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The Influence of Economic Theories on Sustainable Development

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Resumo

O principal propósito desta tese é apresentar uma discussão teórica sobre a influência de diferentes teorias económicas sobre o conceito e estratégias para atingir o desenvolvimento sustentável nas suas três esferas: económica, social e ambiental. São apresentadas diferentes perspetivas sobre a sustentabilidade do processo de crescimento económico. Explora-se a perda da análise ética no decorrer da história do pensamento económico e as suas implicações para o desenvolvimento sustentável. Na esfera do desenvolvimento económico são salientadas as relações entre as teorias de dependência internacional e teorias liberais, por um lado, e os pensamentos económicos de Karl Marx e Adam Smith/David Ricardo, respetivamente. Analisa-se a compatibilidade entre as esferas económica e social do desenvolvimento sustentável focando a questão da distribuição do rendimento entre indivíduos. Na esfera do desenvolvimento social é apresentada a teoria de desenvolvimento de Amartya Sen remetendo-nos para a conceção clássica do sistema económico. Debate-se duas versões da economia como ciência social: a teoria económica neoclássica defendendo que todos os bens são escassos, levando à trivialização do problema de escassez dos recursos naturais; a teoria económica clássica defendendo que o sistema económico produz um excedente, salientando a importância de estudar a gestão dos recursos naturais. No desenvolvimento ambiental discute-se duas correntes opostas: economia dos recursos/ambiental e economia ecológica. Estas duas correntes trazem-nos diferentes versões de sustentabilidade: fraca e forte, respetivamente relacionadas com a teoria económica neoclássica e teoria económica clássica.

Palavras-chave: Desenvolvimento Sustentável; Sustentabilidade; Teorias Económicas; Economia, Ética.

Abstract

The main purpose of this thesis is to present a theoretical discussion about the influence of different economic theories on the concept and strategies to achieve sustainable development in its three spheres: economic, social and environmental. It presents different perspectives on the sustainability of the economic growth process. It explores the loss of ethical analysis along the history of economic thought and its implications to sustainable development. On the economic development sphere, it highlights the relations between the theories of international dependence and the liberal theories of economic development, on the one hand, with the economic thought of Karl Marx and Adam Smith/David Ricardo, respectively. There is an analysis of the compatibility between the economic and social spheres of sustainable development with a focus on the distribution of income among individuals. Under the social development sphere, it presents the capability approach of Amartya Sen as bringing back the classical conception of the economic system. It explores two versions of economics as a social science: neoclassical economic theory defending that all goods are scarce leading to the trivialization of the scarcity problem of natural resources; and classical economic theory defending that the economic system produces a surplus enhancing the importance of studying the management of natural resources. Under the environmental sphere of sustainable development, there is a discussion of two opposing currents: resource/environmental economics and ecological economics. These two currents bring us different versions of sustainability: weak and strong, with a connection to neoclassical economic theory and classical economic theory, respectively.

Keywords: Sustainable Development; Sustainability; Economic Theories; Economics; Ethics.

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Introduction

In this thesis, we will explore the history of economic thought and relate it with the three dimensions of sustainable development (environmental, economical and social). The concept of sustainable development emerged at the 18th century, in the context of forest economics (Figuières, Guyomard, & Rottilon, 2010). The world has been developing a large concern over the achievement of sustainable development, as several documents prove (Pezzey, 1992). In 2015, the Agenda of 2030 for Sustainable Development was launched (United Nations, 2015). The world is now working toward 17 objectives defined and agreed by world leaders.

There is a clear influence of economic theory on the interpretations made of sustainability and sustainable development. There are several economic theories developed by a large number of economists (Hunt, & Lautzenheiser, 2011). In this sense, economics is a social science which was defined by a large number of authors in various ways. The definition of this concept helps us to comprehend the problems analyzed and the methods used, including their approaches and techniques (Backhouse, & Medema, 2009). One of the issues that economics deals with is sustainability and sustainable development.

Considering this, the relations between the different economic theories developed along the history of the economic thought and the concept of sustainable development, as well as the strategies to achieve it, are a matter of academic interest for the scientific community nowadays. Having this as a background, our research question is: "How do economic theories influence the concept of sustainable development and the strategies used to achieve it?"

We shall start by defining economics and sustainable development in chapter 1. We will then address the history of economic thought and ethics in chapter 2.

In chapters 3, 4 and 5 we shall address the three dimensions of sustainable development, the economic, social and environmental dimension, respectively, after which some concluding remarks will follow.

Chapter 1
Defining Economics and Sustainable Development

This thesis will address the connections between economic theories and the concept of sustainable development. So, the first step is to explore the two main concepts: economics and sustainable development.

Several economists developed several economic theories in thousands of books (Hunt, & Lautzenheiser, 2011). In this sense, economics is a social science which was defined by a large number of authors in various ways. The definition of economics helps us to understand the problems analyzed, the methods used, their approaches and techniques, or in other words, the economic theories developed (Backhouse, & Medema, 2009). But due to dealing with a vast matter of subjects, defining economics in few words is not easy.

We will address three definitions of economics. The first one is the definition of Adam Smith, because he was considered the father of economics and the first author of the classical school (Blaug, 1996; Heilbroner, 1999 ;Roncaglia, 2005; Schumpeter, 1994). Adam Smith sees the economic system as a product of labor and its organization, which is implicit in the division of labor (Smith, 2007). He defends that the labor of each country generates its wealth. He studied the process of production of wealth, as well as its distribution. More specifically, Adam Smith studied the wealth of different countries, and the policies that could create wealth (Backhouse, & Medema, 2009).

The second definition of economics that we will explore is from Alfred Marshall because he was one of the main authors within neoclassical economics

(Blaug 1996; Heilbroner 1999; Roncaglia 2005; Schumpeter, 1994). In fact, the term neoclassical economics was first used by Thorstein Veblen in order to denote Marshall's economics, and Marshall's *Principle of Economics* became the canonical textbook through which neoclassical economics was taught (Veblen, 1900). Alfred Marshall sees economics as the study of men's action on the business life and the reasons behind those actions (Marshall, 1920). Marshall defends that each man brings his own interests to the scene and their interests can be selfish or unselfish. However, the main motive to work is the payment you receive as exchange. Marshall sees how economics allows for exact methods because the strength of a person's motives can be measured by the quantity of money he is able to pay to secure a desired satisfaction. Marshall clarifies that what economics is able to measure is the manifestation of desires and intentions using money as a unit of measurement. Human action is not studied in isolation but in relation to a social group (Marshall, 1920). But Marshall was one of the authors that brought the individualistic element to the definition of economics because he felt that psychology was a requirement to understand economic matters (Backhouse, & Medema, 2009).

Finally, another important definition of economics is Lionel Robbins' definition, because it is the most accepted definition of our object of study in our days (Backhouse, & Medema, 2009). According to Robbins, economics is *"the science which studies human behavior as a relationship between ends and scarce means which have alternative uses"* (Robbins, 1932, p. 15). In other words, it studies the choices that individuals have to do with their scarce resources to achieve one of the several ends they desire. Robbins' definition of economics is a consequence of the evolution of marginal microeconomic analysis and of focusing on individual behavior (Backhouse, & Medema, 2009). With these three definitions, we can see: how economists disagree about the definition of

the subject; how hard it is do define economics in few words; how a definition gives us insights on how these authors understand and study economics.

We will not choose any definition of economics, because they are a way to justify its practice, the directions taken, and influence its practice (Backhouse, & Medema, 2009). Instead, we will try to relate the definitions of economics and the economic theories developed by different economists to the concept of sustainable development and to ways to achieve it. That is, we shall critically scrutinize the implications of each definition of economics, rather than simply accepting one to the exclusion of others.

Let us turn now to the concept of sustainable development. It appeared for the first time in the context of forest economics, at the 18th century (Figuières, Guyomard, & Rottilon, 2010). However, it only focused on the optimum management of a renewable resource. Afterwards, with Malthus and Ricardo, at the end of the 18th century and beginning of the 19th century, there was the first economic overview formulated to study and understand how the scarcity of a natural resource, agricultural land, could set a limit to economic and population growth, as well as to a rise in living standards.

Sustainable development has been in the center of attention of many world leaders and there are some documents that prove it (Pezzey, 1992). One of them is the Brundtland Report of 1987, denominated "Our Common Future" (Pezzey, 1992; World Commission on Environment and Development, 1987). In this report, the general accepted definition of sustainable development appeared: meeting *"the needs of the present without compromising the ability of future generations to meet their own needs"* (World Commission on Environment and Development, 1987, p. 16). This report recognizes the importance of everyone's work toward defined common objectives and with specific strategies to follow (World Commission on Environment and Development, 1987). In this sense, a

common understanding of the concept of sustainable development and the best way to achieve it is mandatory.

The definition of the Brundtland Report is the one that we will follow on this thesis. We will follow this one because: it is the one generally accepted, it emerges from one of the more acknowledged reports written about the matter, and finally, it does not go against any of the common features regarding the subject and areas it involves, as we will see. This definition has in it two important concepts: the concept of needs (in order to give priority to the needs of the poor) and the concept of limitations (there are limitations on the environment and organization of the society to meet present and future needs) (Pearce, 2002).

Chapter 2
History of economic thought and ethics

After presenting the more influential definitions of economics and sustainable development, in this chapter we shall present brief descriptions of some economic theories developed by important economists: Adam Smith, Jean-Baptiste Say, David Ricardo, Thomas Robert Malthus, John Stuart Mill, Alfred Marshall and Robert Solow. This summary will be further used to relate economic theories and economic currents with the concept and ways to achieve sustainable development. We are only focusing on the authors and issues that can be further related with sustainable development, and even these are only briefly described. It is important to remember that our goal is to identify how economic theories influence the concept of sustainable development and the

strategies used to achieve it, not to make a complete description of the evolution of economic thought through the centuries.

Afterwards, we will cover the loss of ethical analysis throughout the history of economic thought. This topic is relevant because there are ethical values and concepts necessary to understanding sustainable development. These values and concepts need to be analyzed, understood and respected by humanity. Their acknowledgment is a requirement for the achievement of sustainable development.

1. Adam Smith

The first key author in the modern history of economic thought is Adam Smith, who was born in the XVIII century, in Scotland, and is nowadays regarded as the father of economics and the first author of the classical school (Blaug 1996; Heilbroner 1999; Roncaglia 2005; Schumpeter, 1994). Smith explained how individuals act in market interactions having as their basic motivation their self-interest (Heilbroner, 1999). This basic motivation is controlled by the competition levels of the markets. Then, through the interaction between individuals, social harmony can be achieved (Heilbroner, 1999).

However, Smith also pointed out that humans are able to feel each other's feelings through their imagination (Smith, 1790). We do this by putting us in the situations that others face. Adam Smith called this capacity sympathy (Smith, 1790). Besides this, Smith defended that humans are worried with justice, fairness and altruism (Ashraf, Camerer, Colin, & Loewenstein, 2005). These

factors are crucial in market interactions: they make humans trust in each other, and enable them to repeat transactions and to have material gains.

Smith identified two forces that explain the increases of productivity inherent in the market system (Heilbroner, 1999). The first one is the accumulation of capital or in other words the accumulation of savings. The second one is the law of population The accumulation of savings or capital enables the division of labor and this leads to an increase in productivity (Heilbroner, 1999; Smith, 2007). However, the division of labor is not a decision made to have gains of productivity, it happens due to our propensity to negotiate and exchange things (Smith, 2007). The gains of productivity are limited by the law of population (Heilbroner, 1999). According to Smith, the first effect of accumulating capital and investing it is a raise in wages. This raise in wages leads to an increase of the working force. This increase in the number of workers will pressure wages down, leading to a decrease in the number of workers (Heilbroner, 1999).

Smith defends that the extent to which there can be increases of productivity due to the division of labor is limited by the extent of the market (Smith, 2007). In small markets, for example a village, a man cannot become specialized in one function or employment because he will not have the opportunity to find someone specialized in the other things that he needs and exchange with him. So, in small markets, people end up doing a lot of things leaving no room to specialization or to the division of labor (Smith, 2007).

An essential condition to the division of labor is high levels of production (Martins, 2009). Only then, the division of labor enables an increase in productivity. Smith believed that the economic growth process can be a sustainable positive cycle. He defended that when we increase productivity levels, we are able to have profits. These profits will create savings. These

savings will be applied in capital, enabling a new division of labor and the attainment of higher productivity levels (Martins, 2009).

2. Jean-Baptiste Say

Adam Smith's ideas were popularized in France by Jean-Baptiste Say, a French economist born in Lyons typically associated with Say's Law (Roncaglia 2005; Schumpeter 1993). Say based his law on two propositions: the desire for goods and purchasing power are endless (Heilbroner, 1999). Say's law follows Adam Smith's thinking and states that supply or production generates its own demand (Martins, 2009). The activity of production always costs something, and this cost always generates incomes to people, independently of it being a wage, a rent or a profit (Heilbroner, 1999; Martins, 2009). These incomes are then used in consumption. The act of consuming, is the demand which is never satiated. Say defended that, both in the long-run and in the short-run, overproduction of goods is not possible because by producing goods the purchasing power to buy other goods is produced. Say also defended that economic growth can be a sustainable positive cycle, as well as Adam Smith (Martins, 2009). Other followers and interpreters of Smith, such as David Ricardo and Thomas Robert Malthus, were less optimistic on this possibility.

3. David Ricardo

David Ricardo was a British economist who formulated the more systematic version of the classical system of political economy and dominated economic thinking in the 19th century, creating the classical or "Ricardian school" (Schumpeter, 1994). Ricardo saw people as members of a social class, who follow laws of behavior driven only by economic motivations (Heilbroner, 1999). There are three important social classes: workers, capitalists and landlords. To Ricardo, workers receive wages for their work, and every time there is an increase in their wages, there is an increase in population. This makes them live at the margin of subsistence, with wages at their natural level, which they use to satisfy their necessities. He defended the labor-embodied theory of value where the relative natural prices of commodities are given by the relative hours employed in their production. Capitalists live to gain profits and save them to further on hire more workers, or in other words, to reinvest it (Schumpeter, 1994; Heilbroner, 1999). Landlords receive rent to pay back the fertility of the soil (Heilbroner, 1999). Rent exists to compensate the different productivity levels of land. Keeping everything else equal, higher fertility levels of the soil enable higher production levels which decrease the cost of production per unit. The different costs of production enable the existence of rent. Landlords use their rents to buy luxuries (Roncaglia 2005; Schumpeter, 1994).

Now let us see how these three social classes interact and the subsequent results (Heilbroner, 1999). When capitalists accumulate, they invest in economic activity which increases the demand for labor. Higher demand for any product leads to an increase in the number of workers, so their wages increase. As wages increase, there is an increase in population or workers. More people implies higher demand levels of food or agricultural products, which increases the demand for fields. This factor leads to the use of less productive land. The

use of less productive land will increase the cost of production. This will increase the prices, the wages and the rents of productive soils, considering that it is the difference between the productivity levels that leads to the existence of rents. In the end, the capitalists have to pay higher wages and receive smaller profits. The workers live at subsistence levels. The landlords are the only ones better of considering that the rents of good lands are higher and the worse lands are now into use (Heilbroner, 1999). To David Ricardo, profit and rent levels are determined in the agricultural sector (Schumpeter, 1994).

To Ricardo, there is a limit to economic growth (Martins, 2009). Ricardo believes that soils have a decreasing productivity, which leads to lower productivity levels. With lower productivity levels, profits will also decrease. Investments will be then directed to industrial and manufacturing activity, which will decrease the profits in all these activities due to competition. Considering that there will be no profits in these activities, there will not be any savings to accumulate capital, and there will not be economic growth (Martins, 2009). For Ricardo, economic growth is not a sustainable process in the long run because profits will disappear due to increasing rents and wages, leading the economy to a stationary state where capitalists will not make profits and there will not be any savings/accumulation (Schumpeter, 1994; Martins, 2009). Thomas Robert Malthus, just like David Ricardo, did not believe in the sustainability of the economic growth process, but for different reasons.

4. Thomas Robert Malthus

Malthus was born in the south of London and studied what happened to populations (Schumpeter, 1994). More specifically, Malthus studied individual responses to economic incentives and was known for defending that population growth was higher than food production growth (Schumpeter, 1994; Heilbroner, 1999). According to Malthus, population grows at a geometrical rate higher than food production which increases at an arithmetical growth rate (Schumpeter, 1994). This factor made humans live on subsistence levels (Schumpeter, 1994; Heilbroner, 1999; Martins, 2009). They are kept at this level mainly by population growth control and only to a certain point through increases in the food supply (Heilbroner, 1999). It is possible to increase food supply but only through difficult methods (Schumpeter, 1994). However, people can easily control population growth by using contraceptives, marrying late, between others measures more dramatic. Empirical evidence can be found in the measures applied by China, Mexico and India over the last years (Heilbroner, 1999). Considering the tendency described above, measures of charity focused on increasing the income of the lower classes, until a certain level, would have no result because population will grow leading people to live at subsistence levels again (Heilbroner, 1999).

Malthus suggested that it is possible to solve this problem, to reduce the population growth rate to a point where the tendency to live under subsistence levels does not apply, with the introduction of the hypothesis moral constraint. This consisted on a voluntary abstinence that could be reached by stimulating the poor to change their behavior. He went further and suggested that by increasing incomes to sufficiently high levels, poor people would reach high levels of quality of life and they would look up for it before starting a family, reducing the population growth (Blaug 1996).

On the matter of the origins of rent, Malthus differed from Ricardo's perspective. For Malthus rent brings an incentive for the landlord to improve

land, and is a deduction from the surplus that exists because: agricultural activity produces a surplus, the price of corn is constantly above the cost of production due to the wage-fertility dynamics, and finally, productive lands are scarce (Schumpeter, 1994).

Malthus defended that economic growth is not a sustainable process in the long run, like David Ricardo (Martins, 2009). For Malthus, the population growth rate is higher than the economic growth rate, which leads to a reduction of the economic growth per capita. Since wages are kept at the subsistence levels and they are crucial to consumption levels (the propensity to consume is higher to people that receive wages than to people who receive profits), we will have low demand levels leading to production and a consumption crisis. He did not believe in Say's law and defended that there could be excess of production or excess of demand. In this sense, economic growth can stop (Martins, 2009). The next author under analysis, John Stuart Mill, brings us a different perspective where the focus of our attention should not be on economic growth, but on the distribution of wealth.

5. John Stuart Mill

John Stuart Mill was a British classical economist (Schumpeter, 1994). He followed his father, James Mill, known as a Ricardian economist. Besides this, Mill was a philosopher who defended the theory of utility in his famous book *Utilitarianism* (Mill, 2001). According to this theory, the term utility refers to pleasure and absence of pain, or in other words, to happiness. Utility is the end desire of humans. People desire a lot of things but they only desire what gives

them or have inherently in them the end desire of humans, happiness. Utilitarianism defends that actions are right if they lead to happiness and wrong if they lead to the contrary of happiness. In this theory, there is a focus on the consequences of people's actions and its contribution to the achievement of the end desire of humans (Mill, 2001).

In Mill's (1848) most famous book on economics, *Principles of Political Economy*, the topics covered are rents, wages, prices and taxes, just like his antecessors Smith, Ricardo and Malthus (Heilbroner, 1999). Mill defends that production is subject to economic laws and it is completely separated from distribution. The activity of production is conditioned by the scarcity of nature and depends on technology (Heilbroner, 1999; Martins, 2009). The economic choices made to maximize the productivity of labor are impersonal and absolute. It is a fact that they have to deal with the scarcity of nature and are conditioned by the technology available. With production , individuals create wealth (Heilbroner, 1999). Then, society determines the distribution of wealth through its laws and customs, or in other words, through its social institutions (Heilbroner, 1999; Martins, 2009). These laws and customs are created by a portion of the society that rules (Heilbroner, 1999). Distribution is based on the ruler's ideas and feelings. In this sense, distribution changes from country to country and from time to time, with no boundaries. This perspective empowers the rulers of societies. If societies are unhappy with a certain situation, their rulers can simply change the distribution of wealth in order to improve the wellbeing of societies as a whole (Heilbroner, 1999).

To Mill, economic growth is not a problem because technology enables societies to produce enough quantities of goods (Martins, 2009). The focus of our attention should be on how to improve the distribution of wealth through different social institutions (Martins, 2009). Mill had a very important influence

on Alfred Marshall, who became the most influential British economist after Mill.

6. Alfred Marshall

Alfred Marshall was born in 1842 and was a leading economist of neoclassical economics (Schumpeter, 1994). Marshall sees economics as the study of human action in the sense that it affects the material conditions of welfare (Marshall, 1920). This is a substantive conception where the economy is defined in terms of an object of analysis, human actions. Marshall's work tries to explain an empirical reality using mathematics (in footnotes and appendices) but always trying to keep all aspects of real life he can in his conception (Marshall, 1920).

Alfred Marshall is known for his theory of market equilibrium where there is a combination of classical and marginal analysis (Heilbroner, 1999). Marshall recognizes a crucial element in the equilibrium theory: time, and because of that, he separates the equilibrium analysis in the short-run and in the long-run (Heilbroner, 1999). Marshall defends that supply and demand determine the quantities and prices of goods exchanged, in the short run, and that to know them, we need to know the supply and demand of the goods. In the short-run, the quantities of goods are fixed and their prices are determined by the present demand over the goods or using other words, by the subjective preferences and marginal utility. In the short-run, we are under a context of scarcity where it is not possible to increase or decrease the supply of goods even if the demand increases or decreases. This is the reason behind the fixed quantities of goods in

the short-run (Heilbroner, 1999). In the short run, we have a clear presence of the marginal analysis. On the long run, the quantities of goods are not fixed since we are not under a context of scarcity and we are able to increase or decrease the supply of goods. Thus, on the long run, the prices of goods tend to its cost of production, as defended by classical authors (Heilbroner, 1999). On the long run, we have a clear presence of the classical analysis.

Marshall introduces two important concepts: the concepts of consumer's and producer's surplus (Marshall, 1920). Consumer's surplus is the economic measure of the satisfaction gain that a consumer has when he buys something. There is a satisfaction gain because the price that consumers are willing to pay to acquire a good is higher than its actual price and what they actually pay. The producer's surplus follows the same logic. Considering a market in equilibrium, the prices of goods are higher than the cost of production for those who have exceptional advantages. When these advantages arise from nature, we have the producer's surplus. These concepts arise from a marginal and geometrical analysis (Marshall, 1920).

The most influential neoclassical theory of economic growth was subsequently developed in the United States by Robert Solow.

7. Robert Solow

Robert Solow was born in 1924 in New York and is a neo-keynesian author known by his neoclassical growth model. Robert Solow developed a model where there is only one good in the economy being the only one used in the production (Solow, 1956; Solow, 1957). In this model, the level of production is

determined by supply which is defined by the production function. The factor that determines the production level is the accumulation of capital which depends on the savings levels. In the neoclassical theory, the logic is: savings generate investments which leads to a certain level of production. Apart from this logic, economic growth per capita is determined by technical progress, and in this Neoclassical Growth Model, technical progress is an exogenous variable. Besides this, some other variables are not explained and treated as exogenous variables or included in the Solow's residual like human capital and institutions (Solow, 1956; Solow, 1957). This model clearly has a focus on the supply side, where demand only determines prices, while supply determines the quantities produced conditioned by the existent resources and productive process (Pasinetti, 1993). This model with its focus on the supply and production side follows Say's law where production generates its own demand and potential growth turns always into effective growth (Martins, 2009).

Now that we have covered some relevant economic theories developed along the history of economic thought, we are ready to understand the loss of ethical analysis throughout the evolution of economic thought.

8. Economics, ethics and sustainability

Neoclassical analysis focuses on mathematical models, leaving ethical aspects aside, as it was the case of the theories developed by Alfred Marshall and Robert Solow. But according to Amartya Sen, economics has two origins (Martins, 2009; Sen, 1987). The first origin is related to ethics and goes from back to the time of Aristotle, who also influenced Adam Smith, John Stuart Mill,

and other classical economists. To Aristotle, the science of economics is related to the study of the end desires of man, where we can find wealth as a means but not the end (Sen, 1992). Aristotle defends that economics involves the study of reaching other objectives, and the main goal to achieve is the welfare of man. For Amartya Sen, who follows the Aristotelian approach that also influenced the classical economists, there are two areas in which there is a clear connection between ethics and economics: the Socratic question (how should we live?) and the Aristotle question of the common welfare which takes into account the welfare of individuals and distributive justice (Martins, 2009; Sen, 1987, 1992). The second origin of economics is related to engineering and leads to technical and logistical questions. This origin is associated to authors as Leon Walras and it is predominant in the neoclassical economic theory. Under this influence, the goals are not a matter of further analysis (Sen, 1987). Instead, the question of analysis is the identification of the best means to achieve given goals. Lionel Robbins' definition of economics highlights this matter (Robbins, 1932).

Classical authors were able to find a balance between both origins of economics. However, the neoclassical authors left ethical analysis outside the scope of economics and there was a clear focus on the engineering perspective (Martins, 2009; Sen, 1992). Adam Smith, for example, believed that ethical aspects enable dialogue and mutual trust, which are essential conditions for exchanges to happen and the proper functioning of markets (Martins, 2009). The capability of humans to exchange and the extent of the market enable the division of labor and also delimit its boundaries. The division of labor leads to economic growth, through increases in productivity. This means that for Adam Smith, economic growth as a part of the process of development, can be a sustainable process and it is seen in a integrated way, where the ethical dimension is present and crucial for it to happen. The same happens with Say where economic growth can be a sustainable process and it is supported by

ethical and moral dispositions. In the case of the classical author John Stuart Mill, the Aristotelean question is present. He is one of the first authors to defend that indefinite economic growth leads to the exhaustion of natural resources. The solution consists in finding better ways to distribute income through new social institutional arrangements (Martins, 2009). Neoclassical economists with their positive conception of the economy, do not analyze normative questions which are incorporated in a purely ethical perspective, which is separated from positive economics (Martins, 2009; Sen, 1992). As we have seen, Alfred Marshall and Robert Solow theories and models do not take into consideration any ethical values, concerns or concepts. Instead, they present a clear focus on the positive conception of the economy.

The loss of the ethical perspective in economics can be explained by the success of physics and its mathematical deductive models (Martins, 2009). There was a belief that for economics to be a respectful science, just like physics, it had to use the same models. Having this in mind, mathematical deductive models were applied to the prediction of social events, or in other words, to the prediction of human actions. The problem with this is that these models are useful for predicting events in closed systems, such as the ones physics studies, but they are not adequate for predicting events on open systems or systems you cannot simulate in laboratories, like the case of social processes (Martins, 2009). The use of mathematical deductive models lead to a new way of seeing economics as a social science which is less focused on studying empirical realities. This was a concern present in the classical authors and in Alfred Marshall work that started to disappear with the evolution of neoclassical economics (Marshall, 1920).

Amartya Sen believes it is curious how economics has evolved in a direction where human motivations are characterized in such a straightforward way, with the lost of the Socratic question, considering that economics should

analyse real persons (Sen, 1987). He also questions how economics ends up consciently separated from ethics considering that Adam Smith, the father of economics, was also professor of moral philosofy and economics was for a long time in the same sphere as ethics (Sen, 1987).

Ethical considerations are a crucial factor when looking and searching for sustainability (Horns, n.d.; Vucetich, & Nelson, 2010). However, it has been forgotten when compared with other disciplines and techniques. There is little concern with understanding the normative concepts that define sustainability, just like human needs, and the morality and values which underlie sustainability issues. But without ethical considerations, we will never understand how to achieve sustainability and we will not be able to motivate and change behaviors of societies to achieve it. To achieve sustainability it is necessary to align the values of societies with the Earth matters and to understand that these values shape our societies (Horns, n.d.; Vucetich, & Nelson, 2010). After all, the final objective of development can be considered an ethical discussion that needs to have as background a justice concept.

In order to have some insights over the ethical dimension which is inherent to the concept and strategies to achieve sustainable development, we will briefly explore the ethical and social justice conceptions from the following authors: Aristotle, Immanuel Kant, Jeremy Bentham and John Stuart Mill, John Rawls and Amartya Sen. We will use Amartya Sen's method to study the various ethical and social justice conceptions. In order to do this, we will analyze two items in each theory: the criterion they use and the space to which that criterion is applied. This helps systematizing the key ethical theories, such as Aristotelian virtue ethics, Immanuel Kant's deontological ethics, and utilitarianism, as well as more recent ethical approaches such as John Rawls' and Amartya Sen's, all of which are relevant for understanding sustainability.

Aristotle's theory is called virtue ethics. This theory has moderation as the criterion and dispositions/habits as the space. The main idea is for the human being to train his habits and ways of acting in order to be virtuous. Virtue is to achieve an equilibrium between to extremes. Basically, this theory defends the moderation of habits and ways of acting between two extremes. Aristotle considered that individuals generate ways of acting and it is really hard for man to leave a given mode of being. The next theory is not focused on actions, but instead, on intentions.

The ethical theory of Immanuel Kant has universality as criterion and the maxim of the will as the space. For Kant, someone is moral if that someone is rational and forgets his emotions. To Kant, the focus of analysis is the intentions that humans have behind their actions, not necessarily the consequences of the actions taken. Intentions are only morally acceptable if individuals can accept that the maxim of the will behind the action can become a universal law. The next theory focuses on the consequences of the actions and not on the intentions behind them.

Jeremy Bentham and John Stuart Mill are the founders of an ethical theory called utilitarianism. Utilitarianism has maximization of the sum as the criterion and individual utilities as the space. According to utilitarianism, the focus of analysis is the happiness that actions bring to individuals. This theory focuses on the consequences of the actions taken. This theory is extremely influential in the neoclassic economic school where happiness is considered subjective while using utility levels as the unit of measure and assuming that individual always want more happiness, or, more utility. An action is considered ethical if it maximizes the sum of the utility levels of all individuals. The next theory focuses on giving liberty to humans and protecting individuals on more vulnerable situations.

John Rawls (1971) created an ethical and a political theory that has maximin as the criterion and primary goods as the space. Rawls' theory follows two principles: the liberty principle and the difference principle. The liberty principle promotes the maximum level of liberty to all individuals, however it has to be equally distributed among everyone. The difference principle tell us to maximize the situation of the individual that is in the worse situation. Basically, an action is ethical if the person who is worse off is in a better situation in terms of the primary goods he owns, independently of the inequality among individuals, where primary goods include income, wealth, rights, liberties, opportunities, and the social bases of self-respect. The next theory under analyses also recognizes the importance of guaranteeing equal levels of liberty to all individuals.

Amartya Sen (1992; 1999) developed an ethical theory that has equality as the criterion and human potentialities as the space. According to this theory, an action is ethical if it promotes equality of human capabilities. This theory has a close relation to the capability approach of Sen which will be developed further on.

These are some of the ethical theories that are relevant for an analysis of economics and development. According to these theories, development can have different goals and can be achieved by different strategies with different focuses. They must be kept in mind when addressing the three dimensions of sustainable development (economic, social and environmental).

In the next chapters, we will answer to the research question of this thesis: "How do economic theories influence the concept of sustainable development and the strategies used to achieve it?" This will be done by exploring the three dimensions of sustainable development (economic, social and environmental). We will cover theories, currents and important concepts that fit under each of these three dimensions and establish relevant connections between these topics

and the economic theories seen before. The first sphere of sustainable development that we are going to explore is economic development.

Chapter 3
Economic Development

Now that we recognized the importance of ethics to sustainability and sustainable development, as well as its loss along the history of economic thought, we can have a better perspective of the first sphere of sustainable development, economic development. Under this sphere, we will focus our analysis on four groups of economic development theories: theories of stages of economic growth, theories of structural change, theories of international dependence and liberal theories.

1. Theories of stages of economic growth

According to this group of theories, development and growth processes are complex and integrated so we cannot understand one without the other (Todaro, & Smith, 2012). In order to understand the development and economic growth processes of a country, we need to study the country as a whole. Walt Rostow was an economic historian born in 1916 who created a model that follows these theories, more specifically, Rostow developed the linear stages theory of economic development in its famous book Stages of Economic growth: A non-communist manifesto (Rostow, 1962).

According to Rostow's (1962) model, the processes of economic growth and development of a nation should be studied as a sequence of historical phases (Todaro, & Smith, 2012). Considering that every country needs to be studied as a whole, as well as each historical evolution process, and both of them are extremely complex, the best way to analyze it is to divide the historical evolution in stages and study the stages as a whole. To understand a certain historical stage, there is a need to consider multiple structures, including social structures, political structures, economical structures, technological structures, amongst others. Having this in mind, we need to understand how these diverse structures lead to a certain stage of the historical evolution process of development and economic growth (Todaro, & Smith, 2012).

In the linear stages theory of development of Rostow, developing countries pass always through five distinct stages sequentially: traditional society, preconditions for take-off, take-off, drive to maturity and age of mass consumption (Todaro, & Smith, 2012). In the first stage, traditional society, agriculture activity is done on a subsistence level and there are no savings or investments. In the second stage, preconditions for take-off, there are improvements in the agricultural activity, more specifically, the mechanization of the agricultural processes. With this, it is possible to obtain economic surpluses and savings begin to grow. In the third stage, take-off, there is an increase in manufacturing, political institutions start to develop and savings continue to increase. In the fourth stage, drive to maturity, savings stabilize and the process of growth expands to other sectors. We can also observe technological improvements. In the last stage of development, the age of mass consumption, output levels are driven by consumption and economic activity shifts to the third sector. Rostow forecasted that the length of the economic growth and development processes would be around forty to sixty years (Todaro, & Smith, 2012).

In this theory, sustainability is not discussed as a problem. It is simply assumed that societies progress through a series of linear stages from a traditional society to a mass consumption society, without considering the implications of this transition for sustainability. Besides this, according to this theory, all developing countries pass through the same process of development. This can be questioned given Kuznets' (1955) studies: developing countries nowadays face different challenges when compared to the challenges faced by developed countries. If the challenges are different, different measures will be applied to overcome them and the processes of development will probably be different. Also, the internal dynamics through which this transition takes place are left aside, and are analyzed in more detail in structural change theories, as explained below.

2. Theories of structural change

According to theories of structural change, economic development can be analyzed through the comprehension of the evolution of the internal structure of the economy (Todaro, & Smith, 2012). Arthur Lewis was a British economist born in 1915 that worked on the field of development economics and won a Nobel Memorial prize. Arthur Lewis (1954) developed a model that fits within the theory of structural change, and a similar model was published in the same year by Amiya Dasgupta (1954)

In Lewis' model, the economy is divided in two sectors: the rural sector and the urban/industrial sector; so we have a dualistic economic structure (Todaro,

& Smith, 2012). Lewis defended that by studying the dynamic relation between these two sectors, we can understand the process of economic development. The rural sector has as its main characteristics: to be overpopulated; its agriculture is practiced on a subsistence level (there is no economic surplus in the agriculture activity); the marginal productivity of labor is zero, meaning that it is indifferent to hire another worker because production will not increase any further. The urban/industrial sector has one main characteristic: it presents high productivity levels, meaning that by hiring another worker production will increase. Lewis identified a pattern between this two sectors: workers will move from the rural sector to the urban/industrial sector due to the higher productivity levels on the last sector. These workers will pass from having zero marginal productivity (in the rural sector) to positive marginal productivity levels (in the urban/industrial sector). Due to this, there will be an increase in the overall productivity levels, leading to a higher output (Todaro, & Smith, 2012).

Lewis' model raises a question: will migration from the rural sector to the urban/industrial sector continue if we have unemployment in the urban/industrial sector (Todaro, & Smith, 2012)? Michael Todaro was an American economist that worked on the field of developing economics and gave an answer to this question. In the Harris-Todaro (1970) model, workers migrate from the rural sector to the urban/industrial sector if they expect that their income in the urban/industrial sector will be higher than their income in the rural sector. The expected income in the urban/industrial sector is determined by the multiplication of the probability of finding a job with the income received on that sector (Todaro, & Smith, 2012).

Although structural change theories address in more detail the internal structure of the economy, covering the relevant dynamics, they do not address problems of sustainability posed by the migration from the rural sector to the

urban sector. The migration from the rural to the urban sector can hamper the integrated economical, social and environmental development of a country. Concerns with sustainability, such as environmental problems concerning the depletion of resources in developing countries, and other economic and social problems regarding sustainability, appear in more detail in theories of international dependence, to be now addressed.

3. Theories of international dependence

According to the theories of international dependence there are countries dependent of others which are in a dominant position (Todaro, & Smith, 2012). A good example of these theories is the neocolonial dependence model that follows Marx's thoughts about this subject.

Karl Marx was a German economist born in 1818 who inspired the Marxian economics school. Marx defended that only a small number of individuals own the capital of a country (Marx, 1999). These individuals appropriate most of the surplus value generated by labor leaving only a small part of this value to be delivered to workers in the form of salaries (the effective return of their work). However, capitalists depend on workers in two different ways: they need workers for the production process and they need workers for the consumption process of the goods produced. Since salaries are low and do not include the complete surplus value created by the labor activity, we will have crises of low consumption and over production. In other words, workers will not have enough purchasing power to buy all the production because some of the value they should be receiving is retained by the capitalists. Another problem is the

mechanization of the production process. With the mechanization of the productive process, we need more capital and less labor. However, it is labor that creates profit, not capital. This evolution turns the productive process less profitable, or in other words, decreases profit rates (Marx, 1999).

According to the neocolonial dependence model, inspired in Marx, in order to have economic development, international trade is based on relations of dependence between groups of countries (Todaro, & Smith, 2012). On one side, we have developed countries (capitalists) that sell their production to developing countries creating a dependence on their production and consumption habits. This is a way to solve the problem of low purchasing power of national buyers, present in Marx's theory. Besides this, developed countries use the work force of developing countries where wages are lower in order to increase profit rates. This is a way to solve the problem of the mechanization of the production process and the respective decrease of the profit levels, present in Marx's theory. Besides, it also increases the value capitalists can appropriate from labor activity. In order to establish these relations, a group of developed countries (the center) creates power relations over a group of developing countries (the periphery). These power relations are kept through the manipulation of the local elites of the developing countries, more specifically, the elites are rewarded if they create policies that favor this dependence and power relations (Todaro, & Smith, 2012).

According to this model, the development of the center is attained by the use of the periphery's human and natural resources. While the center is developing more and more, the periphery has less space to grow and develop due to its inferior positioning on the power relations established. This process of development can be considered ethically wrong if we follow Amartya Sen's ethical theory. This process does not help fostering a greater equality of human capabilities. Instead, it increases the human capabilities of individuals that live

on the center and of the periphery's elites since they are rewarded for promoting dependence relations. Dependency theories are critical of the globalization process, in contrast with liberal theories, which regard the expansion of world markets as a positive phenomenon, for the reasons to be now explained.

4. Liberal theories

Liberal theories defend that in order to have economic growth and development we need to have a market economy (Todaro, & Smith, 2012). These theories advocate the existence of a free market because: we must have freedom in economic transactions (ethical reason) and a market economy leads to higher economic efficiency levels (economic reason) (Hayek, 1948; Todaro, & Smith, 2012). These theories are associated with the Austrian Economic School. Authors of this school defend that in order to have a better functioning of the economy we need a decentralized mechanism, like the market, because all the relevant information to the functioning of the economy is decentralized. According to these authors, like Ludwing von Mises or Friedrich Hayek, it is not possible for a central entity, like the state, to gather all the relevant information to the functioning and coordination of the economic activity in a country (Hayek, 1948; Todaro, & Smith, 2012). Public Choice Theory authors like James Buchanan (1954) defend that the State agents will only follow their own interests and will not focus on the public interest or on the general objectives of the population (Todaro, & Smith, 2012).

There is a connection between the liberal theories and classical economic thought, more precisely, with Adam Smith and David Ricardo work. Adam Smith argued that when countries open the doors to international trade, there are economic advantages (even though the two countries that establish the trade may not have equal advantages) (Smith, 2007). Smith defends that global economic trade leads to a higher world wealth. Adam Smith explained how commerce activity leads to higher specialization levels at work and to the division of labor. These two factors strengthen the production of certain products in a country and lead to achieving absolute advantages in their production in relation to other countries. A country has an absolute advantage over other countries in the production of a certain product if it is more efficient in its production, or in other words, if it is able to produce a greater quantity of the good per units of factors of production used. Adam Smith, with its absolute advantage theory, defended that for countries to increase their wealth they should produce the products in which they have absolute advantages and export them, while they should import the products in which they do not have absolute advantages (Smith, 2007). Adam Smith theory had an important limitation: for countries to export they need to have absolute advantages on the production activity of the goods. What should a country do if it does not have any production process with an absolute advantage? David Ricardo answered to this question with the relative or comparative advantage theory (Ricardo, 1817). According to Ricardo, a country that has no absolute advantages in the production of any of its products will produce and export the goods in which it has a relative or comparative advantage. A country has a relative advantage in the production of good X in comparison to good Y when the relative cost of producing X is lower than the relative cost of producing Y. This means that the country is more efficient in the production of X when compared to production of Y. According to Ricardo, each country should produce and export the goods

in which it has relative or comparative advantages in the production processes (Ricardo, 1817).

The world opened the doors to international trade between 1840-1870 (Cameron, 1987). This period was marked by: the elaboration and expansion of Adam Smith and David Ricardo theories; a good global economic phase; the second phase of innovations with improvements in the transports and communications activities worldwide. Since that moment, international trade has been increasing and we have been witnessing the globalization phenomenon. This phenomenon makes countries more dependent from each other, especially in their economic activities. There is empirical evidence of an increase of income inequality within developed countries while the economic activity has been integrating and developing with more intense international trade relations.

Even though there are economic and ethical reasons to believe that markets are the best way for the economic system to function, the globalization phenomenon proved that the economic development has not occurred equally among nations resulting in income inequalities between developed nations. Both Adam Smith and David Ricardo observe economic advantages in opening the doors to international trade, defending that it enables higher world wealth levels. Now, the question is how can we distribute this higher world wealth levels more equally among all nations involved in the international trade. This take us back to John Stuart Mill focus on improving the distribution of wealth through different social institutions.

Liberal theories bring us an ethical concept important for development, freedom. Freedom is especially important in Amartya Sen development theory which we will explore on the next sphere of sustainable development, social development.

Chapter 4
Social Development

Under the second sphere of sustainable development, social development, we will focus our analysis on two main subjects: redistribution and the capability approach of Amartya Sen. Redistribution is an important ethical matter that can contribute to welfare and has an impact in the economic growth of a nation. Economic authors have different perspectives over the influence of distribution on the economic growth of nations. Some of these perspectives will be explored in this section. The capability approach of Amartya Sen is a development theory focused on human freedom and on human capabilities. We will cover the Amartya Sen theory and highlight the return to the classical economic theory it brings.

1. Redistribution, growth and development

Distribution is an ethical matter with a high impact on economic growth so there is a need to understand distribution's impact on sustainability integrating both an ethical as well as an economic perspective (Martins, 2009). Classical authors, like Smith, Say, Ricardo, Malthus and Mill, defend that savings are used in investments which lead to an accumulation of capital (Martins, 2009; Smith, 2007). Higher levels of capital lead to higher economic growth. According to the neoclassical models, a higher level of savings lead to higher production levels, even though economic growth in Solow model is only determined by technical progress (which is an exogenous variable) (Martins,

2009; Solow, 1956; Solow, 1957). With increases in inequality of income, a country will have more savings because individuals with more income have a higher propensity to save (Martins, 2009). Increasing savings lead to more investments and higher production levels. A similar model was published in the same year as Solow's (1956) by Trevor Swan (1956) – see Barro and Sala-i-Martin (1999) for a discussion. According to the neoclassical model (from Solow and Swan) and the classical authors Smith, Say, Ricardo, Malthus and Mill, income inequality leads to higher production levels or higher economic growth rates, respectively.

A different conclusion was reached by John Maynard Keynes, who was a British economist born in 1883 who wrote one of the most influential books of the 20th Century called The General Theory of Employment, Interest and Money (Keynes, 1936). Keynes brings us a different perspective of the influence of distribution in economic growth that we will now explore (Martins, 2009). Keynes defended that a more equal distribution of income has a positive effect on the output level of an economy. According to Keynes, higher effective demand levels lead to a higher output, when there is unemployment. Effective demand is composed by consumption and public/private investment. When income is distributed more equally between individuals, the individuals that before had low income levels will be beneficiated. These individuals have a higher marginal propensity to consume, so there will be an increase in consumption. Higher consumption leads to an increase of effective demand which will have a positive influence on production. In Keynes' theory, there is compatibility between the ethical question of distribution brought by Sen and the economic sustainability problem (Martins, 2009).

According to the theory elaborated by Keynes, even though a more equal distribution of income leads to lower savings as a proportion of output, there will be no decrease in investment, as the classical and neoclassical authors

defended (Martins, 2009). For Keynes, investment levels determine the savings level and a more equal distribution of income does not lead to low investments. Keynes defended that when there is an increase in savings, they can be hoarded and they do not necessarily turn into high investment or product levels. The investment level is determined by the difference between the marginal efficiency of capital (return of capital invested) and interest rate (opportunity cost of investing). The investment level then leads to a certain output that determines the savings level. The final savings are compatible with the investment and output of that country (Martins, 2009).

Nicholas Kaldor and Joan Robinson, two Keynesian economists, explained the process by which savings get adapted to different investment levels (Thirlwall 2002; Martins, 2009). According to Kaldor and Robinson, an increase in investment leads to higher prices (Thirlwall, 2002). However, the wages do not increase at the same rate because they are conditioned by institutional questions. With this, there is an increase in the profits when compared to wages. The propensity to save is higher for people that receive profits than to those who receive wages. Finally, we have an increase in savings that was determined by the initial positive movement of investment (Martins, 2009).

Concluding, to the classical and neoclassical authors there are incompatibilities between the economic and social spheres of development and sustainability because a more equal distribution of income has negative effects on economic growth or output levels (Martins, 2009). In the Keynesian theory there is compatibility between the social and economic spheres of development and sustainability, as well as its ethical perspective, thus enhancing the importance of a more equal distribution of income since it guarantees certain demand levels and consequently economic growth (Martins, 2009).

These are two opposing theoretical opinions about the compatibility between the economic and social spheres of development. In order to get a better

perspective over this subject, we will now explore the empirical work of Simon Kuznets (1955) about the effect of income distribution on economic growth. Simon Kuznets was a Russian economist born in 1922 who dedicated his life to the collection and organization of the United States national income accounts and elaborated empirical analyses of business cycles. Kuznets was one of the first economists working in the field of development economics. One of Kuznets' most important discoveries was that developing countries nowadays face different challenges compared to the challenges that developed countries faced on their developing process. Another important discovery made by Kuznets was the inverted U-shaped relation between income inequality and economic growth (Todaro and Smith, 2012). The inverted U-shaped relation between income inequality and economic growth tells us that: income is more equally distributed in countries with lower output levels per capita; income is more unequally distributed in countries with average output levels per capita; income is again more equally distributed in countries with higher output levels per capita. But the inverted U-shaped relation between income inequality and economic growth is simply a statistical correlation between different countries. Countries with lower product levels per capita do not have to follow the same pattern than actual developed countries, especially if they face different challenges. Concluding, Kuznets (1955) did not find out any empirical evidence that proved that it is necessary to have income inequality in order to have economic growth.

Thus, Kuznets' analysis does not undermine Keynes' perspective on this matter: a more equal distribution of income leads to economic growth, at least, when we have average output levels per capita. If this is true, then societies need to focus on the redistribution of income for economic and social reasons. Developed nations have high income inequalities and this diminishes the welfare of the lower social classes. Nowadays, safety systems are created to

protect the lower classes and some of the measures they use are focused on the redistribution of income. However, there is always space for improvements of the safety systems. We need to focus on the redistribution of wealth since all humans are equally important and in some cases, the dignity and human rights of the lower social classes are not protected neither guaranteed.

The next development theory that we are going to explore, the capability approach of Amartya Sen, highlights the importance of participating in economic activity which depends on income distribution and safety systems which are crucial to protect and help people to avoid vulnerable situations where their dignity and human rights are in risk. Amartya Sen's theory also comes to defend redistribution of income, and especially capabilities in general.

2. Amartya Sen and the Capability Approach

Keynes brings us an economic theory with an impact on social development focused on the demand side of the economic system, while Amartya Sen brings us a development theory focused on the supply side of the economic system, more specifically, focused on the human capabilities. Amartya Sen is a well-known economist from the XX and XXI century that won the Memorial Nobel Prize in 1998 with contributions to the field of welfare economics. Amartya Sen developed the Capability Approach where it is stated that we can reach development by expanding human capabilities and human capabilities are themselves the main goal of development (Martins, 2009; Martins, 2013). For Sen, development is related to increases in welfare. Sen (1992; 1999) identified two types of capabilities: achieved functioning (what someone is and does) and

potential functioning or capabilities (which gives freedom to choose). With this, Sen is attributing freedom to humans, since they are the ones that choose to turn the potential into reality or not. The key point of the capability approach is to promote opportunities for humans and strengthen them with the capability to expand their potential. He takes freedom into consideration because he recognizes that human preferences can change, so by making a choice in the present humans can be restricting theirs or others' welfare in the future. Human freedom is also considered an element that brings welfare to humans. Concluding, for Amartya Sen development is reached with human liberty in the form of real potential opportunities and real potential opportunities are the main goal of development (Martins, 2009; Martins, 2013).

Sen identified a group of instrumental freedoms that are a means to and final goals of development: political liberties (being able to take a role in the decisions of the society directly or indirectly); economic facilities (being able to participate in economic activity depending on the markets and income distribution); social opportunities (access to public goods and services such as health and education services); transparency guarantees (which enable trust and exchange of information in social relations); safety system (existence of social security systems that protect people and help them to avoid very vulnerable situations) (Martins, 2009).

Using the capability approach framework as a reference we can see that it is economically viable and sustainable to use social policies in developing countries (Martins, 2009). This happens because social services need more labor than capital to function. The wages on developing countries are usually lower, while the prices of capital are usually similar across countries. These factors create a low cost structure that makes it viable to invest in social services in developing countries since they are in an initial phase of their development and in the beginning of their economic growth process. Social policies have another

important advantage: they use human capital to enhance the development and not exhaustible resources which enhances the value of labor instead of contributing to the exhaustion of not renewable resources. These are ethical and economic crucial reasons for investing in social policies in developing countries (Martins, 2009).

The capability approach takes us back to some relevant points of the classical economic theory and gives us answers to some of its unanswered questions (Martins, 2013). A summary of the classical economic theory will be developed below. For now we will focus on the relations between the classical economic theory and the capability approach of Amartya Sen. For classical economic theory, human beings do not always optimize their utility as in the neoclassical economic theory (Martins, 2013). Instead, they are creatures of habit that have the capability to adapt to different social situations and contexts and live on a customary standard of living. In the beginning of the development of the capability approach, Sen was concerned with the definition of the basic capabilities. Basic capabilities means the minimum level of capabilities that enable a way of living that respects human rights and guarantees a minimum welfare. This concept and its correct definition as well as development can answer to one crucial question of the classical authors. The basic capabilities can define the threshold above which a social surplus emerges, which is not necessary for the reproduction of the existing economic system while guaranteeing a customary standard of living. For classical authors, the threshold that separates the part of the social surplus that is not necessary to reproduce the economic system but guarantees a customary standard of living was already present in the concept of subsistence wages. Classical authors believed that wages are on subsistence levels because workers do not have bargaining opportunities, since in unemployment workers receive no wages, and workers cannot live without receiving wages. To classical economists,

wages can only increase beyond this level if the economy is growing and in order to increase production there is a need to employ more workers which leads to an increase in the demand for labor. Higher demand labor levels lead to an increase of wages above subsistence levels (Martins, 2013).

As we can see, the capability approach brings us a new way to look to development based on the classical economic thought where humans are creatures of habit. If we look to the world, people can live in very different ways and be satisfied with their conditions. This might happen because they are effectively used to their conditions, that is, they are accustomed to their standard of living according to their social and cultural backgrounds. When the goal of development and the means to achieve development are defined by expanding real potential opportunities, we are saying that we need to create opportunities for these creatures of habit to increase their welfare. They will not be always trying to have higher satisfaction levels, instead, with freedom, they will increase their welfare by turning potential opportunities into reality.

In this section, we were able to see how elements from classical economic theory and Keynesian theory give us a good basis for a development theory, even if further work is necessary regarding the compatibility between classical economic theory and Keynesian theory – see Geoffrey Harcourt (1981) on a possible way to make both theories compatible. In the last sphere of sustainable development, environmental development, classical economic theory will help us to focus on the scarcity problem of natural resources and will have a close relation to the strong sustainability concept which defends that natural capital cannot be substituted with manufactured capital.

Chapter 5
Environmental Development

When addressing the last sphere of sustainable development, environmental development, there will be two important analyses. The first one focuses on two different versions of economics as a social science: neoclassical economics and classical economics. These perspectives take us back to some relevant points of the economic theories exposed and to the capability approach of Amartya Sen. This analysis is relevant under the environmental sphere of sustainable development because it leads to different ways to understand the scarcity of natural resources. The second analysis is focused on two opposing currents: resource/environmental economics and ecological economics. They bring us distinct ways to comprehend the relation between the ecological and economic systems. These currents lead to two versions of sustainability, weak and strong, which state opposing perspectives over the substitutability of natural and manufactured capital.

1. Is economics a science of scarcity or surplus?

In order to answer this question, we will analyze two versions of economics as a social science: neoclassical economics and classical economics. In neoclassical economics, human well-being is measured according to subjective preferences, or in other words, subjective achieved utility (Martins, 2013; Robbins, 1932). The objective of neoclassical economics is to maximize the subjective utility of individuals because this theory considers that consumers are never satisfied and have a infinite desire for goods. For this reason, all goods are scarce (Martins, 2013; Robbins, 1932). We have seen a definition

which makes this really clear, the definition of economics from Lionel Robbins. This idea of scarcity makes us trivialize the problem of the scarcity of natural resources because under this theory, all goods are scarce, not only the natural resources (Martins, 2013). Under this theory, the value of goods depends on marginal utility, which will depend upon the scarcity of a certain good. This means that if a good is really scarce its value is going to be extremely higher when compared to a good that is not scarce because its marginal utility is also higher.

In neoclassical economic theory, the economic process is a one way channel, which starts with resources and ends in final consumption (Martins, 2013). There are no ethical considerations over distribution, for it is simply a mathematical question, which can be settled in terms of the laws on marginal productivity, as originally argued by John Bates Clark (1891). In terms of pricing, in neoclassical economics it was Marshall who formulated the dominant approach to supply and demand theory (Marshall, 1920; Martins, 2013). According to him, supply and demand curves determine the prices and quantities of a commodity exchanged in a certain market. Taxation, in the neoclassical economic theory, is based on these curves, on the idea that they are able to move independently and it is possible that everything else relevant for the analysis remains constant (*ceteris paribus* hypothesis). This enables the formulation of the notion of consumer's surplus and producer's surplus used by neoclassical authors. It is on these surpluses that taxation enters into place. Let us see how both these surpluses arise in a geometrical way through the demand and supply framework. The price of a commodity is equal to the marginal utility of the last commodity exchanged. All other commodities exchanged have higher marginal utility levels. The difference between the different marginal utility levels and the lower price gives rise to the consumer's surplus. The same logic is present in the producer surplus. The price of a commodity is equal to

the marginal cost of the last commodity exchanged. All other commodities exchanged have lower marginal cost levels. The difference between the higher price and the different marginal cost levels gives rise to the producer surplus. The social surplus, for Marshall, is the sum of the producer's surplus and the consumer's surplus. This concept is determined by a marginal analysis and presupposes a generalization of the notion of scarcity always present in the neoclassical economic theory (Martins, 2013).

The classical conception is totally different. On the one hand, individuals are seen as men of habit, whose levels of consumption are adapted to social situations and standards of living (Martins, 2013). The second major difference is that economics is seen as a process centered on the production and distribution of a social surplus, where the social surplus (in contrast to Marshall's social surplus) is the part of the production not needed to reproduce the existing economic system. Classical authors see the economic system as circular process, where they study the production and allocation of the social surplus, including the activities of production, distribution and consumption. The use of the social surplus determines the evolution of the economic system (Martins, 2013). If the social surplus is used on luxury goods, it leads to the stagnation or decline of economic growth. If it is used on productive activities, it leads to economic growth and to an expansion of the economic process. The value of each good is measured according to its cost of production, or in other words, according to the human labor employed to produce the good, since costs of production are measured in terms of human labor (Martins, 2013). Now that is clear how classical economists elaborate a surplus economic theory, we can see that for them it was easier to focus on the scarcity of natural resources. Under the classical economic theory, natural resources are the only ones which present scarcity as a characteristic, besides exceptions such as works of art (Martins, 2013; Ricardo, 1817). The classical authors studied the implications of

the use of natural resources on the economic system while taking scarcity to be a key characteristic of natural resources, not of all commodities.

For the classical authors, the prices are determined by the cost of production and they gravitate around it (Martins, 2013). Redistribution can be done in an effective way through taxation, according to David Ricardo (Martins, 2013; Ricardo, 1817). Ricardo believes that if we apply taxes to luxuries, rents or the lands that yield rent, we are able to redistribute the social surplus without affecting the circular process of reproduction of the social surplus. This should be done instead of taxing raw products, basic goods and wages. Taxes on these items will affect its prices which are the basis of the circular process of reproduction of the social surplus on economics. This idea gives us an important insight: it is possible to improve standards of living without compromising the sustainable process of reproduction of a social surplus through redistribution with the right taxation measures and there is no need for constant economic growth (Martins, 2013; Ricardo, 1817).

Neoclassical economic theory sees economics as a social science of scarcity, where the natural resources do not deserve any special attention because all goods are considered scarce. However, the world is now facing a major challenge in terms of preserving natural resources or non-renewable resources. If we do not change our consumption and use habits of this type of resources, we can quickly lead to their extinction. This can make us question the trivialization of this problem inherent in neoclassical economics and turn us to the classical economic theory. Under the classical economic theory, natural or non-renewable resources are the only ones that are scarce, and the classical theory has already studied the implications of their use in the economic system.

Under neoclassical economics, distribution is either not studied, or it is simply a mathematical question or problem (Clark, 1891). However, we have seen before how the distribution of income impacts on welfare and economic

growth in the classical perspective. According to the classical theory, distribution is a highly relevant part of economic systems for two main reasons: first, there is a social surplus to distribute; and second, its distribution determines the evolution of the economic system. It is difficult to see how economic, social and environmental problems can be all addressed without focusing on distribution. Without focusing on distribution, the solution to economic and social problems would be endless economic growth, which is problematic, to say the least, from an environmental point of view.

In fact, neoclassical and classical economic theories bring us also different ways to look at the relation and dynamics between the economic and ecological systems, to which we will turn now.

2. Resource and environmental economics vs ecological economics

Resource and environmental economics emerged after the second world war as sub disciplines within neoclassical economics (Beder, 2011). At this time, pollution levels were growing around the world and that was the reason for the emergence of these fields. In environmental economics, economic systems are not affected by internal environmental constraints, so there is no need to analyze them. Natural and environmental constraints affect markets because it is impossible to have property rights over environmental benefits considering its indivisibility. Negative effects of economic activities over the environment and nature are only treated as negative externalities. Pollution was a case like that. An externality is a market imperfection where the economic act of

production or consumption of an individual or a firm impacts the welfare of others positively, or negatively, and there is no financial economic benefit or payment for those who cause the impact (Beder, 2011). Unlike environmental economics, resource economics (or natural resources economics, as it was sometimes called) focused not so much on externalities such as pollution, but on the depletion of natural resources. But both disciplines were merged into resource and environmental economics (or environmental and natural resources economics, as it is sometimes called), following a neoclassical methodology (Pearce, 2002).

Under resource and environmental economics, the process of economic modeling started to include resource depletion and pollution (Beder, 2011). This was done by looking to the natural environment as assets and resources which could be exchanged. This means that natural commodities can be exchanged with other commodities and they do not have any special constraint effect over the economic activity and markets. Nowadays, environmental economists believe that markets have the ability to allocate environmental commodities in an efficient and socially optimal way (Beder, 2011). This is done by attributing to them a market price under the supply and demand framework where individual preferences enter into action. With this, environment and nature are included in the market and are a matter of analysis on market decisions. Pollution growth and environmental degradation happens due to failing to price the environmental commodities (Beder, 2011). Hedonic pricing or contingent valuation are techniques often used to mimic market prices for environmental characteristics (Pearce, 2002).

Ecological economics, in contrast, gained prominence in 1987 with the creation of the International Society for Ecological Economics (Beder, 2011). In the beginning, the idea was to join neoclassical environmental economics with ecological studies but it ended up being more pluralistic. The focus of ecological

economics is on determining a sustainable way of managing the relationship between the economic and ecological systems. For these economists, the economy is a subset of the Earth which is a finite and a non-growing system where the economic system is a part of the ecological system. Under this current, it is accepted that there are physical limits to material growth due to nature and environmental constraints (Beder, 2011).

Ecological economics is concerned with philosophical and ethical issues and it recognizes non-human, social and community values, as well as, social and cultural contexts (Beder, 2011). A clear example is the equity concerns under ecological economics with the study of footprints from different nations. On this study it was discovered that bigger and more powerful nations have larger footprints per person which means that they are using a larger portion of resources than they should (Beder, 2011). This current brings novelties to economic analysis where social, political and ethical concerns are introduced.

Considering the depletion of natural and non-renewable resources we can observe in the world, we need to understand how to manage and use them in a responsible and efficient way. If we use these resources to produce goods, they become products in our economic markets. Their scarcity and non-renewability needs to be taken into consideration when we decide to use them in our production processes. Ecological economics is a current that accepts and respects the material growth limitations due to the nature and environmental internal constraints. Ecological economists argues that when environmental economics treats natural resources as commodities that can be exchanged in the market, it should accept the internal environment constraints effect on economic systems.

These two currents lead to different versions of sustainability: weak sustainability emerging from resource and environmental economics and strong sustainability emerging from ecological economics. Weak sustainability

comes from the neoclassic economic theory, more specifically from Solow and Harrtwick (Davies, 2013). The defenders of weak sustainability believe that capital produced by humans is more important than natural capital and it is possible to substitute the second with the first one. To weak sustainability authors what matters is to keep capital from generation to generation, independently of the type of capital kept (Ayres, Bergh, & Gowdy, 1998). This means that what matters is changes in aggregate capital, including natural and manufactured capital. Under weak sustainability, the objective is to maximize well-being using mathematical models and measuring well-being through utility functions. Usually, sustainable development implies keeping at least the same amount of well-being to the next generation, or in other words, the same utility level. Some models use proxies of utility in order to be more simple (Ayres, Bergh, & Gowdy, 1998).

Weak sustainability is related to neoclassical economic theory because its theory of value is defined by the relative scarcity of capital, independently of being natural or manufactured capital (Martins, 2016). The theory of value of neoclassical economics uses as unit of measure a subjective mental metric by measuring ecological concerns according to their impact on utility or subjective human preferences. Besides that, neoclassical economics takes into consideration ecological problems or constraints with ad hoc assumptions and does not introduce them into the analytical core of neoclassical theory (Martins, 2016).

Now changing to the notion of strong sustainability, here the natural capital cannot be substituted with capital produced by humans (Davies, 2013). In this notion of sustainability it is necessary to keep certain levels of the different types of capital (Ayres, Bergh, & Gowdy, 1998). There are two explanations for this. Strong sustainability defenders value natural capital as essential and believe that it is not possible to substitute it with capital produced by humans

or physical capital. On the other hand, they recognize the value of natural capital as unique and the irreversibility of some natural processes (Ayres, Bergh, & Gowdy, 1998).

Strong sustainability version can be related to the classical economic theory and the circular economic process concept (Martins, 2016). This happens because in this approach, ecological concerns can be taken into consideration by measuring their impact in the circular process of reproduction of the biophysical and socio-economic systems. For the classical theory of value is based on objective entities as land and labor time and these are conditioned by the capabilities of the ecosystem's biophysical processes, as it was the case for the classical authors (Martins, 2016).

According to the neoclassical economic theory and weak sustainability concept, natural capital can be substituted by manufactured capital. However, natural capital has scarcity as an inherent characteristic, while manufactured capital does not have it, as well as other specific characteristics. Besides that, according to the neoclassical economic theory and its weak sustainability notion, we measure the impact of using natural and non-renewable resources through utility, which is a subjective measure. However, as we can see in the contemporary world, there are physical effects of using natural capital. These effects are not measured in physical terms in neoclassical economic theory and its weak sustainability notion. Using the classical economic theory and its strong sustainability concept, in contrast, we can measure the impact of using environmental resources in the circular process of reproduction of the biophysical, social and economic systems. Classical economic theory takes into account the capabilities of the biophysical processes, including the scarcity problem inherent in natural capital in in the very internal structure of its theory of value. This is done by developing a theory of value that depends upon objective entities like land and labor time (and even labor is sometimes seen by

the classical authors in terms of the quantity of land necessary to sustain the laborer during the production process), which are conditioned by the capabilities of the ecosystem's biophysical processes (Martins, 2016).

We have now covered the three spheres of sustainable development: economic, social and environmental. We were able to explore several theories, currents and concepts under each sphere, while discuss the influence of economic theories on them. These are the theoretical bases that support the world vision regarding the concept of sustainable development and strategies to achieve it nowadays.

Conclusion

The main purpose of this thesis is to present a theoretical discussion about the influence of different economic theories on the concept and strategies to achieve sustainable development. According to this, we set the following research question: "How do economic theories influence the concept of sustainable development and the strategies used to achieve it?"

Throughout the evolution of economic thought, we have classical authors defending that economic growth process can be a sustainable positive cycle (Smith and Say), while others believe there is a limit to this process (Ricardo and Malthus). For Mill, we should be focusing on the distribution of wealth through different social institutions rather than focusing on economic growth. With the evolution from classical to neoclassical authors we observe the loss of ethical analysis, one of the origins of economics, with the focus switching to engineering, the second origin of economics (Sen, 1987). However, ethical considerations are a crucial factor when looking and searching for sustainability and sustainable development. Sustainable development has inherently in it ethical concepts, values and concerns, and even a discussion of its final goal can be considered an ethical discussion.

Under the sphere of economic development, we should start by looking to two groups of theories amongst the ones studied above: the theories of international dependence that show us a way to achieve economic development which solves the problems noticed in Marx's theory; and the liberal theories which have a clear connection with Adam Smith theory of absolute advantages and David Ricardo theory of relative/comparative advantages, under the scope of international trade. On all economic development theories approached, sustainability and sustainable development are seen and approached in

different ways. We could see how none of them is perfect. By this we mean that all the theories leave behind some challenges that rise with economic development. However, by taking them all into consideration, we can have a better understanding of the process of economic development as well as its challenges.

In terms of the compatibility between the economic and social spheres of sustainable development with a focus on the distribution of income among individuals, we have two opposing ideas. Classical and neoclassical authors suggest that there is an incompatibility between economic and social sustainability because a more equal distribution of income has negative effects on economic growth and production levels, respectively. Keynes defends that there is compatibility among those two spheres since a more equal distribution of income guarantees certain demand levels and consequently economic growth. Considering the unequal distribution of income among individuals in developed nations and the negative effect it has on the welfare, dignity and respect of the human rights of the lower social classes, Keynes approach brings us some insights that can be relevant for the achievement of sustainable development.

Under the social sphere of sustainable development, Amartya Sen brings back the classical conception of the economic system with the capability approach. In the capability approach, Sen sees humans as creatures of habit that have the capability to adapt to: different social institutions, different contexts and live on a customary standard of living. Sen brings us the concept of basic capabilities which can define the threshold of the social surplus that is not necessary for the reproduction of the existing economic system while guaranteeing a customary standard of living. The final goal and means to achieve sustainable development is to expand real potential opportunities of humans. According to Sen, even if we give real potential opportunities for

humans to increase their welfare, they will not always try to increase their welfare. But with freedom, they can turn these opportunities into reality and be satisfied with it. The capability approach is a new way to approach development based on the classical economic theory that can be explored and brings us some relevant insights on how to achieve sustainable development.

Under the environmental sphere of sustainable development, we have two opposing versions of economics: neoclassical economics theory defending scarcity of goods as a general rule; classical economics theory defending the production of a surplus as a general rule. The first one trivializes the scarcity problem of natural resources. The second one enhances the importance of studying the management of natural resources. Besides that, neoclassical authors see the economic process as a one way channel, starting with resources and ending with final consumption, without any special considerations regarding distribution, which is mathematically determined through marginal productivity theory. In contrast, classical authors have a circular conception of the economic system where they study all the economic process, including distribution as a key aspect, rather than a secondary question. Classical economic theory gives us a more adequate basis to analyze the problems we are now facing concerning the depletion of natural and non-renewable resources. Besides this, it also involves distribution in its analysis, which is highly important considering its impact on welfare and economic growth.

Also within the environmental sphere of sustainable development, we have two opposing currents: resource/environmental economics and ecological economics. The first current emerged as two sub disciplines within neoclassical economics. According to these disciplines, economic systems are not affected by internal environmental constraints and natural environment is included in the economic models as assets and resources which can be exchanged. These disciplines believe in the market capability to allocate natural commodities in

an efficient and social optimum way. The second current has a clear focus on determining a sustainable way of managing the relation between economic and ecological systems. In this current, the economic system is a part of the ecological system, where the Earth is a non-growing system that has physical limits to material growth. This current brings pluralism to economic analysis where social, political and ethical concerns are introduced. Taking in consideration the exhaustion state of some natural resources on the world, we should start to accept and respect the material growth limitations due to the nature and environmental internal constraints.

These two previous currents bring us different notions of sustainability: weak sustainability and strong sustainability. Weak sustainability defends the substitutability between natural and manufactured capital while strong sustainability believes that these different types of capital are not substitutes. The first one is related to neoclassical economic theory because its theory of value is defined by the relative scarcity of capital, independently of it being natural or manufactured capital. Besides that, the ecological constraints are merely ad hoc assumptions measured according to their impact on utility levels. The second one is related with the classical economic theory because its theory of value is based on objective entities which are conditioned by the capabilities of the ecosystem's biophysical processes, such as land and labor. Besides that, ecological constraints are taken into consideration by measuring their impact in the circular process of reproduction of the biophysical and socio-economic systems. Classical economic theory and the strong sustainability concept take into account that natural and manufactured capital have different inherent characteristics while enabling the measurement of the concrete physical effect of using natural and non-renewable resources on the economic, environmental and social ecosystems.

There are three limitations on the theoretical research developed in this

thesis. We do not cover all economists in the history of economic thought, due to their large number. We do not cover all economic theories with an influence on the concept of sustainable development, as well as strategies to achieve it. We do not explore the practical implications of our study on the influence of economic theory on sustainable development, as well as strategies to achieve it. We had to restrict ourselves to a theoretical analysis and narrow the economic theories and authors under analysis due to the nature of the work being presented here. However, this thesis brings us an overview of the relevant connections between economic theories and sustainable development, covering its three spheres.

For future research, it would be relevant to study the practical implications of the influence of economic theories on the strategies to achieve sustainable development, more specifically, under the scope of social, economical and environmental policies, as well as the social projects to be developed and implemented. This can bring insights to politicians, entrepreneurs, and others, on how to achieve sustainable development, more specifically, on how to achieve the 17 objectives defined on the Agenda of 2030 for Sustainable Development. Indeed, future research should explore how the world sees and looks to achieve sustainable development nowadays. In order to do this, a possibility is to discuss the concept of sustainable development and summarily present the Agenda of 2030 for Sustainable Development.

Sustainable development appeared within the context of forest economics and several definitions have emerged since then (Figuières, Guyomard, & Rotillon, 2010; Pezzey, 1992). It is clear that the concept has different meanings to different people, depending a lot on their context (Giddings, Hopwood, & O'Brien, 2002; Pezzey, 1992). However, we can identify three common features in the definitions: the long term aspect; the idea of intergenerational justice; and how sustainability is seen as a constraint in mathematical models, instead of

searching for optimal solutions (Pezzey, 1992). Usually, the concept involves three areas: economy, environment and society, which are interconnected (Giddings, Hopwood, & O'Brien, 2002). Sustainable development is a way to achieve an equilibrium in the three areas, managing to solve any conflicts that may arise between them. Sustainable development was once defined as: environmental protection, economic growth and social equity, focusing on the challenges of intergenerational equity (Figuières, Guyomard, & Rotillon, 2010). However, in this thesis we are following the sustainable development definition of the Brundtland Report: meeting "*the needs of the present without compromising the ability of future generations to meet their own needs*" (World Commission on Environment and Development, 1987, p.16).

Amartya Sen recognizes the relevance of some features that appeared with the Brundtland Report regarding sustainability and sustainable development: the concern with intergenerational justice having in mind each generation and the change of focus from resources to human beings (Sen, 2013). Besides the improvement seen, Sen defends the inclusion of freedoms because they have crucial value to people, as we have seen under the capability approach. With this inclusion, sustainable development is not only about the fulfillment of needs, it also includes the pursuit of our goals, objectives and commitments. This turns humans into creatures with capability to choose and not creatures simply led by their own needs (Sen, 2013).

In 2015, there was an agreement over the Agenda of 2030 for Sustainable Development (United Nations, 2015). All the world is now working toward 17 objectives defined and agreed by world leaders. These objectives are a common vision for the humanity and a social contract between worldwide leaders and people around the world. The 17 objectives are: "*end poverty in all its forms everywhere (1); end hunger, achieve food security and improved nutrition and promote sustainable agriculture (2); ensure healthy lives and promote well-being for all at all*

ages (3); ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (4); achieve gender equality and empower all women and girls (5); ensure availability and sustainable management of water and sanitation for all (6); ensure access to affordable, reliable, sustainable and modern energy for all (7); promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (8); build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (9); reduce inequality within and among countries (10); make cities and human settlements inclusive, safe, resilient and sustainable (11); ensure sustainable consumption and production patterns (12); take urgent action to combat climate change and its impacts (13); conserve and sustainably use the oceans, seas and marine resources for sustainable development (14); protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (15); promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (16); strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development (17)" (United Nations, 2015, p.14). Even though they seem too general, they are divided into smaller objectives with targets and means of verification, enabling them to be possible and verifiable. These targets use a diverse set of measures, both numerical and qualitative, where we can find different types of indicators. In all objectives there is carefulness in analyzing them in their multidimensional perspective, in order to guarantee a complete achievement of the main goal that was set. Because of this, we have indicators directly related to the goal (measuring the goal), others indirectly related to the goal (measuring the achievement of the goal through policies, services, or other measures) (United Nations, 2015). This Agenda is on practice at national, regional and global levels, in order to promote: accountability to citizens, cooperation at an international basis and

mutual learning with the sharing of the best practices. International understanding is extremely important in order to keep track of the new issues and shared challenges. The implementation of the Agenda of 2030 for Sustainable Development has a follow-up and a review looking to enhance and strength it, as well as guarantee that no country is abandoned during the implementation period (United Nations, 2015). This is briefly how the world is now working toward the achievement of sustainable development. These practical developments should be guided by further theoretical reflection such as the one outlined in this thesis, and the theoretical reflection outlined in this thesis should also be further elaborated in a more practical direction in future research.

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