are part of it, responding proactively to the various situations that the entity faces, enables to increase the profitability of the organization since it adapts the internal environment of the company to the external environment, achieving a more significant portion of the market share. (Guyadeen , Henstra, Kaup, & Wright, 2013). In general, implementing strategic planning enables the company to reduce resources such as money, time, and human resources, maximizing productivity and aligning decisions with the well-being of a common objective.

### 2.1 PEST Analysis as strategic Planning Model

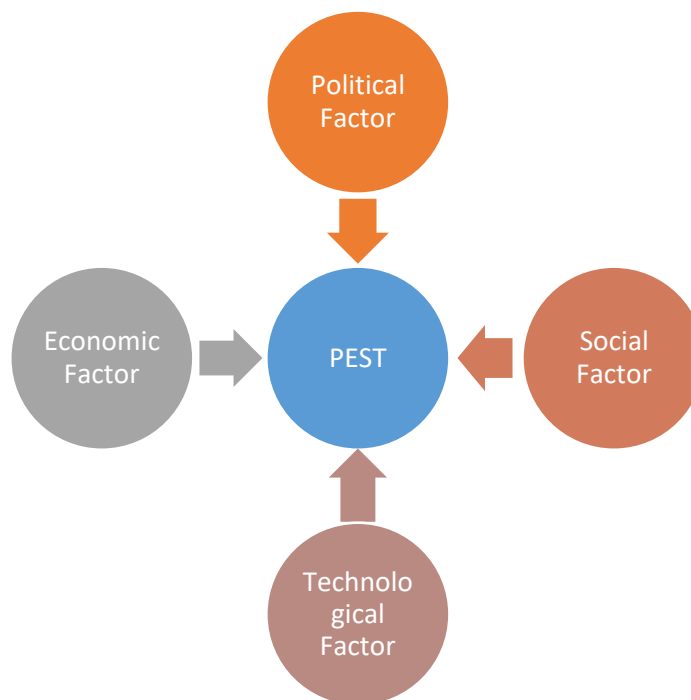
The model denominated Political, Economic, Social, and Technological factor known as a PEST analysis, refers to a tool used in strategic management to understand the external environment in which a firm operates and consequently the organization's operation is affected by (Kim-Keung Ho, 2014).

- Political Factors: *“These variable aims to analysis government policies, regulations, and laws that affect the operations of a firm. For instance, the change to tax laws, trade policies, and environment regulations can impact business operations”* (Dibrell, Craig, & Neubaum, 20014).
- Economic Factor: these tend to analyze macroeconomic trends that affect an organization's operations, such as inflation, economic growth, currency exchange rates, and interest rates (Kim-Keung Ho, 2014). Economic factors can affect demand for a company's products or services, as well as its supply chain and financing options.

- **Social Factors:** Companies also have to lead with social factor since its internal and external customer are people with attitudes, beliefs, lifestyles, and demographics that may influence consumer behavior and market demand (N'Souvi, Sun , Egbendewe-Mondzozo, & Kafui Tchakah, 2021). Factors such as population growth, changing consumer preferences, and cultural shifts can have a significant impact on the internal process in the company.
- **Technological Factors:** These relate to advances in technology that influence business operations and create new opportunities or intervene current business model in different ways. A clear example of this factor is the impact of internet and social media in the relationship client – Company or the automation of process through innovation or artificial intelligence.

By analyzing these four factors, organizations can gain better understanding of the external environment in which they operate as well as improving the effectiveness of the decision making regarding the operations, strategies, and resource allocation. External factor analysis can also help organization identify potential opportunities and threats, as well as prepare for future changes in external environment.

*Figure 1 PEST Analysis*



*Source: Adapted from N'Souvi, Sun , Egbendewe-Mondzozo, & Kafui Tchakah, 2021, own processing*

## **2.2 Corporate Tax Planning**

In the past, *tax planning* was not taken as the manager's priority to accomplish the tax obligation. Nevertheless, the concept of tax planning is known widely nowadays in the business sector Cooper & Quyen T.K. , (2020) defines tax planning as the process that aims to define strategies that enable the firm to reduce the tax burden in the frame of the tax law and government guidelines. In some cases, the concepts of avoidance and planning are used interchangeably. However, exists some differences which are discussed as follow.

### **2.2.1 Strategic Tax Planning and Tax Avoidance**

Tax planning is the basis of the study of the company's financial management, identifying the strengths and aspects where it must improve to generate greater profits. For this, the term of evasion must be studied to contribute to efficient planning.

#### **Tax Avoidance**

Although the term tax avoidance is used in some literature at the same level of tax planning for Cooper & Quyen T.K, avoidance is an essential part to consider during tax planning "often defined as the "legal" measures taken by companies to reduce their tax bill often using different mechanisms and methods to shift profits/income from high to low tax jurisdictions. In contrast, tax evasion is considered as more extreme "illegal" measures" (Cooper & Quyen T.K. , 2020). Based on the given definition, companies adopt avoidance as a part of the strategic plan for possible measures to reduce the tax bill.

The current trends in international trade, lead to tax avoidance and change in accounting schemes carried out by multinational firms, and modification in tax regimens done by the government leads to erosion of the tax base and displacing profits to places of low taxation or tax havens. As a result, states must face new challenges in international taxation (Mendoza, 2016). For developing countries, the current financial situation has led to severe fiscal deficit problems, and they need alternatives to attract resources to not raise tax rates for citizens.

#### **Strategic Planning**

The essential knowledge of the current situation of the company and the changes in the business environment is a crucial element in achieving the company's main goals, ensuring that the company's proposed plans and growth will be guaranteed. Therefore, Dibrell, Craig,

& Neubaum, (20014) refer that Strategic Planning is a management tool that allows establishing the tasks and the path that organizations must travel to achieve the planned goals, taking into account the changes and demands imposed by their environment.

### **Strategic Tax Planning**

According to Samuel , (2020) "*Tax planning is a process, made up of lawful actions by the taxpayer, systemic and methodical, by virtue of which the legal tax option that generates the greatest tax savings or the greatest fiscal financial profitability is rationally chosen*". Therefore, it must be pointed out that tax planning is an instrument that allows companies to avoid incurring excessive tax payments. Hence the importance of fulfilling the tax responsibility without incurring in the everyday activities of all companies. Tax planning leads firms to establish compliance strategies with the State, protecting the assets to continue with their operational and economic activities.

Although tax planning is employed to reduce the tax burden, the main objective of such a comprehensive process is to enable managers and executives to decide on the organization's internal administrative control, avoiding future consequences that affect the optimization of company resources. In turn, the strategies should align with the interests, objectives, reality, and characteristics of the business on the basis of which the work is carried out.

## **2.3 Corporate Tax Planning Phases**

The tax planning process consists of several phases necessary for optimal implementation and a clear understanding for investors, stakeholders, and managers.

### **2.3.1 Business Acknowledge**

According to Chen, Ma, Teng, & Wu (2022), tax planners must consider the following aspect to set up an exact and comprehensive process. In order to be able to identify weakness and strength of the business:

- Organization structure
- Composition of capital
- Corporate purpose (productive process or service)
- Strategic business risks
- Special regulations



- Financial information
- Investment plans
- Transactions with related parties

### **2.3.2 Rigorous analysis of the tax situation of tax periods subject to review**

Base on the Mintz's (1998) assumption the following aspect should be consider as the mos relevants to carry out the tax analysis:

- Tax returns should be reviewed to analyze the contingencies of taxes, level of taxation classifying presumptive income, and ordinary income.
- Tax procedure reviews and control must be considered to identify the risk levels of penalties or higher tax burden.
- Based on the tax returns reviewed tax planner identifies points of improvement and opportunity.
- As a result, tax planner recognizes improvement and opportunity.
- Review of areas that have to do with the tax process classifying
- Harness or disposition of the balances in favor reflected in the tax returns.

### **2.3.3 Plan Development:**

The company will cover the following elements after completing the previous steps:

- The calculation of the income tax will be analyzed based on the projected information.
- Report presentation.
- Based on the changes in legislation, regular updating will be considered.

### 3 INTERNATIONAL ACCOUNTING STANDARDS BOARD (IASB)

The international accounting standards known as IAS were created with the objective of ensuring reliability, quality and understanding of the accounting information reported by companies in a standard manner and applicable in any country where such standards are in force and are accepted by the national government (IFRS, 2023). This set of standards helps both company leaders and third parties such as investors, creditors, and capital market participants, to make managerial decisions. For this study, IAS number 12 will be taken as a reference for the application of income tax.

#### 3.1 IAS 12

International standard number 12 presents the guidelines for the accounting treatment of income tax, including national and foreign taxes that are based on taxable profits. In this sense, in accordance with the standard, the taxes that the company has not yet paid are recognized as an accounting liability, and, on the other hand, the tax that is overpaid is taken as an asset for the company. The measurement of the amount of liability is carried out based on the tax rates promulgated by the country's tax entities.

According to the IASB *"IAS 12 requires an entity to recognize a deferred tax liability or (subject to specific conditions) a deferred tax asset for all temporary differences, with some exceptions"* (IFRS, 2023). In this way, it can be analyzed that the temporary difference is the result of the tax base of an asset or liability, comparing it with the accounting book value.

As examples of deferred tax assets, IAS 12 mentions tax losses or unused tax credits, and, on the other hand, a deferred tax liability is identified when the company recovers the value of another asset for the tax it will pay in the future.

#### 3.2 IFRIC 23

The Interpretation Committee of International Financial Information Standards establishes in its standard 23 Uncertainty over Income Tax Treatments, which is analyzed as the interpretation in the event in which the tax accounting treatment is uncertain in cases where the company decides not to include some income as taxable income for income tax and there is uncertainty as to whether it will be accepted by the tax authorities (IFRS, 2017). The resolution the company takes in the event of uncertainty must be treated by reporting the most probable amount in a range of outcomes or the sum of the probabilities. Likewise, the entity must make a value judgment in deferred and current taxes.

## 4 COLOMBIAN TAX SYSTEM

According to the National Constitution of Colombia in its article 95 “*Colombians have the responsibility to contribute to the financing of the state’s expenditures and investments within the principles of justice and equity*” (Colombia’s Constitution, 1991). In accordance with the above definition, the Colombian citizen has the duty to promote the dignity of the nation and the duty to pay taxes in order to support the national budget.

Based on the above stated, different type of taxes has been arranged to meet the national budget in compliance with the law. The tax system in Colombia is headed by the Directorate of National Taxes and Customs (DIAN) or for local entities called indirect collectors.

### 4.1 Taxes in Colombia

In Colombia’s tax System are considered as tributes that individuals must pay to the state. However, the payer does not receive any direct benefit for such amount of money from the government, instead the government allocates percentage of the contribution to different social programs, national budget and public investments. Therefore, the purpose of the taxes in Colombia is mainly to meet public investment obligations.

The tax system has the faculty to set the tax rate proportional to the income of the taxpayer, it is known as tax progressivity (Direcotrate of National Taxes and Customs, 2022). According to the premise mentioned above, it can be said that the tax system affects not just natural persons but also companies, where it is reflected in its financial resources. However, numerous companies in Colombia need to consider a strategic plan that contributes to decreasing the tax burden and maximizing financial resources.

Each person can respond to the imposition of the tax according to the income they receive. The fact that all individuals must contribute to the State is based on their ability to pay; consequently, the Colombian State can assume its taxing capacity without imposing oppressive changes on taxpayer (Ricaurte , 2018).

In addition to the principle of Equity, the Colombian State considers Progressivity as one of the principles in the tax system, in terms that the tax burden must be distributed among taxpayers depending on their ability to pay. That means that citizens whose income is higher must pay taxes accordingly. Thus, this principle enables the system to classify the difference between taxpayers with large payments and those with less capacity. In other terms, the tax system pretends that the high-income taxpayer settles more taxes than the low-income

taxpayer. For instance, the Income and Complementary Tax is considered a progressive tax in Colombia (Direcotrate of National Taxes and Customs, 2022).

Tax system is considered Non-Retroactive, which indicates that the taxes are applied enforceable by the law or decree that gave rise to it, or that implemented a modification to it, and not from previous dates.

#### 4.1.1 National Taxes

National Taxes are those that are collected and administered by the Directorate of National Taxes and Customs (DIAN). Such taxes are divided into two main categories:

- Direct Taxes in Colombia: „Direct taxes directly tax the income or wealth of citizens“ (Direcotrate of National Taxes and Customs, 2022, p. 8 In the Colombian tax system, the main direct taxes collected by the government are income tax, industry and commerce tax, wealth tax, and automobile tax. Likewise, it should be mentioned that direct taxes can be of a national or regional nature and are collected by the DIAN.
- Indirect Taxes in Colombia: On the other hand, indirect taxes are those which citizens have to pay when they acquire a good, consume or use a service. They affect all citizens equally. That is, all taxpayers have to pay the same tax percentage, regardless of income level or purchasing power. The main indirect taxes at the national level are the Value Added Tax (VAT), the tax on tobacco, alcoholic beverages and gambling, the gasoline surcharge, among others.

The main difference between both categories is that in the case of direct taxes, the citizen must pay the tax to the Administrative Department of National Taxes and Customs (DIAN) on behalf of the Government according to the wealth or assets. Some examples of direct taxes in Colombia are Wealth Tax, Income Tax, or postage stamps that are charged directly for the provision of a service falling into this category.

On the other hand, indirect taxes are those that are charged on a financial or commercial transaction. The most common example of this type of tax is VAT. When the National Government presents a tax reform, the changes made in direct taxes such as Income or the income tax on equity which is a tribute that all companies must pay on their profits, income capable of increasing equity, must be applied in the following taxable year rather than immediately. In contrast, indirect taxes such as VAT or Tax on Financial Movements can be levied in the current taxable period because they are instantaneous taxes.

- Value Added Tax (VAT): It is defined as an indirect tax on the sale, importation of goods or services. This added value falls indirectly on consumer's income, which means that every time the consumer buys, consumes products, services, or carries out commercial transactions or imports, it will pay an additional value at the time of purchase (Direcotrate of National Taxes and Customs, 2022), the VAT rate in Colombia 19% for the year 2023.
- Income tax: According to the definition given by the Direcotrate of National Taxes and Customs (2022) The income and complementary tax is a tribute of a direct nature, because it essentially taxes the natural or legal person and is based on the income as a tax base, it should be clarified that they are suitable to produce an increase in net worth in the moment of its perception, taking into account the costs and expenses incurred to be able to produce them, which could be deducted according to the law and guidelines given by the entity in the current period when the incomes are settle. tax statute considers the following sources to collect income tax: Income from employment, pensions, capital income, non-labour income, dividends and shares.

#### 4.1.2 Municipal Taxes

The Municipal Taxes are made on commercial activity (in the case of the ICA Industry and Commerce Tax) or on real estate property (Predial). For these taxes, citizens must pay their obligations to the municipal finance secretary. Therefore, such taxes do not go to the national budget but to the municipal one. Also this taxes are classified as direct taxes because citizens must pay directly to the local government and cannot be passed on to a different person or entity.

- Consumption Tax: a indirect tax levied on the vehicles, telecommunications, food and beverages, the tax rate is 2%, 4%, 8% depends on the good.
- Industry and CommerceTax: it affects all acts on industrial and commercial activities or services collected by municipal or district jurisdictions by a taxpayer with or without a commercial establishment. Therefore, this tax is determined and collected by the corresponding local authorities (Bogotá Chamber of Commerce, 2017)
- Levy on gasoline: municipal and departmental contribution, generated by the consumption of extra and current motor gasoline, national or imported. The levy is incurred at the time the wholesale distributor, producer or importer sell the product,

to the retail distributor or to the final consumer (Direcotrate of National Taxes and Customs, 2022). The responsible for the surcharge are the wholesale distributors of extra and regular motor gasoline, the producers and importers.

- Vehicle tax is a direct tax on the property or possession of the taxed vehicles. The following are the main characteristics of such tax paid in the municipality where the car has its fiscal address on January 1 of the current year. It must coincide with the city in which its owner is registered. The cost of the tax can vary in each municipality, and each one can establish exceptions, for example, due to seniority.

#### 4.1.3 Types of Tax in Colombia

Three different types of taxes are considered in the Colombia's Tax System; contributions, taxes and fees.

- Taxes: Government allocates the amount of money collected from taxes mainly to meet public investment obligations, such as the case of income and complementary tax. Therefore, the State is not obliged to give any immediate consideration. A good example is income and complementary tax (Direcotrate of National Taxes and Customs, 2022).
- Contributions: these kind of taxes are levied on the benefit recognized a state investment, consequently the taxpayer are able to reap the benefit from the tax payment, Hence, the government considered mandatory taxes. An example is the contribution of valorization, which is generated in the performance of public works or social investment carried out by the State, causing a higher value of nearby properties. According to the Ministry of Housing, contributions are originated from obtaining a particular benefit from works intended for the general welfare (Ministry of Housing, 2022).
- Fees are considered voluntary since the activity that generates them is the product of free decisions. The purpose to collect fees is remuneration for the services that the State provides. As examples of fees in Colombia, tolls can be mentioned which are the fee of the free decision to travel, and the gasoline surcharge as the free decision to have one's own means of transport, among other services provided by the State. Mentioning the different types of taxes below are defined the main taxes in the Colombian Tax System National Taxes.

## 5 COLOMBIAN TAX REGIME

Base on the Colombian Tax Regimen (Congress of the Republic of Colombia, 2023), all companies established in Colombia have formal obligations that must be fulfilled to the control entities, mainly the Internal Revenue Service and the Superintendence of companies. Therefore, enterprises must consider their primary tax responsibilities with the Colombian state. For the taxable year 2023, the income tax rate corresponds to 35%, The value-added tax rate is 19%.

On the other hand, the basis and starting point for determining the income tax base comes from the accounting carried out under the Colombian principles of financial information. Therefore, according to the Colombian Tax Regime business profits generated from taxable year 2017 that are not declared at December 31, 2018, will be taxed at 7.5% in the first distribution to companies, and 10% in the distribution to foreign shareholders and resident natural persons. Taking into account the aforementioned increase, in the last 6 years tax filers registered an increase in their tax liabilities according to the study carried out by Barón Rincon (2018)

Regarding benefits such as exemptions, tax discounts, special deductions, among others aimed at encouraging priority sectors for the economy national, strengthen social investment and assets of companies in the country likewise The Colombian Free Zone regime contemplates a 20% income tax rate for certain qualified users.

### 5.1 Main Taxes in Colombia in 2022

As the previous chapter mentioned, the Colombian tax system classifies its tributes into national and regional taxes. Below is the description of the most relevant taxes levied in Colombia.

#### 5.1.1 Income Occasional Gains and Dividends Tax:

It is considered a national tax levied on profits derived from a company's ordinary operations. Occasional gains tax is complementary to the income tax and is levied on profits derived from activities not included in ordinary operations. The tax base depends on the economic activity of the company

The tax rate is 35% for 2022, levied on the income. According to the tax statute there a special tax rate for companies that operate in free trade zones (with the exception of commercial users), in this case the tax rate is 20%.

Regarding occasional gains tax, the tax rate 10 % levied in occasional gains and dividends. According to the tax statute defines the following income as occasional earnings: The liquidation of a company, the sale of an asset, inheritances, and illiquid successions. Therefore, to determine the tax base, it is necessary to review the value of the assets just before making the tax return, in other words, the value they have on December 31 of the immediately previous year.

### **5.1.2 Value Added Tax:**

It is considered an indirect national tax, levied on goods and services rendered as well as imports of goods, in the year 2022 the VAT tax rate was classified in three categories based on the good or services in the following rates 0%, 5%, and 19%.

The Value-added Tax levies the economy activities and transactions:

- The sale of movable and immovable tangible assets, with the exception of those expressly excluded.
- The sale or assignment of rights over intangible assets, solely associated with industrial property.
- The provision of services in the national territory, or from abroad, with the exception of those expressly excluded.
- Imports of tangible assets that have not been expressly excluded.

The circulation, sale, or operation of games of luck and chance, with the exception of lotteries and games of luck and chance, operated exclusively over the Internet (Dirección de Impuestos y Aduanas Nacionales, s.f.).

### **5.1.3 Consumption Tax:**

Regarding taxes levied on the consumption of goods or services, the Colombian tax system considers it an indirect tax imposed on the vehicles, telecommunications, and food and beverage sectors. Moreover, consumption tax is levied on the provision or sale to the final consumer or the import by the final user of mobile phone service, the sale of any movable tangible property of domestic production or imported (automobiles, boats, airplanes), The



service of sale of prepared food and drinks. In regards to the tax rate there are four different rate from 2%, 4%, 8% and 16% according to the good or service levied.

**5.1.4 National Carbon Tax:**

„The tax consists of paying a fee related to the carbon content, which is a chemical element in fuels and is released in the form of greenhouse gases to the atmosphere when the combustion of these energetics is done“ (Ministry of the Environment of Colombia, 2022, p. 1)

The rate is determined depending on the carbon dioxide (CO2) emission factor for each specific fuel, expressed in unit volume (kilogram of CO2) per energy unit (Terajoules) according to the volume or weight of the fuel.

Table 1 Carbon tax rate 2022

Fossil Fuel	Tariff/Unit
Natural Gass	\$29 Cop
Petroleum Liquid gas	\$95 Cop
Gasoline	\$135 Cop
ACPM	\$152 Cop
Fuel Oil	\$177 Cop

Source: Adapted from “ Frequently Asked Questions About the National Carbon Tax and the Tax Treatment of Non-Causation Due To Carbon Neutrality“ (Ministry of Envaironment of Colombia)

**5.1.5 Property Tax:**

Tax levied annually on the right of ownership, usufruct, or possession of real property in Colombia. This tax is determined and collected by the municipalities or districts where the property is located. Depending on the municipality in which the property is located, the tax rate tends to be from 0.5% to 1,6%. Its tax base depends on the property appraisal. It is an domestic income, the property of the municipalities and districts, who are in charge of its administration, collection and control.

**5.1.6 Industry and Commerce Tax:**

The Industry and Commerce tax levied the industrial, commercial, or service activities carried out by a taxpayer, with or without a commercial establishment, in the jurisdiction of

a municipality or district. The corresponding municipality or district administers it. The tax rate is between 0.2% and 1% of the company revenue base on the economy sector and municipality where the company carry out its activities.

#### **5.1.7 Registration Tax:**

This tax is considered a municipality contribution, it tax the acts, documents or contracts that must be registered to the Chamber of Commerce and the offices of public instruments. The taxable base is constituted by 50% of the value incorporated in the document that contains the act or by the proportion of the subscribed capital or the social capital.

## **5.2 Tax Benefits Granted to Legal Persons in 2022**

Tax benefits are given to companies that develop productive projects; these benefits are granted under the criteria provided by the ministries of science, development, and innovation, which promote economic growth and good manufacturing practices. On the basis of Directorate of National Taxes and Customs (2022) tax discounts are given in certain situations, the most relevant are considered as follow:

- Discount for investments made in research, technological development or innovation: The tax benefits given to innovation and development projects are deductible in the taxable period in which the project is carried out, deducting 25% of income tax of the investment made, as long as it does not exceed 25% of the tax to be paid (Ministry of Science, Development and Innovation, 2023).
- Discount for investments made in control, conservation and improvement of the environment: according to the report release by the The Regional Autonomous Corporation (CAR) „*Legal entities that make direct investments in control, conservation, and improvement of the environment will have the right to discount 25% of the investments they have made in the respective taxable year from their (liquid) income tax.*“ (The Regional Autonomous Corporation, 2018, p. 4) Exempt income for the sale of energy generated with wind resources, biomass, or agricultural waste, which generates reductions in Greenhouse Gases (GHG). Moreover, those companies that sell the certificates of reduction of carbon dioxide emissions are eligible to access this benefit, as well as the income obtained from ecotourism services (Environment Ministry, 2023).

- Preferential VAT rate (5%) for goods and services whose production or consumption generates positive environmental impacts, such as electric vehicles, hybrids, and plug-in hybrids for the transport of goods and for special uses: taxis, electric cars, electric motorcycles and bicycles, accumulators , inverters and electric vehicle battery chargers.
- Discount for donations to non-profit entities belonging to the special regime: Donations given to Non-profits entities generate a discount for income tax and complementary taxes, equivalent to 25% of the value donated in the taxable year or period.
- For Taxes paid abroad: In an effort to avoid double taxation, the Colombian Government gives tax credit that can be used by natural persons residing in the country and national companies and entities that receive income from a foreign source, subject to income tax in the country where the income is originated, or for dividends received from their investments in companies in abroad
- Preferential VAT rate (5%) for goods and services whose production or consumption generates positive environmental impacts, such as electric vehicles, hybrids, and plug-in hybrids for the transport of goods and for special uses: taxis, electric cars, electric motorcycles and bicycles, accumulators , inverters and electric vehicle battery chargers.
- For the VAT paid in acquisition, construction or formation and import of productive real fixed assets: The tax statute contemplates that the VAT paid on real fixed assets products can be treated as a tax discount on income ta. Therefore, the VAT paid is deducted directly from the taxpayer's income tax (Direcotrate of National Taxes and Customs, 2022).

## **II. ANALYSIS**

## 6 COMPANY PROFILE

This section of the research analyzes the company profile emanating from the viewpoint of the firm, taking into consideration issues such as the structure of the company, participation in the market, corporate culture, strategic planning, and other factors that are relevant to understand the internal procedures of the company, and the branding strategies for Ecopetrol. Moreover, the researcher intends to analyze the impact of the taxes that the company must pay on the business's profitability. The research results will be crucial to settle the strategic tax plan for minimizing tax reform risk.

### 6.1 Ecopetrol

The oil company Ecopetrol is an anonymous society firm supervised by the Ministry of Mining and Energy. The company operates along the Colombian territory through different projects in the oil business. It is the owner of most of the country's oil pipelines and products that interconnect production systems with large consumption centers and maritime terminals. Moreover possesses two refineries in Barrancabermeja and Cartagena cities which enable the company to process the product as well as it owns two seaports supplying exports and imports of oil (Ecopetrol, 2022).

*Figure 2 Ecopetrol Logo*

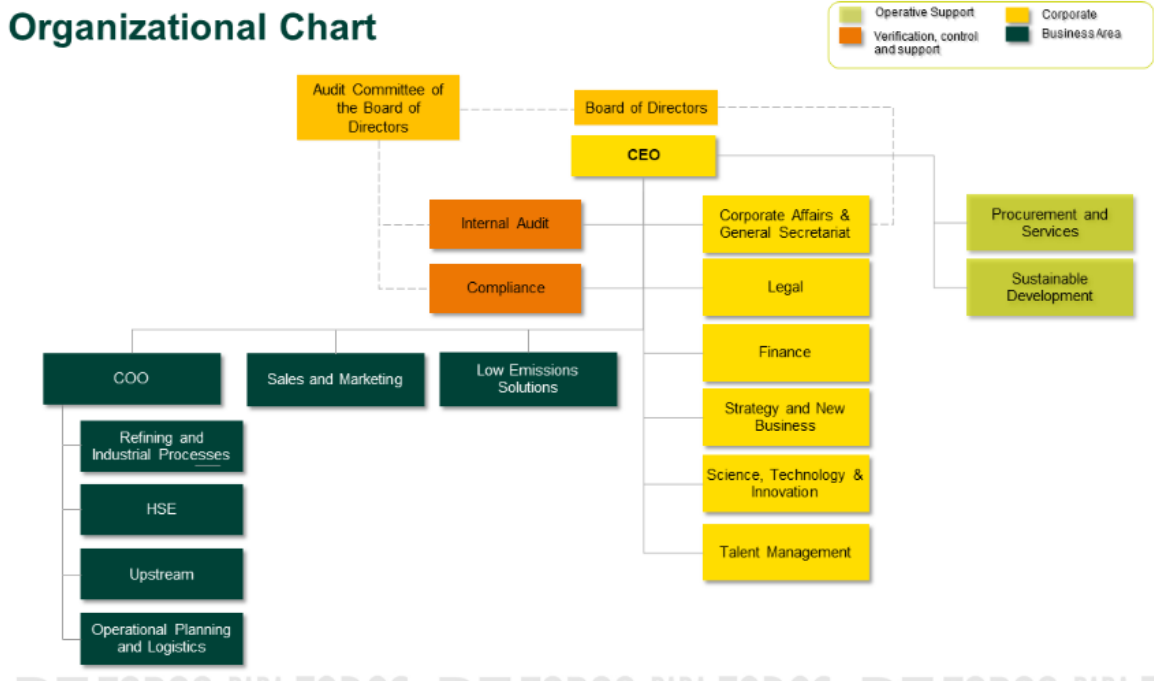


*Source: Adapted from Ecopetrol (2022)*

### 6.2 Company Structure

Taking into account that the company has several business lines and subsidiaries, the following organization chart shows the structure of the company in the exploration and extraction line business of hydrocarbons.

Figure 3 Ecopetrol Structure



Source: Adapted from Ecopetrol Web Site (Ecopetrol, 2022)

Based on the picture, the company’s command chain explains how the tasks are delegated throughout the process and the work approval in the company. The organizational structure allows for defining steps for a particular department, task, or business line according to the sector. As well as the way in which the activities, requests, and proposals are communicated up and down the stream. On the other hand, the firm structure relies on several teams that respond to a single leader assuming projects according to the priority and specialization of the department; as a result, firm’s management get broader control range, decentralization, specific department control, and flexible allocation process.

### 6.3 Strategy 2040

In accordance with the national development plan (PND), the company is committed to energy transformation. Therefore, the tax planing is thought to create an strategic guideline that addresses the company towards the common objective of the country. Thus, in the corporate document Strategy 2040 Energy that Transforms, the company outlines the short and long-term main goals in factors such as corporate culture, social and environmental responsibility, financial sustainability, business lines, management indicators, cleaner production processes, and business diversification (Ecopetrol, 2022).

In terms of investment, the company considers to increase its efforts in innovation and cleaner technology that contributes to conventional production processes. On average, the company plans to invest between 5,200 and 6,000 million dollars (Ecopetrol, 2022), of which will be invested in exploration and extraction projects. Another pillar that becomes relevant for the company is strengthening relations with interest groups, among which are communities, the government, suppliers, and investors, among others. The company will invest 1,400 million into projects aimed at the circular economy, treatment of natural resources such as water, and minimizing the impact of production on communities.

*Figure 4 Refining Plant*



*Source: Adapted from Ecopetrol (2022)*

### **6.3.1 Strategic pillars**

To achieve the expected results, the company bases its 2040 strategy on four Pillars that are explained below.

- **Grow with the Energy Transition:** Keeping levels of competitiveness is vital for Ecopetrol. Therefore, to stay at the forefront through investment in projects that allow more efficient product logistic.
- **Add value through sustainability and technology:** Trust and leadership are among the company's corporate values, which need to be transmitted to the stakeholders that are involved in the production process. Investment in circular economy projects and

adequate treatment of natural resources gives a perspective of a more reliable company.

- knowledge at the forefront: Science, technology and innovation are the three factors that the company considers to be at the forefront of the latest trends in the sector, and achieve greater market share.
- Competitive Returns: The Group has proposed a new competitiveness agenda that seeks to achieve efficiencies of COP 4 trillion accumulated by 2024, out of which 2.7 trillion COP will have an impact on EBITDA and COP 1.3 trillion on CAPEX.

## 6.4 SWOT Analysis

Some experts consider Strengths, Weaknesses, Opportunities, and Threats analysis as the most straightforward planning tool that a firm can implement to identify the internal characteristics and help to recognize the external situation in the environment where the company interact. Therefore, the SWOT analysis can be implemented in an organization, project, or person to unveil the current situation and, based on identifying the organization's competitive advantages and the environment's characteristics, make decisions and implement strategies (Puyt , Lie , & Wilderom, 2023). Companies that use this tool tend to ask and answer questions to generate meaningful information for each aspect to make a helpful matrix, and identify their competitive advantage.

The matrix is divide into four aspects mention above. The internal aspects are considered the strengths and weakness of the firm, while Opportunities and Threats commonly focus on environmental placement.

**Strengths:** these internal factors give a company an edge over its competitors, such as knowledge of the process, employee expertise, strong branding, recognition, machinery and equipment, technology, effective marketing strategies, low-cost structure, etc.

**Weaknesses:** On the other hand, the matrix assesses the internal factors that hinder a company's ability to achieve its objective, such as low customer retention, inefficient operations, inadequate resources, outdated technology, ineffective management, etc.

**Opportunities:** These are external factors that present potential advantages to a company, such as new market trends, government policies, industry growth, emerging technologies, changing consumer preferences, etc.



Threats: These are external factors that present potential challenges to a company, such as intense competition, economic downturns, unfavorable regulations, disruptive technologies, changing market conditions, etc (Hayati , Barani, & Mahdevvari, 2023).

#### **6.4.1 SWOT Matrix**

The following SWTO matrix analyze the internal and external factors of the Ecopetrol Company, base on the company profile and literature reviwed in the first part of the research.

Table 2 Ecopetrol SWOT Matrix

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Diversified portfolio of oil and gas assets, which enables it to mitigate risks and adapt to changing market conditions.</li> <li>• The investment in technology and innovation, which helps it to increase efficiency and reduce costs. It has also developed expertise in unconventional resources such as shale gas.</li> <li>• Due to its reputation in the petroleum sector in Colombia and Latinoamerica, financial position with a high credit rating, which enables it to access capital at favorable rates.</li> <li>• Ecopetrol has participated in the oil industry for more than four decades and has become one of the most relevant and largest petroleum companies in Colombia. It has a strong presence in the domestic market and has expanded its operations globally.</li> </ul>	<ul style="list-style-type: none"> <li>• Revenue and profitability are highly dependent on oil prices, which can be volatile and unpredictable.</li> <li>• Environmental impact, particularly in the areas of oil spills and deforestation.</li> <li>• limited exploration success, which has resulted in a decline in its oil reserves.</li> <li>• Due to the dependences of the oil extraction, clear added value in its product.</li> <li>• High tax rates imposed by the government to taxes intended to record the exploitation of natural resources and the impact on the environment</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• The global demand for oil and gas is expected to continue to grow.</li> <li>• Expansion of operations into new markets, particularly in Asia and Africa.</li> <li>• Investment in renewable energy, which can help it to diversify its portfolio and reduce its carbon footprint.</li> </ul>	<ul style="list-style-type: none"> <li>• The volatility of oil</li> <li>• Intense competition from other international oil and gas companies.</li> <li>• Unstable political and economical environment.</li> <li>• Changes in taxes and environmental policies, and government policies can have a significant impact on Ecopetrol's operations and profitability.</li> </ul>

Based on the aspects mentioned in the Swot matrix, Ecopetrol is a company with several strengths, including its strong market position, diversified portfolio, technological capabilities, and solid financial position. On the other hand, it also faces several challenges, including its dependence on oil prices, environmental concerns, limited exploration success, and limited downstream operations. The company has several opportunities to grow and diversify its portfolio, including expansion into new markets, investment in renewable energy, and potential success in the production of green energy. However, it also faces threats such as the volatility of oil prices, competition, political instability, uncertainty in taxes and environmental regulation from the current government..

## 7 PEST ANALYSIS

### 7.1 Hydrocarbon Sector in Colombia

- Political Factor

In the last two decades, the Colombian government has aimed its economic policy to promote the petroleum sector through tax benefits and financial support to encourage foreign investment to increase production, which is why it has undertaken strategies to attract significant investment from the rest of the world, making the sector one of the most important in Latin America (UPME Unidad de Planeación Minero Energetico, 2021).

Due to particular characteristics of the fuel market, which is considered non-competitive and also considering that it is a non-renewable natural resource, oil has become one of the most precious natural resources in the modern economy of any nation. However, it is the most exploited resource in the world as well.

- Economic Factor:

According to the latest economic performance reports released by the National Administrative Department of Statistics (DANE), the primary sector represents 14.1% of the income of the Colombian economy, which agriculture products such as coffee, bananas, flowers, sugar cane, cattle, and rice are the most relevant product. However, in 2022 the hydrocarbon subsector represents 3.3% of the GDP, where it might, highlighting the participation of coal, oil, natural gas, iron ore, ferronickel, and gold, contribute an essential role in the economy of the country. Taking into account the figures mentioned above there is evidence that the government budget has financial dependence on the primary sector that was affected by its exports during the lockdown measures caused by the Covid-19 pandemic in 2020 (Ministry of Interior, 2021).

The following table highlights Colombia's main exports and imports as well as the most relevant the economic sectors with the highest participation in GDP during the year 2021 and comparing between 2019 and 2020. The figures are given in American Dollars.

Table 3 Exports, Imports and Net Exports of Colombia During 2021

<b>Exports</b>	<b>Thousands of USD</b>	<b>%</b>
Petroleum	11.197.819	27,1
Coal	5.652.258	13,7
Other Miners	3.378.970	8,2
Coffee	3.091.838	7,5
basic chemistry	2.782.138	6,7
Other sectors	15.284.243	36,9
Total Exports	41.387.266	100
<b>Imports</b>	<b>Thousands of USD</b>	<b>%</b>
machinery and equipment	16.347.538	26,8
Basic Chemistry	13.243.884	21,7
Automotive	5.364.640	8,8
Metallurgy	4.786.624	7,8
Petroleum derivatives	3.594.480	5,9
Rest	17.764.197	29,1
Total Imports	61.101.362	100
Trade Balance	-19.714.096	

Source: Adapted from National Statistics Department DANE

Table 4 Colombia's Exports 2019-2020

<b>Sector</b>	<b>Thousands of USD</b>		<b>Oscillation</b>	<b>%</b>
	<b>2019</b>	<b>2020</b>		
Total	31.055.811	41.387.266	33,3%	100,0%
Mining-energy	16.446.122	23.201.146	41,1%	56,1%
Non-mining-energy	14.609.689	18.186.120	24,5%	43,9%
Agricultural	5.780.024	7.044.776	21,9%	17,0%
Agro-industrial	2.045.712	2.339.318	14,4%	5,7%
industrial	6.783.953	8.802.026	29,7%	21,3%

Source: Adapted from National Statistics Department DANE

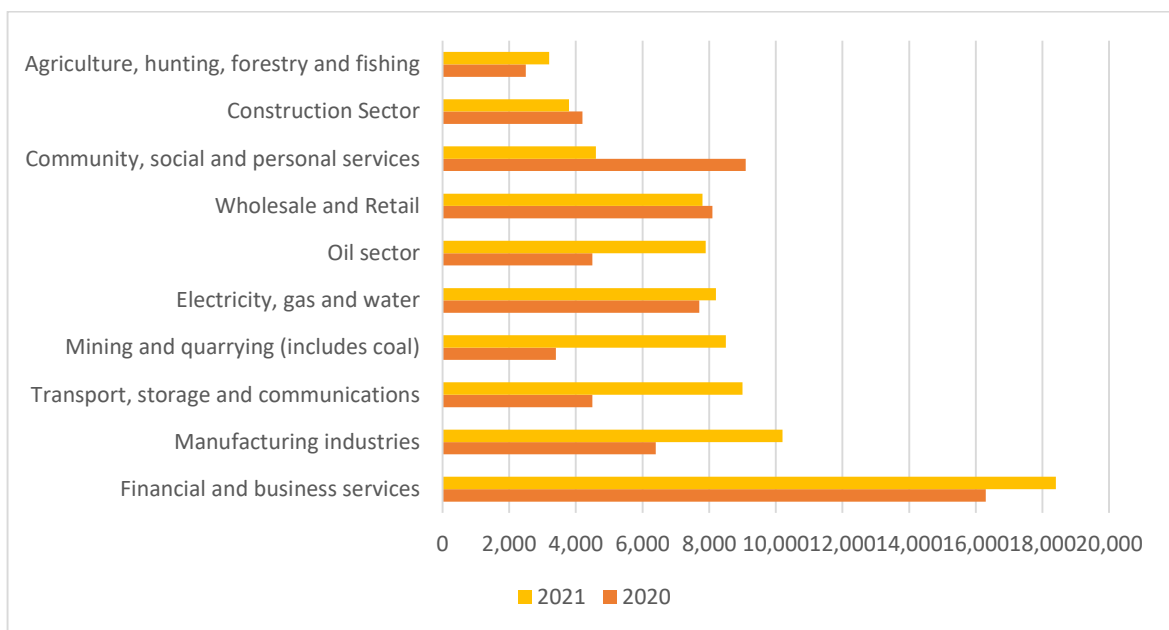
Despite the fact that the Colombian economy was affected by the covid-19 pandemic crisis in 2020, the hydrocarbon exports yield increased that year due to the effort of the government to invest in exploration projects and attract foreign investment to promote the extraction of natural resources

As a result, based on the data from the tables above, the oil sector's participation led to the country's exports during 2019, with 27.1% followed by coal 13.8%, mining 8,2% and coffee 7% in the net export. Thus, the oil sector contribute a large portion in the GDP in the country of the export. On the other hand, figures from the National Statistics Department show that in 2019 exports of oil and its derivatives went from 31.055.811 thousand dollars to

41.387.266 thousand dollars, rising to 10.331.455 thousand dollars in 2020. Also, from 2019 to 2020 exports have had a trend of increase.

Similarly, the behavior of crude oil production positions the oil sector as one of the most important sectors in Colombia, as well as one of the most important oil sectors in Latin America. According to British Petroleum, it is the third country in the region in produce oil. This relevant position in the continent enables foreign investors to turn to the country to start a business in such a sector. Therefore, analyzing foreign investment behavior and comparing economic sectors is essential to understand the potential.

Figure 5 Foreign Investment by Sector Millions USD



Source: Adapted from Ministry of Commerce „Colombia Profile“, own processing

The graph illustrates the dynamics of the different sectors throughout 2020 and 2021. Overall, positive behavior is a trend in most sectors, although the personal and social services sector shows a significant reduction. On the top the Finances and Entrepreneur services sector is leading, followed by the manufacturing industry and transport. In the fourth position mining sector is placed, and sixth place belong to the oil sector.

In terms of foreign direct investment, those going into oil and mining account for around 30% of total investment. The leading companies investment plans alone amount to nearly USD 10 billion for 2021 (Ministry of Commerce , 2022). likewise, UPME Unidad de Planeación Minero Energetico (2021) indicates that in 2021 125 exploratory wells were drilled and the Government's goal for 2021 was 178, it explains the effort of the government to promote the primary sector boost the oil sector by finding ways to increase production

Implementing strategies to attract investment from foreign sources has become the priority sector for the government in the last two decades.

- Social Factor:

Without any doubt, oil is one of the most efficient natural sources thanks to its characteristics as a fuel; as a result, throughout time, petroleum has provided economic power for the countries in which the natural resources lie underground. In some cases, such benefits become the primary source of their income; moreover, oil is considered a potential fact for development on the world stage, unlike the coal industry (de la Hoz Granadillo, Fontalvo Herrera, & Morelos Gómez, 2014). Nevertheless, the hydrocarbon sector is a crucial fact that drives the standard of living in societies, but it can also become a factor in conflicts when it is not well managed.

In the case of Colombia, the regions where this natural resource is extracted have been affected by high levels of inequality and unemployment. However, according to the 2021 management and social responsibility report published by the Ecopetrol company, the company has invested in programs to contribute to the quality of life of the communities. It has also taken advantage of the tax benefits offered by the government to companies that generate social impact in their environment.

- Technological Factor

Technological advances mean the sustainability of a company in the industry. For Ecopetrol, implementing new, cleaner and greener technologies within its production process means long-term financial investment and the opportunity to obtain tax benefits that The Ministry of the Environment awards companies that incorporate environmentally friendly technologies. Moreover, adopting digital technologies and data analytics can provide Ecopetrol with valuable insights to optimize its operations, increase safety, and streamline decision-making processes.

## **7.2 National Development Plan of Colombia 2022 – 2026**

In 2022 a new presidential period in Colombia started. Gustavo Petro, the current president, established a road map document for his government, known as Development Nation Plan, whereby seeks to lay the foundations for the country to become a leader in the global struggle for life, humanity, and nature (Panning National Department , 2023). In doing so, the entire country (companies, communities, government, and society overall) drives in the same direction to achieve a common goal throughout the presidential period.

### 7.2.1 Objectives of the National Development Plan

The structure of the National Development Plan is based on three main goals. In the general part, the long-term national purposes and objectives, the goals and priorities of state action in the medium term and the strategies and general orientations of economic, social and environmental policy that will be adopted by the government are indicated (Planning National Department, 2023).

During the period 2022 – 2026 government proposes the following main goals:

- Human right to feeding: Increase production in prioritized agricultural chains for the Human Right to Food by 10.38%, going from 35.3 tons of food to more than 38.9 (Planning National Development, 2023).
- Land planning around water and environmental justice: Overcoming social, environmental and economic conflicts around the use and access to land requires formalizing the earth.
- Productive transformation and internationalization: Use the financial surpluses from coal and oil to make an energy transition that leads the country towards a green economy.
- Regional convergence: Reduce the percentage of logistics cost over sales by 1.1 percentage points, from 12.6% in 2020 to 11.5%.

In order to achieve the goals, the government must implement strategies to raise financial resources. Therefore, the public investment plan contains the multi-year budgets of the main national public investment programs and projects and the specification of the financial resources required for their execution and their sources of financing as well as coordinates all public entities and agencies to ensure proper compliance and execution of policies, programs.

### 7.3 Tax reform - 2023

13th December 2022, the Congress of Colombia enforces the tax reform through the law 2277, which has the primary purpose to face the high inequality rate, as well as contributing to social justice, consolidating fiscal adjustment based on equity, progressivity, and efficiency tax system supporting social spending. Implementing the tax reform will bring "*a set of measures aimed at strengthening the taxation of subjects with greater contributive capacity, strengthening state income, reinforcing the fight against evasion, abuse, and*



*avoidance, and promoting the improvement of public health and the environment."* (Congress of the Republic of Colombia, 2022, p. 1).

### 7.3.1 Income Tax for Legal Entities

Regarding corporate tax, the reform provides annual income tax return must be submitted with a fixed tax rate of thirty-five percent (35%), applicable to national companies and their assimilated, permanent establishments of foreign entities and foreign legal persons with or without residence in the country.

#### 7.3.1.1 Treatment for the Corporate Tax on the Hydrocarbons Sector

According to the tax reform, Firms in economic activities related to the extraction of coal and petroleum must add some additional points to the general corporate tax rate as the following table illustrates:

*Table 5 Additional points on the tax rate of corporate tax for coal extraction companies*

Additional points on the tax rate of corporate tax	Addition to fulfill the additional points
Zero Points (0), zero Percent (0%)	When the oil price during the tax period is below the 65th percentile of the average monthly price during the last 120 months.
Five (5) additional points , five percent (5%)	When the price during the tax period is between the 65th percentile and 75th percentile of the average monthly price during the last 120 months.
Ten (10) additional points , Ten percent (10%)	When the oil price during the tax period is above the 75th percentile of the average monthly price during the last 120 months.

*Source:* Adapted from Law 2277 December 2022 (Congress of the Republic of Colombia, 2022)

*Table 6 Additional points on the tax rate of corporate tax for oil extraction companies*

<b>Additional points on the tax rate of corporate tax</b>	<b>Addition to fulfill the additional points</b>
Zero Points (0), zero Percent (0%)	When the oil price during the tax period is below the 30th percentile of the average monthly price during the last 120 months.
Five (5) additional points , five percent (5%)	When the price during the tax period is between the 30th percentile and 45th percentil of the average monthly price during the last 120 months.
Ten (10) additional points , Ten percent (10%)	When the oil price during the tax period is between the 45th percentile and 60th percentil of the average monthly price during the last 120 months.
Fifteen (15) aditional points , fifteen percent (15%)	When the oil price during the tax period is above the 60th percentile of the average monthly price during the last 120 months.

*Source: Adapted from Law 2277 December 2022 (Congress of the Republic of Colombia, 2022)*

Based on the information given in the tables five and six, the effects of the tax reform on the hydrocarbon sector and mining sector are the increase of tax rate, general speaking establishing a surtax for oil producers and prohibited the deductibility of royalties from income tax as it will be explained in detail in the following chapter. which can be linked with the president's purpose to lead the country towards a green economy through an energy transition. Hence, the government seeks to discourage the oil and coal sector increasing the corporate tax for this specific sector, in doing so firms tend to reduce the production and investment.

The National Hydrocarbons Agency will publish the data corresponding to the price of oil on the last business day of January of each year. The information corresponding to the average prices of the immediately preceding taxable year, as well as the table of average price percentiles in the last 120 months. The published information will include the average prices of each percentile shown in Table number six without having the months elapsed in the year of the declaration.

### 7.3.2 Minimum Tax Rate for Corporate Tax

Article number 10 in the tax reform considers a minimum tax rate on the tax rate of 35%. This minimum rate will be called the Debugged Tax Rate (DTR), which may not be less than fifteen percent (15%) and will be the result of dividing the Debugged Tax (DT) over the Debugged Profit (DP) (Direcotrate of National Taxes and Customs, 2022).

$$DTR = \frac{DT}{DP}$$

Where the Debugged Tax will be calculated as follow:

$$DT = NIT + TD + PIT$$

DT: Debugged Tax

NIT: Net Income Tax

TD : Tax Discount or Tax Credits by application of treaties to avoid double taxation

PIT: Income tax for passive income from foreign controlled entities

$$DP = CP + DPARL - NRI - IVEM - INVOG - EI - C$$

DP: Debugged Profit

CP: Accounting Profit before taxes

DPARL: Permanent differences given by the law and that increase the net income.

NRI: Non- Rental Income or occasional gain that affect the accounting profit

IVEM: Income value equity method of the respective taxable year

INVOG: Income net value by occasional gains that affect accounting profit

EI: Exempt Income by applying a treaty to avoid double taxation

C: Compensation for tax losses or excess presumptive income taken in the taxable year and that did not affect accounting profit of the period.

*„When the Debugged Tax Rate is less than fifteen percent (15%), the value of the Tax to be Added must be determined to reach the rate of fifteen percent (15%)“ (Congress of the Republic of Colombia, 2022).*

### 7.3.3 Royalties

In Colombia, oil companies are considered by the state as a hydrocarbon economic sector for which the primary purpose is to extract natural resources. Therefore, as per the National Constitution of Colombia in its articles 260 and 261, "*The exploitation of a non-renewable natural resource will cause, in favor of the State, an economic consideration as a royalty, without prejudice to any other right or compensation that is agreed.*" (Colombia's Constitution, 1991).

According to the development national plan the government tends to minimize the extraction of coal and oil in doing so it will apply a tax strategy which taxes raise from royalties will not be deductible from income tax nor can it be treated as a cost or expense of the respective company, regardless of the name of the payment and the accounting or financial treatment that the taxpayer performs, and regardless of the form of payment (Congress of the Republic of Colombia, 2022). Moreover, payments for affiliations to social clubs, work expenses of support staff in the home cannot be deducted from the income tax. The new royalty's regime was enforceable based on the tax reform 2022.

### 7.3.4 National Carbon Tax

According to the guidelines of the tax reform, the carbon tax will have a specific rate, taking into account the class of fossil fuel and the greenhouse gas emission factor as illustrated in the following table.

*Table 7 Carbono National Tax*

<b>Fossil fuel</b>	<b>Unit</b>	<b>Fee/ Unit (Colombian Pesos)</b>
Coal	Ton	\$ 52.215
Fuel Oil	Gallon	\$238
ACPM	Gallon	\$191
Jet Fuel	Gallon	\$202
Kerosene	Gallon	\$197
Gasoline	Gallon	\$169
Natural Gas	Cubic Meter	\$36

*Source: Adapted from Law 2277 December 2022 (Congress of the Republic of Colombia, 2022)*

The collection of such tax will be bimonthly and will be the responsibility of the DIAN, which categorizes it as a direct tax of national nature.

#### **7.4 Impact of the tax reform on Ecopetrol's finances**

According to the analysis carried out on the 2022 tax reform, the bonds of the Ecopetrol company will be affected by the increase in the tax burden due to the effects of the exploration and extraction of crude oil. The following aspects are the impacts they will have on the company:

- The new tax reform implements a surcharge system on the income tax declared by the company taking into account international prices during the last ten years. Thus, the law includes a surcharge on income tax for the hydrocarbons sector when the values and prices of raw materials reach certain levels.

According to the tax reform guidelines, Ecopetrol will be taxed an extra 5% when crude fluctuates between US\$67.3/b and US\$75/b. The figure will increase to 10% if the price ranges between US\$75/b and US\$82.2/b and will reach 15% when the price is higher. The average prices of a barrel of crude oil to which the reform refers, for the economic activity of extracting crude oil, *"it will correspond to the international average price of Brent crude oil. USD/barrel deflated with" the Consumer Price Index. For all urban consumers in the United States of America, published by the Bureau of Labor Statistics of that country"* (Congress of the Republic of Colombia, 2023).

- Another aspect that the company must assume is the treatment of royalties in the income tax settlement. Ecopetrol will not be able to deduct the production costs assumed by royalties from its income tax.

This change's effects will be marginal since Ecopetrol's effective tax rate will rise between two and five percentage points. Based on the company's first quarter 2023 financial report, the effective tax rate is around 33-35%. And according to the analysis of oil prices in a scenario of high prices, there will be a surcharge of 15% according to table number six, so the effective tax rate will be 48-50%.

- The payment of other taxes such as the national carbon tax will have an effect on the equivalent carbon content (CO<sub>2</sub>eq) of all fossil fuels. However, the reform stipulates that the carbon tax will be deductible from income tax

## 7.5 Social Impact of the Ecopetrol's Operation

Ecopetrol's operations can impact local communities and the environment, which can lead to social and environmental concerns and protests. According to the report on the social impact caused by the company's operations in different regions of the country, the company is aware of the strengthening of relationships with local communities, suppliers, workers, and stakeholders in general. For this reason, Ecopetrol has proposed strategies that establish sustainable relationships over time (Ecopetrol, 2022).

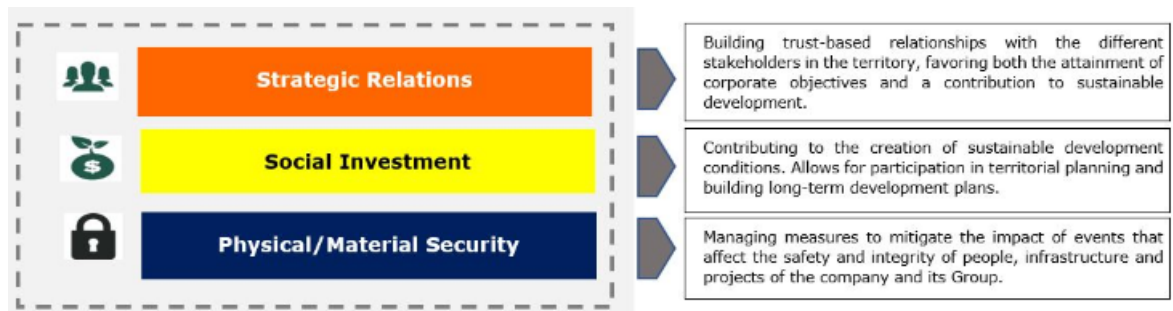
The recognition of the diversity of the country in terms of ethnic groups, territory, culture and governance has enabled the company to identify the different risks to which it is exposed and likewise propose the following objectives

- Achieve the credibility of the interest groups and the importance of the company's presence in the territory where the company carries out its operations of extraction and exploitation of natural resources.
- Adaptation to the social conditions of the communities and at the same time achieve the operations of the company.

Through social analysis, it is possible to identify the contribution of the company in terms of generating direct and indirect jobs in the regions where it operates. On the other hand, based on the information found in the company's management report, (Ecopetrol S.A., 2022) Ecopetrol is one of the companies that has strategic allies in the supply of products and services throughout the entire production process.

The following image describes the three pillars on which the company's social plan is based and the mechanisms to achieve the objectives mentioned above.

*Figure 6 Social Pillars*



*Source: Adapted from oEcopetrol S.A. report, 2022*

Through the image it is evident that the company plans to invest financial, human and time resources in the creation of a social plan that contributes to the rapprochement with local communities and interest groups, minimizing the affectation risk to the environment and the livelihood of the communities.

## 8 STRATEGIC TAX PLAN PROPOSAL

After understanding the profile of the company, the different business lines in which the firm works and analyzing the internal factors of Ecopetrol likewise identify the external factors of the market that affect business operations, the strategic tax plan is proposed, it is made up of the following phases:

- Data collection and application of the regression model as an analysis tool
- Analysis of the tax reform in relation to the tax obligation
- Resource Optimization
- Implementation of the strategic plan
- Controlling Plan

### 8.1 Data Collection and Application of the Regression Model as an Analysis Tool

In the first phase of the implementation of strategic tax planning, the diagnosis of the company is carried out in order to analyze the financial situation of the company in relation to its tax liability during the last 12 years. The analysis is based on a linear regression model that will enable to recognize the relationships between the variables taken for the study.

#### 8.1.1 Linear Regression Model

A linear regression model enables to analyze an independent variable and its relationship with one or more dependent variables. The use of this statistical model helps to estimate or predict future outcomes and the level of dependence between the two variables ( Raouf, 2022). For a long time, the use of statistical models have been applied in the field of economics and business as an effective tool to carry out analysis, establish strategies in decision-making processes. The implementation of this statistical model allows to facilitate the analysis of the data collected and the prediction of the same to understand the behavior of the taxes with respect to the profits generated by the company.

The following equation demonstrates the structure of the statistical model taking into account the variable X and the variable Y

$$y = a + bx$$

where y is the dependent variable, x is the independent variable, a is the intercept (the point at which the line crosses the y-axis), and b is the slope of the line (the change in y for a one-



unit increase in  $x$ ). „The model estimates the values of  $a$  and  $b$  that best fit the data. The fit of the model can be assessed by calculating the residual sum of squares (RSS), which measures the difference between the observed values of  $y$  and the predicted values of  $y$  based on the model“ ( Raouf, 2022, p. 1161).

There are various techniques for estimating the parameters of the linear regression model, including ordinary least squares (OLS), maximum likelihood estimation (MLE), and gradient descent. Once the parameters are estimated, they can be used to make predictions about the dependent variable for new values of the independent variable.

The construction of the linear regression model as a planning tool points out to analysis of the independent variables: income tax, indirect taxes on industry and commerce, carbon tax, gasoline surcharge tax, and lastly, the contribution of royalties for the exploitation of natural resources. And on the other hand, the profit generated by the company annually is taken as the dependent variable.

Below are the data collected from the financial statements of the last 14 years published by the company on its official website.

*Table 8 Ecopetrol's Net Income and Corporate Tax Paid by Company*

Year	Corporate Tax Paid Annually (millions of Colombian Pesos)	Net Income (millions of Colombian Pesos)
2022	11.866.915	33.406.291
2021	4.076.200	16.694.684
2020	882.595	1.688.077
2019	3.098.437	13.251.483
2018	5.297.399	11.556.405
2017	2.711.515	6.620.412
2016	2.014.587	4.350.930
2015	3.008.922	8.322.415
2014	5.297.326	7.812.615
2013	7.023.499	13.352.986
2012	6.516.062	14.972.950
2011	7.366.556	15.448.333
2010	3.079.878	8.346.097
2009	1.946.175	5.256.232
2008	4.374.195	11.630.716
2007	1.885.512	5.179.792
2006	1.499.769	3.391.373
2005	1.034.574	3.253.756
2004	805.884	2.110.506

*Source: own processing*

For the collection of data corresponding to indirect taxes and royalties, these could be obtained from the consolidated financial reports published on the official Ecopetrol website from 2014 to 2022. The consolidated tax reports on the company's website only report the indirect taxes paid by the company during the period 2014 to 2022.

*Table 9 Historical Data of Indirect taxes and Royalties Paid by Ecopetrol*

Year	Indirect Taxes Paid by the Company (millions of Colombian pesos)	Royalties	Net Income (millions of Colombian pesos)
2022	7.630.901	1510265	33.406.291
2021	2.152.104	1125761	16.694.684
2020	1.243.883	841443	1.688.077
2019	2.570.779	788924	13.251.483
2018	1.751.300	441207	11.556.405
2017	2.005.688	449959	6.620.412
2016	2.130.940	478332	4.350.930
2015	2.803.559	481029	8.322.415
2014	1.896.938	399752	7.812.615

*Source: own processing*

After collecting the data from primary sources, it is to establish a statistical model that enables analyzing the effect of the corporate and indirect taxes paid by the company and the profits generated by the firm, likewise, it is sought that the linear regression model serves as a tool for planning to reduce the uncertainty of the taxes paid in the following years. The following procedure estimates the coefficient of linear regression equation which will describe the relation between the dependent and independent variables, by following equation:

*Figure 7 Normal Equations*

$$nb_0 + b_1 \sum_{i=1}^n x_{1i} = \sum_{i=1}^n y_i$$

$$b_0 \sum_{i=1}^n x_{1i} + b_1 \sum_{i=1}^n x_{1i}^2 = \sum_{i=1}^n y_i x_{1i}$$

$$y_i = b_0 + b_1 x_{1i}$$

The linear regression model is carried out through the Microsoft excel program which yields the following equations for the corporate tax and indirect tax model

Equation for the independent variable corporate tax and depended variable net income  
 $b_0 = 416619,896$

$b_1 = 2,42227896$

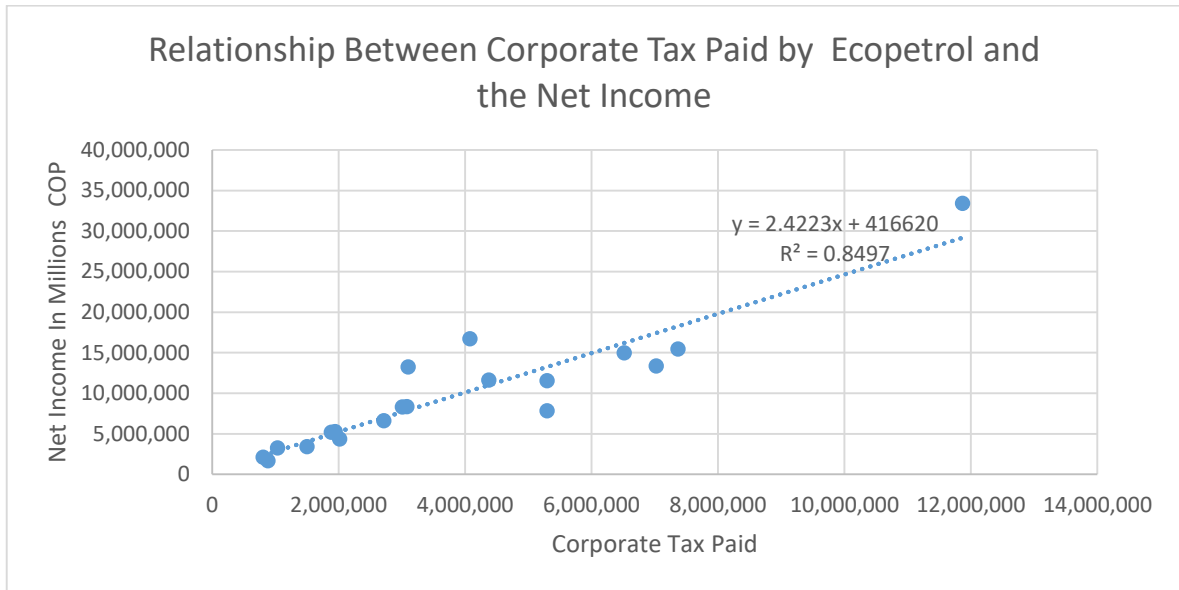
function:  $y = 2,42227896x + 416619,896$

*Table 10 Linear Regression Model # 1*

Year	Corporate Tax Paid Annually (millions of Colombian pesos)	Net Income (millions of Colombian pesos)	Model	Residual (U)
2022	11.866.915	33.406.291	29.161.598	-4.244.693
2021	4.076.200	16.694.684	10.290.313	-6.404.371
2020	882.595	1.688.077	2.554.511	866.434
2019	3.098.437	13.251.483	7.921.899	-5.329.584
2018	5.297.399	11.556.405	13.248.398	1.691.993
2017	2.711.515	6.620.412	6.984.666	364.254
2016	2.014.587	4.350.930	5.296.512	945.582
2015	3.008.922	8.322.415	7.705.068	-617.347
2014	5.297.326	7.812.615	13.248.221	5.435.606
2013	7.023.499	13.352.986	17.429.494	4.076.508
2012	6.516.062	14.972.950	16.200.340	1.227.390
2011	7.366.556	15.448.333	18.260.473	2.812.140
2010	3.079.878	8.346.097	7.876.944	-469.153
2009	1.946.175	5.256.232	5.130.799	-125.433
2008	4.374.195	11.630.716	11.012.140	-618.576
2007	1.885.512	5.179.792	4.983.856	-195.936
2006	1.499.769	3.391.373	4.049.479	658.106
2005	1.034.574	3.253.756	2.922.647	-331.109
2004	805.884	2.110.506	2.368.696	258.190
Sum	73.786.000	186.646.053		

*Source: own processing*

Figure 8 Relationship Between Corporate Tax Paid by Ecopetrol and the Net Income for the period 2004 to 2022



Source: own processing

Table No. 8 is the result of the application of linear regression, in which the company's net profits were taken as the dependent variable on the Y axis and the tax paid by the company in the last nineteen years as the independent variable on the X axis. This last data comes from the fix tax rate that the government stipulates each year.

Applying the simple equation, in column four of table No. 8 it is calculated the values that the model shows with respect to the values of Y. Likewise, the residual value is figured out and interpreted as the difference between the real value and the linear model values, to determine how accurate is the model in relation with data collected.

Through the scatter plot, it can be analyzed that there is a directly proportional relationship between the dependent variable, that is, the net profit at the end of the accounting period and the payment of income tax. On the other hand, the model yields the correlation coefficient  $R^2$  which determines the intensity of the relationship between the two variables, this coefficient must be between 0 and 1, the closer the result is to 1, the intensity of the relationship is stronger. ; for the case study, the coefficient is 0.849, demonstrating a close relationship.

A second regression model is proposed taking as an independent variable the sum of the industry and commerce tax, the carbon tax and the value added tax, these taxes are considered indirect taxes that the company must pay annually. The dependent variable stays the same. The following table shows the results of the statistical model.

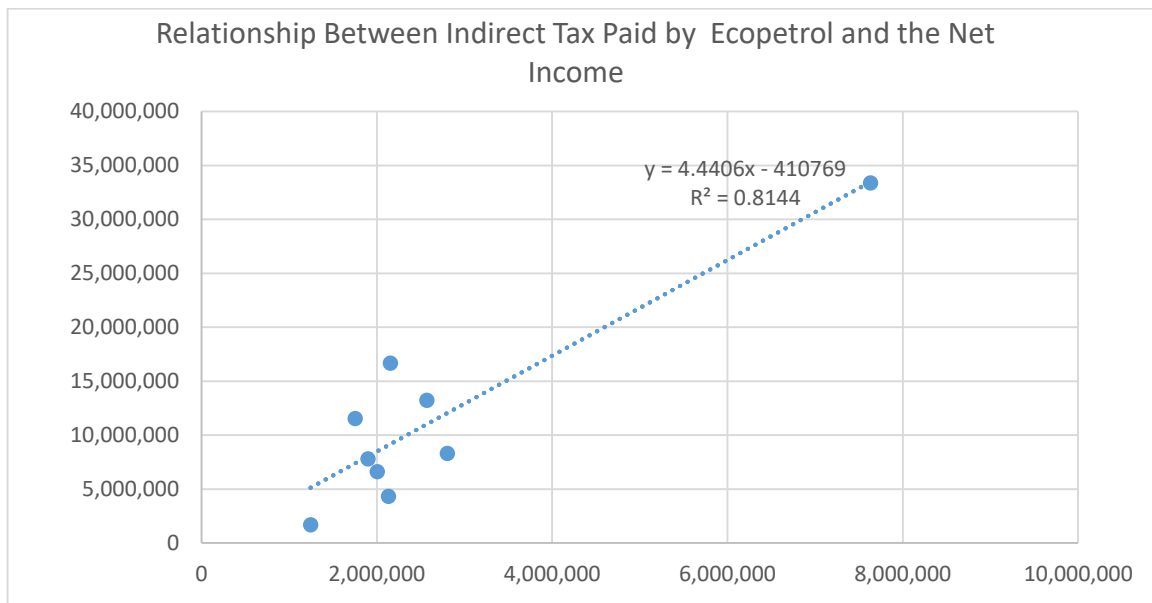
function:  $y = 2,42227x + 416619,896$

Table 11 Linear Regression Model # 2

Year	Indirect Taxes Paid by the Company (millions of Colombian pesos)	Net Income (millions of Colombian pesos)	model	Residual (U)
2022	7.630.901	33.406.291	33.474.843	68.552
2021	2.152.104	16.694.684	9.145.817	-7.548.867
2020	1.243.883	1.688.077	5.112.791	3.424.714
2019	2.570.779	13.251.483	11.004.976	-2.246.507
2018	1.751.300	11.556.405	7.366.016	-4.190.389
2017	2.005.688	6.620.412	8.495.645	1.875.233
2016	2.130.940	4.350.930	9.051.837	4.700.907
2015	2.803.559	8.322.415	12.038.654	3.716.239
2014	1.896.938	7.812.615	8.012.733	200.118

Source: own processing

Figure9 Relationship Between Indirect Tax Paid by Ecopetrol and the Net Income



Source: own processing

The outcomes by the statistical model, between the indirect taxes and the net profit of the company, also determine a positive linear relationship. However, through the scatter plot is observed that a dispersion between the data collected and the slope, which can be explained by the fact that indirect taxes are not tied to a fixed rate but to a variable rate depending on the company's consumption.

Since the purpose of this research is to demonstrate the effects of the tax burden on the firm's net profit that is explained by the lineal regression models proposed; the company's net profit is affected by other variables such as the oil barrel price in the stock market, the company's investment strategies, and macroeconomic variables that have a large impact on the company's financial statement.

## **8.2 Analysis of the Tax Reform 2022 in Relation to the Tax Obligation**

In the second phase of the proposed tax planning, it is important to carry out an analysis of the tax reform that came into force in December 2022, To that extend, the hydrocarbons sector is one of the economic sectors that is affected. Therefore, the analysis will be based mainly on the taxes that the company is required to declare.

The calculation of the provision for income tax requires the interpretation of the tax regulations given by the government in the framework where the Ecopetrol Company operates. Significant knowledge is required to determine the income tax estimates. According to the finance reports 2022 „*to assess the recoverability of deferred tax assets, which are based on estimates of future tax results and the ability to generate results sufficient during the periods in which said deferred taxes are deductible*“ (Ecopetrol S.A., 2022, p. 27). Therefore, tax liabilities deferred assets are recorded in accordance with the estimates made of the net assets that in the future will not be tax deductible.

To the extent future cash flows and taxable income differ materially from estimates, the ability of the Ecopetrol Business Group to use the deferred tax net assets recorded at the filing date, could be affected.

Additionally, changes in tax regulations could limit the capacity of the Ecopetrol Business Group to obtain tax deductions in future years, as well as the recognition of new tax liabilities product of questions by the audit of the supervisory body.

### **8.2.1 Corporate Tax**

According to the provisions of the 2022 tax reform, the law 227 of 2022, the income tax rate increased from 31% in 2021 to 35% as of 2022 for companies operating in the national territory, entities of-foreign and domestic companies. However, article 2040 of this law contemplates one of the tax benefits that the Ecopetrol company can apply, which refers to a 20% discount on the income tax rate for those companies that are located in the free zones and that have a legal establishment contract in this territory. During the analysis of the

company's profile, it was found that the company has the Carategena refinery, called Reficar, which is located in the free zone of that municipality.

However, one of the aspects that had structural changes in the reform is the treatment of royalties when the corporate tax is setting. Previously the royalties were a deductible amount of the corporate tax. Nevertheless, with the approval of the tax reform, this item is no longer deductible. It is important to mention that according to the Ministry of Mining and Renewable Energies, the company Ecopetrol is one of the firms that contributes the most in the payment of royalties to the national budget.

From 2022 onwards, the company will have to consider the additional points to which the tax reform refers to the income tax rate. A surcharge is established for companies that carry out oil extraction activities.

*Table 12 Additional points to Corporate tax*

< 30th percentile	0%
> = at the 30th percentile and < at the 45th percentile	5%
> = at the 45th percentile and < at the 60th percentile	10%
> = to 60th percentile	15%

*Source: adapted from Planning National Department, 2023*

Table number 10 shows the classification of the additional points, which will be calculated by taking as reference the average Brent price of the last ten years. It will be updated by the inflation index of the United States to update them to constant values. The percentiles that give rise to the surcharge rate are determined by these.

It took the last three financial statements of the periods 2020, 2021, and 2022 to analyze the effect of this variation of additional points.

*Table 13 Income tax expense in millions of Colombian pesos*

Item	2022	2021	2020
Current	16,791,619	6,975,549	2,861,606
Deferred – temporary differences	840,278	718,534	(1,053,690)
Deferred – rent rate change	-658,919	-41,017	-
Previous years - Current and Deferred	17,421	-90,861	-31,12
Income tax expense	16,990,399	7,562,205	1,776,796

*Source: Adapted from Ecopetrol report S.A., 2022*

The variation between 2022 and 2021 for \$121,744 in the account of deferred – temporary differences, corresponds mainly to the effect of the Market Representative Rate (TRM) on the foreign obligations of Ecopetrol and Refinería de Cartagena, to the adjustment of the calculation of the deferred tax for occasional gains, from 10% to 15%, associated with the investment of the participation of Ecopetrol S.A. in the opportunity to invest in projects, that were promoted in 2022 and boost with resources from the national government (Ecopetrol S.A., 2022). Concerning the modifications of the tax reform, in table number eleven, due to the additional points 10% based on the production during the year 2022, hydrocarbon extraction and exploration companies must pay for production, an increase in income tax can be evidenced in the company's financial statements.

### 8.2.2 Royalties

As mentioned above, royalties are the contribution that companies with natural resource exploration and extraction activities must pay in cash to the National Hydrocarbons Agencies (ANH), which manages and allocate such resources through the municipality administration level. In this sense, before the 2022 tax reform, royalties were deductible from income tax. However, from 2022 onwards, the law does not allow royalties to be considered in the corporate tax settlement.

Because Ecopetrol is one of the country's most significant contributors to royalties, the amount is considerable, and the changes in the income tax are substantial. The royalties paid in the last three years and the variation of the royalties are presented below.

*Table 14 Royalties during the last three years given in Millions of Colombian Pesos*

Royalties (Variable Cost)	2022	2021	2020
Cost for Gas and Oil Royalties in cash	\$15.210.665	\$1.125.761	\$841.443

*Source: Adapted from report of Ecopetrol S.A., 2022*

Table number twelve shows royalties accounted as a variable cost of production. According to the National Hydrocarbons Agency, the settlement of royalties is associated with the type of contract of the company, the area where the exploration or extraction of the resource is being carried out, and the type of hydrocarbon.



### 8.2.3 Other taxes

The firm recognizes in the result of the period costs and expenses for taxes other than income tax, such as the wealth tax, which is determined based on fiscal equity, the industry and commerce tax levied on the income obtained in the municipalities for the development of commercial, industrial and service activities, and the transport tax that taxes the volumes loaded in the transport systems. Taxes are calculated in accordance with current tax regulations.

*Table 15 Other Taxes in Millions of Colombian Pesos*

Current tax liabilities	2022	2021	2020
National tax and gasoline surcharge	181,49	192,665	137,71
Tax of industry and commerce	346,958	247,966	161,81
value added tax	206,341	157,452	5,607
carbon tax	77,721	66,006	64,061
Other Taxes	200,923	189,491	63,465
Total	1013,433	853,58	432,024

*Source: Adapted from report of Ecopetrol S.A., 2022*

It can be seen in the table number 14 that there is a big difference between the taxes paid between 2021 and 2022. This is due to the increase in the company's income during 2022; likewise, this can be seen in the statistical model created, which shows a change in the company's net profits.

## 8.3 Resource Optimization

For a good optimization of resources in Ecopetrol, tax planning should go hand in hand with the company's strategic planning as it should correspond to long, medium, and short-term plans according to the needs and possibilities. With the planning, courses of action are specifically set, establishing the objectives, and through the strategy, adequate resources are assigned to achieve them.

Tax planning must be carried out by the board of directors, the company's finance department, presenting several options supported by the fiscal reality that indicates the budgetary responsibility of the company suitable for carrying out operations and suggests alternatives that, jointly or in isolation, achieve the desired economic and administrative impact for the organization and its partners.

The creative element plays a fundamental role in the constant search for successful alternatives that determine an operation's feasibility or otherwise and even the company's course (Li, 2022). Therefore, tax planning offers the company options to carry out a particular action, and it can freely and validly choose the most effective and economical option, minimizing the risks to which the company is exposed.

Considering the tax repercussions, the following table is proposed, which tends to monitor the following aspects:

*Table 16 Factors Analysis*

Aspect	What does the company have?	What is the proposal?	Where do I want to go?
Use of the Resources	The company has the physical infrastructure in different parts of the country and human and financial capital that must be evaluated to facilitate good planning work. Similarly, the company has other lines of business, which make tax settlement more complex.	A resource improvement plan is suggested, including qualified external personnel for accounting, fiscal and legal activities, with judgment and conflict resolution capacity. Likewise, internal audit processes of tax settlement processes.	Include within the tax planning mechanism the optimization and good use of resources such as physical, human, and capital; in such a way that they allow an effective rationalization of the tax burden.
Management Leadership	The company's board analyzes the company's financial results, which are reported in the financial and management report each year. In the report, the possible causes of the increase in the tax burden of the company are evaluated in search of possible solutions to short term	The directives of the financial area must generate long-term strategies that enable Identifying the specific tax-related changes or updates introduced by the law and understanding the law's scope and impact on Ecopetrol's operations and tax liabilities. It evaluated Ecopetrol's existing tax structure, liabilities, and exemptions. Identify areas where Law 2277 may impact Ecopetrol's tax planning.	Determine how Ecopetrol can leverage the provisions of Law 2277 to optimize its tax position. Identify potential tax incentives, credits, or deductions introduced by the law that are applicable to Ecopetrol's operations. Assess any compliance requirements or additional reporting obligations imposed by the law.
Capital	Ecopetrol complies with its tax obligations, as established by law, which has allowed it not to incur fines for non-compliance with the payment or filing of the income statement.	Define Ecopetrol's short-term and long-term tax objectives, such as reducing tax liabilities, optimizing cash flow, managing tax risks, and ensuring compliance. Align the tax planning objectives with Ecopetrol's overall corporate strategy and financial goals.	An optimal tax planning seeks to achieve the highest performance of capital with the lowest tax cost

Aspect	What does the company have?	What is the proposal?	Where do I want to go?
Human Resource	The 2022 management report shows investment in training personnel in the financial area in updating the tax regulations of the Colombian system.	According to decree 392 of 2021, Colombian tax system allows tax deductions for companies that hire recently graduated professionals, giving young people the opportunity to start their professional life, likewise, the current regulations stipulate deductions for companies that hire students from the institution. National Apprenticeship Service with professional internship work contracts.	Regarding the use of Human Resources, a tax-type strategy includes: Carrying out training programs for personnel that include scholarships that allow improving the quality of human resources and taking them as a deduction from income.
Productivity	The firm has increased its productivity in the last two years, and this is due to the increase in demand after the economic recovery of the country. However, the company must face the country's energy transfer policies proposed by the national government.	According to Law 1955 of 2019, the Ministry of Science and Technology grants tax benefits to those companies that invest in R+D+I projects that are sustainable over time and achieve an impact on society. Therefore, it is suggested to create strategic alliances with educational and research centers.	Maintain the sustainable business model through innovation processes and the creation of new technologies.

Source: Adopted from Figueroa, Muñoz, & Tamayo, 2019, Own processing

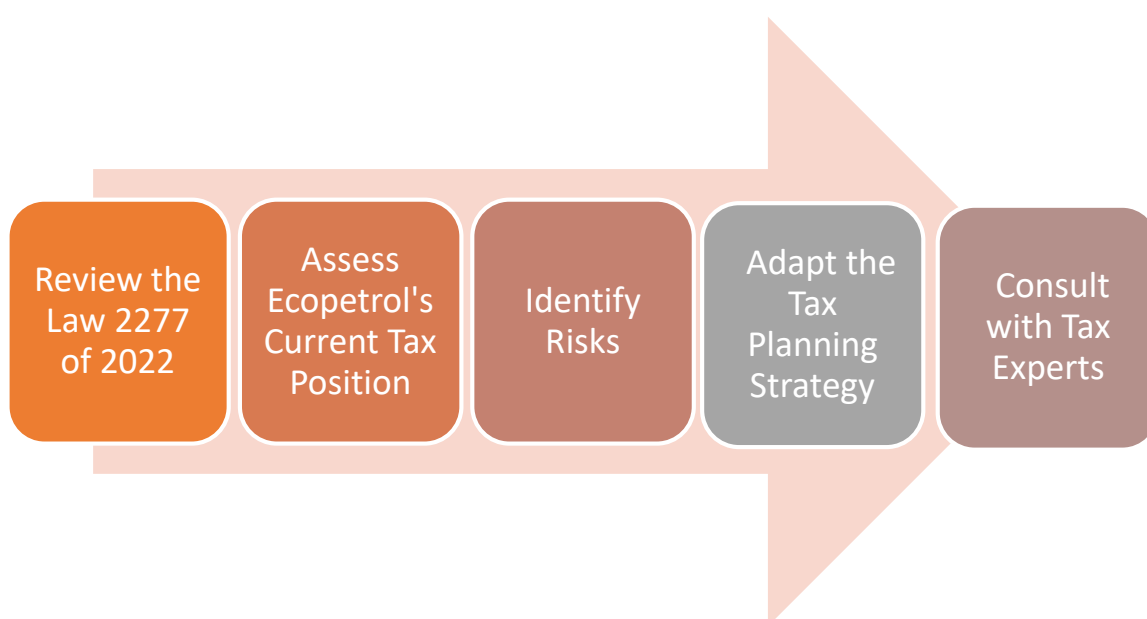
The analysis of the factors previously mentioned in table number 15 allows to compare the different aspects that the tax reform affected with the company's current situation. Therefore, the fiscal positions that are adopted suppose the careful evaluation on the part of the Management, and they are reviewed and adjusted in response to circumstances such as expiration in the application of legislation, closure of tax audits, additional disclosures caused by any legal matter or any decision of the Court in a tax matter in particular. The Ecopetrol Company records provisions based on the estimate of the possibility of a negative decision that may arise from a tax audit.

The amount of these provisions depends on factors such as previous experience in tax audits and interpretations of tax regulations by entities taxpayers and the tax authority. Actual results may differ from recorded estimates (Ecopetrol S.A., 2022).

#### **8.4 Implementation of the Estrategic Tax Plan**

After collecting the data concerning the company's tax obligations and analyzing the impact of the tax burden on net profit, the analysis of the company's resources and the proposal for improvement in each of the evaluated aspects, the implementation phase is proposed. Therefore, in the third stage of the strategic plan, reference is made to the execution of the project, and the following steps are proposed for efficient execution.

*Figure 10 Execution process*



*Source: Adopted from Figueroa, Muñoz, & Tamayo, 2019, Own processing*

Each of the passes mentioned in the previous figure is explained below.

**Review the Law 2277 of 2022:**

The firm shall obtain the full text of the law and carefully analyze its provisions and requirements. Because the company has different lines of business, it must consider the taxes for each of them, identify the specific tax-related changes or updates introduced by the law. As well as, understanding the scope and impact of the law on Ecopetrol's operations and tax liabilities.

**Assess Ecopetrol's current tax position:**

Evaluate Ecopetrol's existing tax structure, liabilities, and exemptions. Extensive knowledge of companies' operations that carry out oil exploration and extraction activities is essential for proper planning. Tax savings strategies include methods whose application is made to inventory accounts, accounts receivable, and depreciation, among others. These methods can be carried out more effectively if management and administrative staff have extensive business knowledge identifying areas where Law 2277 may have an impact on Ecopetrol's tax planning.

For the analysis and minimization of risks from external and internal variables of the company, the use of the proposed strategic planning tools is suggested, such as the SWOT matrix and the PEST analysis. The results of this analysis suggest, strategies can be formulated to maintain or improve strengths and opportunities, as well as to turn weaknesses into strengths and face the constant threats that are part of the business.

The tax assessment must be divided based on IAS 12, differentiating three aspects: first, the calculation of the income tax provision, thus evaluating which expenses are or are not deductible from income tax. In the analysis of deferred tax, as stipulated by IAS 12 during this step, Ecopetrol must identify the recoverability of deferred tax assets must be taken into account. Finally, there are tax uncertainties, that is, those tax treatments that generate companies not knowing whether or not they can have a specific tax treatment based on IFRIC 23.

**Identify Risks:**

Due to the constant tax changes that the country has been going through, taxpayers tend to make decisions that limit tax compliance. That is, although they have established tax policies, they need to identify possible business risks and opportunities.

Changes in tax matters should motivate these companies to take measures regarding tax risk so that sanctions are avoided and, at the same time, the decisions that do not affect tax policies before any future modification. The risks that the company faces are:

- Risk of Legal Tax Regulations. As it was mentioned above, every period of time, the tax process has changes to strengthen the country's economy; therefore, Ecopetrol must keep up to date and aware of the new resolutions.
- Tax Compliance Risk: This risk are all payments and the submission of data to the regulatory bodies. Hence, the firm must comply with following legal regulations to avoid penalties that affect the company's profitability.
- Financial risk. This sort of risk occurs when excess amounts of money are paid for interest and fines that were generated by tax noncompliance. To minimize financial risk, the company must establish standardized processes that allow time and movement control.
- Political risk. This type of risk goes hand in hand with the previous one in that the decisions made by the government to stipulate new mechanisms to collect taxes affect the tax planning of taxpayers.

Tax planning arises from the evaluation of tax risks. The events and damages caused by the lack of internal control occur as a consequence of tax pressure, breach of obligations, bad economic decisions

**Adapt the tax planning:**

Develop a tax planning strategy that incorporates the changes brought by Law 2277.

Identify ways to minimize tax liabilities while ensuring compliance with the law. Therefore, Ecopetrol shall optimize the use of available tax incentives, credits, or deductions within the framework of the law.

**Cunsult with tax experts:**

Engage tax professionals or legal advisors knowledgeable about Law 2277 to guide and assist in implementing the tax plan. Moreover, collaborate with partnership with other entities in the hydrocarbon sector to ensure that the tax plan aligns with Ecopetrol's business objectives and complies with the requirements of the law.

**8.5 Controlling Plan**

The definition of controlling is given by Zámečník (2018) a process of cooperation between the senior management of a company and the company's collaborators in assuming the responsibility of meeting the institutional objectives in the short and long term and likewise maintaining the quality standards in the processes adopted by the company. Hence, the

control process goes from the supervision of the company's daily activities to the planning of activities, prediction of results, budget of time and money, and analysis of the same.

The strategies proposed below regarding internal control are based on the analysis carried out on the company and its structure.

**Knowledge of the sector:** The change in the market price and the market volatility makes the company's profits more susceptible to external variables. Therefore, extensive sector knowledge allows the company to carry out efficient planning. Tax savings strategies include methods whose application is made to inventory accounts, accounts receivable, and depreciation, among others. These methods can be carried out more effectively if management and administrative staff have extensive business knowledge. The members of the organization who know better the management of operations will be able to find more efficient ways to implement the strategies that are proposed.

Managers must know the social benefits of companies in the sector; find out if they have exemptions, unique tax treatments, and other benefits in terms of taxes so that they are appropriately structured.

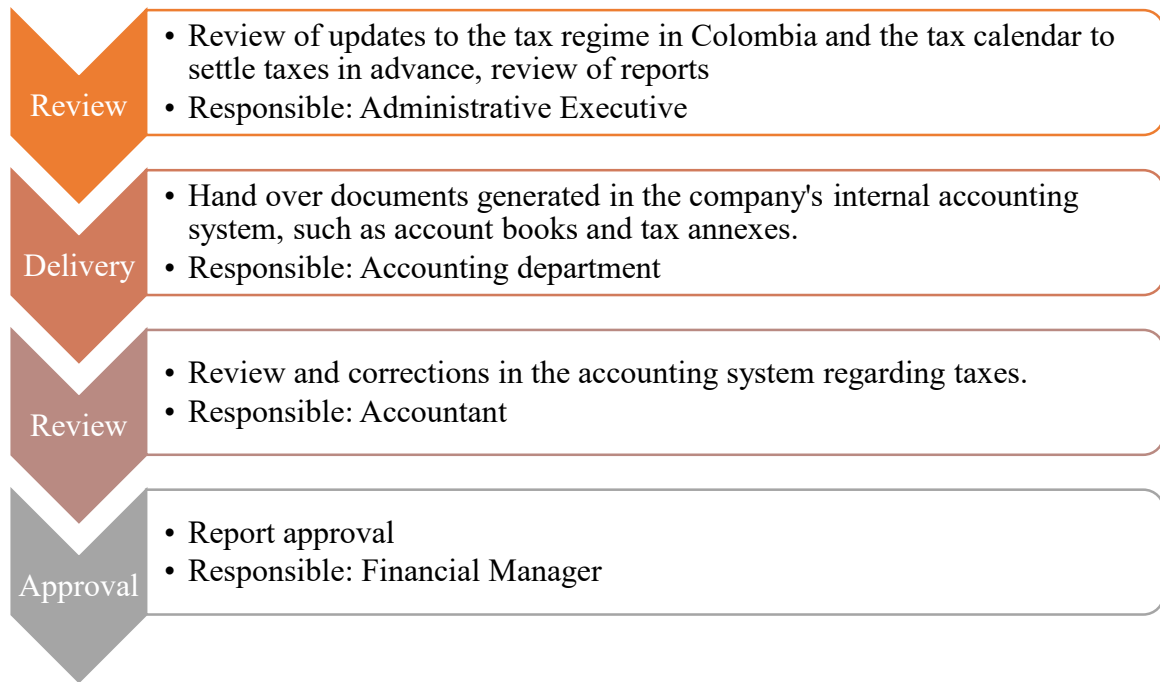
Ecopterol offers a comprehensive portfolio of services and products with different tax treatments. Therefore, it is essential to know the products and services to understand the taxes to which they are obliged to pay.

**Control Process:** The responsibility for tax obligations must fall directly or indirectly on all company members. Therefore, it is necessary to standardize the tax process to achieve compliance with it.

This process aims to have one or several managers who are pending and ensure the presentation of the reports. For this reason, a tax process flowchart is presented to optimize compliance and internal control:

*Figure 11 Control Process*





*Source: adapted from Zámečník , 2018, own processing*

Complying with tax obligations is essential. And the standardization of processes will benefit the company, especially in economic matters, avoiding the payment of infractions, maintaining a clean history of tax obligations that will allow you to access bank credits without any problem, you can request returns for balances in favor, and be able to present the Report Tax compliance. All these factors are associated with a financial improvement in the company since it will allow tax activities to be carried out through tax-saving strategies. **Information Systems:** Information systems facilitate the registration process, especially creating a database necessary to generate reports for managers and central control agencies. With the help of information systems, processes are automated so that data management becomes more efficient.

At the tax level, it is essential to have an accounting system, preferably integrated with other modules such as inventory, operations (customer creation, activation, suspension, and withdrawal of service), and human resources. On the other hand, monitoring and analyzing historical data strengthen managerial decision-making to predict possible future scenarios. For this, the implementation of the Power BI system is suggested, which is a tool for visualizing historical data. It has the facility to share the information safely with the members of the organization and thus involves each dependency in tax responsibility.

**Monitoring:** In the organizations' projects, the managers or those responsible for the implementation must periodically follow up on the primary operations that constitute the

plan. For this project, it is necessary to monitor the activities that were established in the tax calendar.

*Table 17 Controlling Card*

<b>Data Sheet</b>			
<b>Tax Name</b>	<b>Value</b>	<b>Responsible</b>	<b>Approval</b>
Corporate Tax			
Withholding at Source			
Added Value Tax VAT			
Carbon Tax			
Industry and Trade Tax			
Transport Tax			

*Source: own processing*

## **8.6 Time Analysis**

The analysis of the time that the project takes is necessary since it is considered two critical reasons. The first are the times and calendars managed by the DIAN and the second are the internal control times managed by the company. For this reason, the Program evaluation and review technique (PERT) and Critical path method (CPM) are considered the most appropriate to carry out time evaluation.

To calculate the time that the project takes to complete it, the networking method is carried out with the help of the Microsoft QM program. The table below shows the different steps that must be taken into account to carry out the proposed proposal. Moreover the time required for each task in weeks and immediate predecessors.

*Table 18 Project Activities*

<b>Activity</b>	<b>Description</b>	<b>Immediate Predecessors</b>	<b>Completion Time in weeks</b>
A	Conception of the project	---	1
B	Data Collection	A	3
C	Planning	A	2
D	Assessment of the fiscal provision	B	2
E	deferred tax calculation	B	4
F	Identify tax uncertainty	C	1
G	Identify Risk	D	4
H	Objective definition	E, F	2
I	Excution	G, H	1

J	Controlling	I	8
K	Monitoring plan execution	J	2
L	Cost tracking	K	2
M	Performance of implementation	K	4
N	Evaluation performance	M, L	2
O	Reporting	N	1

The PERT method determines the times of each activity and the prerequisites to complete the entire project as well as the best, since some activities can be done simultaneously while others need to be completed to continue with the next one. Additionally, with this approach, each activity has three estimated times: the optimal time, the normal time, and the pessimistic time. The following formula determines the estimated time.

$$Te = \frac{O + 4M + P}{6}$$

Where:

Te: Expected Time

O: Optimistic Time

M: Normal Time

P: Pesimistic Time

*Table 19 Activities supporting the Strategic Tax Planning*

Activity	Activity time	Predecessor 1	Predecessor 2	Predecessor 3	Predecessor 4	Predecessor 5	Predecessor 6	Predecessor 7
A	1							
B	3	A						
C	2	A						
D	2	B						
E	4	B						
F	1	C						
G	4	D						
H	2	E	F					
I	1	G	H					
J	8	I						
K	2	J						
L	2	K						
M	4	K						
N	2	M	L					
O	1	N						

Table 20 Time Possibilities for the Project

Network type		Method				
<input checked="" type="radio"/> Immediate predecessor list <input type="radio"/> Start/end node numbers		Single time estimate				

(untitled) Solution						
Activity	Activity time	Early Start	Early Finish	Late Start	Late Finish	Slack
Project	28					
A	1	0	1	0	1	0
B	3	1	4	1	4	0
C	2	1	3	5	7	4
D	2	4	6	4	6	0
E	4	4	8	4	8	0
F	1	3	4	7	8	4
G	4	6	10	6	10	0
H	2	8	10	8	10	0
I	1	10	11	10	11	0
J	8	11	19	11	19	0
K	2	19	21	19	21	0
L	2	21	23	23	25	2
M	4	21	25	21	25	0
N	2	25	27	25	27	0
O	1	27	28	27	28	0

Results generated by POP-QM Microsoft software depict that the possibility of time duration regarding the execution of the project is 28 weeks. Moreover, it shows that the critical path is considered with the activities A, B, D, E, G, H, I, J, K, M, N optimistic (fastest) duration for the project, while activities C and F can delay for four weeks (slack 4) without affecting the entire project duration. Finally, with this approach, we can verify relevant elements such as earliest start, earliest finish, latest start, and latest finish of all activities and slacks are also articulated.

### 8.7 Cost Analysis

Bearing in mind that Ecopetro has institutional strategic planning, which involves the different areas of the company, among which is the site responsible for tax liability. The present proposal for a strategic tax plan aims to plan the company's tax burden in the changes made in the 2022 tax reform. Therefore, the estimated costs in the following table are based

on the cost-benefit evaluation that has the planning and execution of the strategic tax plan in the face of the tax reform changes.

*Table 21 Estimated budget for the initiation of the strategic tax plan*

No	Item	Description	Price (Millions of Colombian Pesos)	Q'Ty	Total
1.	Identify the objectives	The salaries corresponding to the human resources that will be in charge of determining the specific objectives of implementing the tax plan.	4.000.000	3	12.000.000
2.	Gather data	Information systems and human resources willing to collect data concerning the tax burden of the tax burden.	3.500.000	2	7.000.000
3.	Consultancy	Certification granted by the DIAN in the participation of the consultancy concerning the tax reform	2.000.000	1	2.000.000
4.	Training	The material and human resources that will assume the training of personnel to execute the changes of the tax reform	20.000.000	1	20.000.000
5.	Audit	Internal audit in the control of processes and tax management.	15.000.000	1	15.000.000
6.	Budget				56.000.000

*Source: Adopted from Dirección de Impuestos y Aduanas Nacionales, PWC Price Water House Coopers, 2023, Own processing*

The budget will be evaluated annually and assessed with the benefit the plan grants from the profits generated by the company after taxes. This will be used as a benchmark to measure the effectiveness of tax plans and strategies toward minimizing the tax burden as well as perception towards determining the expected ROI by comparing the quantified benefits against the costs; this calculation will provide an understanding of the financial viability and potential opportunities period of implementing the tax plan.

Even though the tax reform 2022 increases the tax burden on companies in the hydrocarbons sector. With the implementation of the tax planning proposed in this paper, Ecopetrol would benefit as follows:

Taking advantage of the tax benefits set out in table number 16 and those mentioned in number 5.2, the tax deductions offered by the Ministry of the Environment and the Ministry of Innovation and Technology. Based on the company's 2022 financial report, the amount paid for income tax was 16,791,619 (millions of Colombian Pesos), but with the entry into force of the tax reform, the company must take into account the additional points for the production of oil according to the international weights of the commodity that would be 5%. Secondly, the benefit of the strategic plan is to avoid the sanctions stipulated by the DIAN to companies that do not carry out the appropriate setting of the tax or do not pay the tax on time.

$$\text{ROI} = (\text{Net Profit from Investment} - \text{Cost of Investment}) / \text{Cost of Investment}$$

$$\text{ROI} = (90.000.000 - 56.000.000) / 56.000.000$$

$$\text{ROI} = 0.60 \text{ or } 60\%$$

The ROI in the implementation of tax planning in Ecopetrol is 60%. The percentage indicates that the project's investment is profitable and as a result in a net gain for the firm.

## CONCLUSION

Tax planning is an essential tool to reduce the fiscal impact through the plan's proposed phases: optimizing compliance and improving internal control. With the help of this tool, the Ecopetrol company can apply the strategies that have been established in the aforementioned phases in order to optimize the processes necessary for an adequate presentation of tax information.

The national development plan proposed by the current Colombian government aims for an energy transition of the country to the consumption of green energy. It has led to proposing strategies to discourage the economic sector from exploring and extracting fossil fuels. In doing so, the executive power to propose tax reform in 2022.

The tax situation of the company is significantly impacted by the new tax reform imposed through Law 2277 of 2022 by the Colombian state, which has substantial changes in the corporate tax paid by companies in the hydrocarbon sector with the increase in the tax rate and the payment of extra points depending on the production of the company. Likewise, the non-deductibility of royalties in the cost of the corporate tax and the increase in the carbon tax rate.

The hydrocarbon sector is highly susceptible to changes in the price of a barrel of oil in the international market, decisions made by the government, and foreign investment. Thus, using tools and strategies to minimize financial risks and adequately plan the company's tax obligations is necessary.

Through the application of the statistical model of linear regression, the affectation of the tax burden on the company's net profits in the last decade is observed. Regarding the corporate tax, although there is a dependency between the tax paid and the profits, the statistical model shows trend isolation as the cost of the tax increases. Likewise, for the other taxes, linear regression determines the dispersion between the data collected and the slope, which can be explained by the fact that indirect taxes are not tied to a fixed rate but to a variable rate depending on the company's consumption.

Internal tax control is a fundamental part of the tax process because it must be aware of the damage caused by failing to comply with tax activities. Failure to follow the tax planning leads to obligations pending presentation and payment, becoming firm debts before the controlling body.

The objective of all companies is to maximize their utility and stay active. In order to achieve this objective, they need to apply strategies that make it possible to generate increasing flows of savings and investment and minimize the tax burden on the company that is generated by delays in filing and paying tax obligations. Therefore, the strategic tax plan presented in this research can be implemented in both large and medium-sized and small companies, serving as a planning tool to minimize the tax burden.

Despite the constant changes in tax regulation, taxpayers need more training. In the future, an error in the declarations can mean an economic outlay for the company. For this reason, Ecopetrol must implement training plans and constant updating for the accounting department leaders since Colombia's tax regulations are being reformed regularly.

The components for tax planning in the Ecopetrol company are analyzing the company's historical data regarding tax payment, business knowledge, standardization of the process of registration, presentation and payment of taxes, control activities, assessment of the information system, and monitoring the tax process. In this way, avoiding obligations pending presentation and payment with the control entities is possible.

The research contributed to strengthening knowledge in tax matters. The analysis of the tax system in Colombia was essential to evaluate the results obtained, as well as it was necessary to have updated tax regulations regarding sanctions and new significant changes of general application. The analysis of the resolutions contributed to knowing the most relevant changes and translating them as part of this work so that it can be helpful for readers. Likewise, tax planning must be carried out with excellent adherence to the constitution, laws, resolutions, and tax regulations. Decision-making must be taken together, since the fiscal factor is not the only one that affects tax planning, but rather the administrative, financial, and economic aspects.

Implement the strategic tax plan with a previously established timeline involving all levels of the organization so that they become involved in the tax process and can provide suggestions resulting from the experience in each function. Strengthen knowledge through the instructions, resolutions, and all information that reflect the types of sanctions, fines, and interest for tax violations; Thus, the company will avoid financial outlays for not presenting and paying their tax obligations on time. On the other hand, the constant reading of the tax regulations is recommended. In this way, a higher level of understanding can be obtained. The tables published by the control entities should be reviewed, such as the withholding



percentages or the new rates for taxpayers. This practice will contribute to the correct application of the laws regarding taxes.

All company employees must be involved in the constant training of Law 2077 of 2022 regarding tax information. It is recommended that the accounting department periodically review the portals of the regulatory entities and that it affiliate with associations that constantly send updates on tax matters according to the changes in the regulations that are reported through resolutions.

Establishing the strategic tax plan involves knowledge in the tax field, but macroeconomic aspects that affect the company must also be considered, as well as applying management planning knowledge that contributes to stipulating the correct management tool to make decisions. That is why this study integrates the different fields of business administration.

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## **LIST OF ABBREVIATIONS**

ANH	National Hydrocarbons Agencies
CAPEX	Capital Expenditure
CAR	Regional Autonomous Corporation
COP	Colombian Pesos
CPM	Critical Path Method
DANE	National Administrative Department of Statistics
DIAN	Directorate of National Taxes and Customs
DP	Debugged Profit
DT	Debugged Tax
DTR	Debugged Tax Rate
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortization
GDP	Gross Domestic Product
IAS	International Accounting Standard
IASB	International Accounting Standard Board
ICA	Tax of industry and commerce
IFRIC	International Financial Reporting Reporting Interpretation Committee
IFRS	International Financial Reporting Standards
MLE	Maximum Likelihood Estimation
NIT	Net Income Tax
OLS	Ordinary Least Squares
PERT	Programme Evaluation & Review Technique
PEST	Political, Economic, Sociological and Technological
PIT	Income tax for passive income
PND	National Development Plan
R+D+I	Research + Development + Innovation

ROI Return On Investment

SWOT Strength, Weakness, Opportunity and Threat

TD Tax Disccount

USD Unitated State Dollar

VAT Value Added Tax

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