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Reviewing the 17 Sustainable Development Goals: Importance and Progress

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Abstract
The United Nations introduced the 17 Sustainable Development Goals in 2015, aiming to tackle economic, social and environmental problems that exist in the world and to promote the concept of sustainability and sustainable development. This paper provides a comprehensive literature review regarding the background of sustainable development and each one of the 17 SDGs; an in-depth analysis of the problems addressed in each goal is provided and these problems' impacts in the world are identified. The importance of achieving each goal is highlighted, while recent data regarding the targets included in each goal are provided, as well as the mean changes of these data for the past few years, based on a trend analysis that we performed. An evaluation of the achievement of various targets is discussed; we highlight the need of improvement of various SDGs' progress, including the 4th, 11th and 13th SDG.

Keywords: Sustainable Development Goals; SDGs progress; sustainability.

JEL codes: I31; O44; Q01; Q56; Q58.

1. Introduction

The most common definition of sustainable development, that was given in 1987 in the United Nations' publication "Our Common Future", also known as the Brundtland Report, and is now commonly used to define the modern idea of sustainability, defines sustainable development as the "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*".

The basic concepts of sustainable development, as defined in the Brundtland Report, are:

- *"the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."* (WCED, 1987).

Sustainable development focuses on environmental protection, while providing economic and social development and welfare to present and future generations (Hansmann et al., 2012). The three interrelated concepts of sustainable development, or the main three pillars are: social sustainability, economic sustainability and environmental sustainability (Purvis et al., 2018). In these lines, Figure 1 depicts these interrelationships. Natural, human and economic capital should be all taken into consideration in each action or decision, in order to achieve responsible and sustainable development (Hansmann et al., 2012).

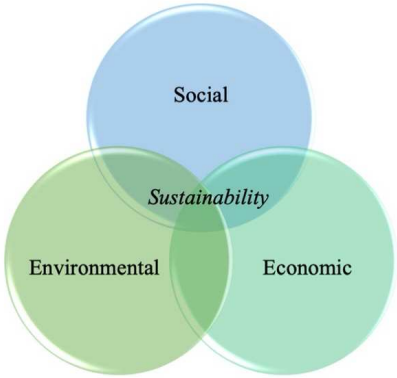


Figure 1: The three pillars of sustainable development

In the literature, more aspects of sustainability are often recognized as additional pillars, such as the institutional dimension, the cultural dimension and the technical dimension. Despite that, the three pillars are the most common and widely used approach when defining sustainability (Purvis et al., 2018).

Economic sustainability includes an economy with a production system able to satisfy the levels of consumption, while government and external debt are in manageable levels and sectoral balance is maintained, preventing damages in agricultural and industrial production. Social sustainability is mainly based on equity: equal access to health services, education, political participation, as well as gender equality. Environmental sustainability is based on environmental conservation and on the preservation of natural resources, ecosystems and biodiversity, relying more on renewable resources (Harris et al., 2000). These basic principles of sustainable development are now applied in a significant amount of countries and areas around the world (Rosen, 2017).

In order to promote and successfully create a world based on the principles of sustainability, it is important to consider and examine the factors that affect the development and progress of sustainable development. Some of these factors that have been identified in the literature are:

- The existence of a clear, universal definition about sustainable development, which will prevent misunderstandings regarding what sustainable development means and represents.
- The multidisciplinary nature that sustainable development has.
- People and communities' a ttitudes and support towards sustainable development.
- Peoples' needs, especially of those in developing and poor countries.
- Progress in technologies and tools, as well as in systems and ideas that promote and facilitate sustainable development (Rosen, 2017).

The past few decades, the concept of sustainability has attracted a worldwide attention and has been an issue extensively discussed by policy makers and decision makers, academics and experts. Sustainable development is now a part of every political agenda and a variety of goals and targets have been set, in order to make the world a more sustainable place for everyone.

This paper focuses on the 17 Sustainable Development Goals included in the United Nations' 2030 Agenda for Sustainable Development that was adopted in 2015. Our paper aims to extensively examine each one of the 17 goals, their importance and contribution to sustainability and present the evolution of key indicators that show the progress in achieving these targets, through a trend analysis that we performed and the mean change that we extracted throughout each time period, per region. In addition, based on these mean changes as well as based on the evaluation of the United Nations (2020a), we identify those areas where focus should be given by policy-makers globally.

2. Goals of Sustainability - Background

Even though the general idea of sustainability was present for centuries and has its roots in the 17th and 18th century, the modern concept of sustainable development seems to have emerged in the last years of the 20th century (Purvis et al., 2018).

In 1972, the United Nations Conference on the Environment was held in Stockholm and was the first world conference that focused on environmental issues. Even though the term "sustainable development" was not referred, Member-States agreed to address economic development and environmental protection as one issue (Mensah, 2019) and discuss the linkages between welfare, economic growth and pollution. The Conference led to the adoption of the Stockholm Declaration and Plan of Action, as well as to the creation of the United Nations Environment Programme (UNEP) (United Nations, 1972).

The definition of sustainable development that is widely recognized and used today was provided in the Brundtland Report. The Brundtland Report, that was published in 1987 by the United Nations, aimed to propose actions and strategies that would lead to sustainable development by 2000 and beyond. More specifically, the report focused on the promotion of cooperation among countries, using effective means and ways in order to address environmental concerns and protect the environment and to achieve common objectives, taking into consideration the linkages and interrelationships that exist among people, development and the environment. The report highlighted the links that exist between environmental degradation, poverty and inequalities and promoted a model of economic growth that is, at the same time, sustainable socially and environmentally (WCED, 1987). The Brundtland Report set the foundations that led later to the adoption of "Agenda 21".

"Agenda 21" was presented by the United Nations in 1992 at the United Nations Conference on Environment and Development in Rio de Janeiro. It was an action plan, aiming to create a global partnership for sustainable development. The main focus was given on the improvement of living standards in the world and the satisfaction of basic human needs, by taking into consideration the aspects of development and the environment. More specifically, Agenda 21 aimed to address and provide solutions for the issues of poverty, health access, consumption, pollution and deforestation, among others. Governments were the

most responsible for the proper implementation of Agenda 21, but international cooperation was vital for its success and the contribution of other organizations, either regional or international, was significantly important. Agenda 21 was a dynamic program that referred to various social, economic and environmental dimensions and included the main objectives and targets, as well as the necessary activities and means of implementation, in order to promote sustainability (UNCED, 1992). Making sustainable development a priority in the global community, Agenda 21 was described in the literature as the bible of sustainable development (Doyle, 1998).

Ten years later, in 2002 in Johannesburg, the World Summit on Sustainable Development (Rio+10) was held, aiming to review the progress that has been made in the world towards the implementation of sustainable development principles, as they were defined in Agenda 21 (Mensah, 2019). The Johannesburg Summit recognized that the key elements of sustainable development were the eradication of poverty, a change in the production and consumption patterns, as well as the protection and better management of natural resources. A commitment was made to undertake actions and promote cooperation for the successful implementation of sustainability principles (WSSD, 2002).

The United Nations Conference on Sustainable Development (Rio+20) was held in Rio, 20 years after the UNCED that was held in the same city, and was the third international conference that focused on sustainable development. UNCSD focused on the assessment of the progress made these years and on the identification of new challenges that need to be addressed. Practical measures were proposed in order to promote sustainable development actions and international cooperation, and specific guidelines were adopted regarding green economy. Member-States committed to act towards a more sustainable future for present and future generations (UNCSD, 2012).

In order to successfully undertake actions towards sustainable development, it was obvious that specific goals, universal and measurable, had to be set. These goals would address the most important problems that the world faces and would promote the implementation of actions towards their successful achievement.

The Millennium Summit that took place in New York City in 2000, led to the adoption of the United Nations Millennium Declaration, aiming to create an international partnership in order to reduce the levels of extreme poverty in the world. A set of 8 goals was introduced, known as the 8 **Millennium Development Goals** (MDGs), addressing various social, economic and environmental problems (Figure 2). Member-States, as well as other organizations, took actions in order to assist the achievement of the 8 Goals by 2015. The evaluation report of the MDGs in 2015 showed that significant results were achieved over these 15 years: the number of people living in conditions of extreme poverty was reduced by more than half, as well as the number of undernourished people in developing countries. The enrolment rate in primary schools was significantly increased, as well as the number of girls enrolled in school. More people had access to better water sources, the rates of under-five mortality and maternal mortality were decreased and remarkable achievements were made fighting diseases such as HIV/AIDS, malaria and tuberculosis (United Nations, 2015a).

The MDGs addressed important problems and improved a variety of issues, such as poverty, human health, mortality, etc. Despite these efforts, the world still has to face severe problems and challenges. The 17 **Sustainable Development Goals** (SDGs) are found at the heart of the 2030 Agenda for Sustainable Development that the United Nations Member States adopted in 2015. They aim to create a global partnership in order to address and tackle social, economic and environmental problems and promote sustainable development. In order to create a more sustainable world by 2030, strategies will have to be planned and actions will have to be undertaken regarding issues concerning people and prosperity, the planet, partnership and peace (Figure 3) (United Nations, 2015).

The SDGs followed the MDGs and addressed all the unfinished goals. They took into consideration additional challenges, while benefiting from the knowledge gained during the implementation of the MDGs (Kumar et al., 2016). The SDGs are different from the MDGs, in terms of purpose, conception and politics: the MDGs focused mainly on developing countries and on the issue of poverty, while the SDGs are a global initiative that focus on

sustainable development. The SDGs cover a wider context and more aspects of sustainable development and they include more goals and targets (Fukuda-Parr, 2016) while focusing on the aspects of human development and human rights, which weren't included in the MDSs (Kumar et al., 2016). The SDGs also balance better the three pillars of sustainable development and could lead to a systemic change and to the creation of a more sustainable future (Costanza et al., 2016).

Figure 2: Millennium Development Goals (Source: United Nations, 2015c)

Figure 3: Sustainable Development Goals (Source: United Nations, 2015b)

3. Sustainable Development Goals: An Overview

The 17 Sustainable Development Goals consist of 169 targets and, at the moment, 1205 publications exist, 960 events have been organized and 5132 actions have been taken that are related to these 17 goals (United Nations, 2015b).

Goal 1: No poverty

End poverty in all its forms everywhere.[1]

[1] **All images of the SDGs and captions have been retrieved from the United Nations site (2015b) for informational (academic) reasons only. Guidelines for their usage can be found at:** https://www.un.org/sustainabledevelopment/wp-content/uploads/2019/01/SDG_Guidelines_AUG_2019_Final.pdf

Poverty is one of the most intense problems in the world; it is a multi-dimensional phenomenon, that can have a serious impact on the development of society, as well as on humans' health and welfare (Raphael, 2013). Poverty significantly affects a lot of areas in the world but since it is difficult to define it, it is also difficult to measure it. Poverty has been described as a low welfare situation, where people cannot sufficiently satisfy their needs (Hagenaars et al., 2014).

According to Hagenaars and De Vos (1988), poverty can be defined as having less either than an absolute minimum that is objectively defined or than what others have in society. In addition, poverty can be subjectively defined as the feeling of not having enough to get along. Each of these definitions could lead to different results regarding poverty estimations (Hagenaars & De Vos, 1988).

Table 1: SDG 1 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
1.1	Eradicate extreme poverty for all people everywhere	- Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)
1.2	Reduce the proportion of people of all ages living in poverty according to national definitions, at least by half	- Proportion of population living below the national poverty line, by sex and age - Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
1.3	Implement social protection systems and measures for all and achieve substantial coverage of the poor and vulnerable	- Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable
1.4	Ensure equal rights to economic resources, access to basic services, ownership, natural resources, appropriate new technology and financial services, in particular for the poor and the vulnerable	- Proportion of population living in households with access to basic services - Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure
1.5	Build the resilience of the poor and vulnerable and reduce their exposure to climate-related extreme events and other shocks and disasters	- Number of deaths, missing persons and persons affected by disaster per 100,000 people - Direct disaster economic loss in relation to global gross domestic product (GDP) - Number of countries with national and local disaster risk reduction strategies
1.a	Ensure mobilization of resources in order to provide means for developing countries to implement programmes and policies to end poverty	- Proportion of resources allocated by the government directly to poverty reduction programmes - Proportion of total government spending on essential services (education, health and social protection)
1.b	Create sound policy frameworks to support investment in actions for poverty eradication	- Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups

Poverty can be divided into two different types: overall and absolute. Overall (or relative) poverty refers to the situation where people have limited access to resources, compared to the societal average, creating thus a series of problems for them. Overall poverty includes hunger and malnutrition, limited income, ill health, lack of access to basic services, etc. Absolute poverty refers to the situation where people do not have access to resources that satisfy basic human needs, such as food and water, shelter, health and sanitation, etc. (Raphael, 2013).

A division can be made regarding the people living with less than approximately $1/day, that can indicate the poverty depth (1993 PPP exchange rates) (Ahmed et al., 2007):

- Ultra poverty: < $0.54/day
- Medial poverty: $0.54 - $0.81/day
- Subjacent poverty: $0.81 - $1.08/day

It is necessary to identify those drivers that lead to or worsen poverty conditions, so that an effective plan for its eradication can be developed. These factors differ from region to region; for instance, some of the key drivers of poverty in Sub-Saharan Africa, a region with one of the highest rates of poverty, include high income inequality, institutionalized democracy and civil war episodes, dependence on oil and high prevalence of HIV, among others (Anyanwu & Anyanwu, 2017).

The eradication of poverty is a significantly important challenge for the world, since certain countries still have to deal with unacceptable conditions of poverty. SDG 1 aims to end poverty in every place in the world, in every form that might take and has set targets towards to achieve that (Table 1).

Target 1.1 refers to the eradication of poverty in the world, using the $1.25/day standard as an indication of poverty. The World Bank set this value as the international poverty line in 2008 until 2015, when the value of $1.90 was adopted (2011 PPP), updating thus the international poverty line. In addition, target 1.2 refers to the eradication of poverty, based on the national poverty lines that each country has set. The percentage of population living with under $1.90/day in the world fell from 42.5% in 1981 to 27.7% in 2000 and to 9.2% in 2017. We have performed a trend analysis and we extracted the mean change throughout the time-period, per region (Table 2) (World Bank, 2020). Regarding social protection systems, more than 70% of population were covered by at least one social protection benefit in North American countries, European countries and certain Central Asian countries, as well as in Australia (ILOSTAT, 2020).

Table 2: Mean change of an SDG1 indicator, per region

Target	Region	Mean change (1990-2018)
Percentage of population living with under $1.90/day	**World** *(1990-2017)*	-1.08
	Sub-Saharan Africa	-0.8
	Latin America & Caribbean	-0.47
	Middle East & North Africa	-0.14
	East Asia & Pacific	-2.27
	Europe and Central Asia	-0.19

Goal 2: Zero hunger

End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Table 3: SDG 2 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
2.1	End hunger and ensure access to safe, nutritious and sufficient food for everyone	- Prevalence of undernourishment - Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)
2.2	End all forms of malnutrition, decrease stunting and wasting in children under 5 years of age and address adolescent girls, pregnant women and older persons' nutritional needs	- Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age - Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)
2.3	Double small-scale food producers' agricultural productivity and incomes, providing secure and equal access to land and other resources and opportunities	- Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size - Average income of small-scale food producers, by sex and indigenous status
2.4	Ensure sustainable food production systems and promote agricultural practices that increase productivity and production, help maintain ecosystems and strengthen capacity for adaptation to climate change and other disasters	- Proportion of agricultural area under productive and sustainable agriculture
2.5	Maintain seeds, plants and animals' genetic diversity and promote fair sharing of benefits arising from genetic resources' utilization	- Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities - Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction
2.a	Increase investment in rural infrastructure and agricultural research to enhance agricultural productive capacity in developing countries	- The agriculture orientation index for government expenditures - Total official flows (official development assistance plus other official flows) to the agriculture sector
2.b	Prevent trade restrictions in world agricultural markets, including the elimination of agricultural export subsidies	- Producer Support Estimate - Agricultural export subsidies
2.c	Ensure food commodity markets' proper functioning and facilitate access to market information to limit extreme food price volatility	- Indicator of food price anomalies

The "*condition in which people lack the basic food intake to provide them with the energy and nutrients for fully productive, active lives*", is defined as hunger, while malnutrition is the result of "*the interaction of inadequate diet and infection, reflected in poor infant growth and an excess of morbidity and mortality in adults and children alike*" (Hunger

Task Force, 2003). One of the basic and more important human rights is to reinsure access to safe and nutritious food, into adequate amounts (Struble & Aomari, 2003).

Poverty is linked to hunger and malnutrition (Behrman et al., 2004), but despite the fact that income poverty has been reduced in the world, the problem of malnutrition is still widespread (Horton et al., 2008). Other factors that can be considered as hunger drivers include economic and political shocks, natural disasters, epidemics, etc. (Hunger Task Force, 2003).

Ahmed et al. (2007) have identified three categories of hunger, depending on the daily consumption of calories. These definitions of hunger refer to an average adult that undertakes light activity, for which the recommended consumption is 2200 calories per day:

- Ultra hunger: < 1600 calories/day
- Medial hunger: 1600-1800 calories/day
- Subjacent hunger: 1800-2200 calories/day

The availability and access to food, as well as the intake of calories, based on the person's sex, age and daily activity are used to measure hunger (Behrman et al., 2004). Since there don't exist direct estimates regarding the extent of hungry, the indicator *Prevalence of undernourishment*, estimated by FAO, is often used in the literature (Hoddinott et al., 2012).

Hunger and malnutrition can cause a series of health problems, like changes in a person's body structure or the metabolism and chronic diseases in the future (Behrman et al., 2004). Malnutrition can lead to a reduction of body mass, to growth faltering and low body weight, to a weakened immune system and a higher risk of infection, as well as to more severe infectious diseases. Additionally, blindness, mental problems or other disabilities that the person will not be able to recover from, or even premature death are also potential effects of malnutrition (Wiesmann et al., 2000).

The 2nd SDG aims to end hunger and malnutrition and to achieve food security and has set a variety of targets in order to achieve that (Table 3). Target 2.1 aims to end hunger and prevent undernourishment. Based on FAO data (2020), the percentage of undernourished population in the world was 8.9% in 2018, having significantly dropped since 2001 (13.3%). These percentages were higher in Sub-Saharan Africa since 2001, while South Asia followed. The situation of undernourishment seems to have improved since the beginning of the century (FAO, 2020b).

Table 4: Mean change of an SDG2 indicator, per region

Target	Region	Mean change (2001-2018)
Prevalence of undernourishment	**World**	-0.33
	Sub-Saharan Africa	-0.46
	Latin America & Caribbean	-0.22
	Middle East & North Africa	-0.079
	East Asia & Pacific	-0.485
	Europe and Central Asia	-0.06
	North America	0
	South Asia	-0.44

FAO also provides data regarding the second indicator of target 2.1, concerning the prevalence of moderate or severe food insecurity in the population for the years 2015-2018. Food insecurity refers to the situation were people don't have "*access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life*" (Hunger Task Force, 2003). In 2018, 25.81% of world's population faced problems of moderate or severe food insecurity. This refers to the people that were exposed to low quality nutrition or to reduced food quantity, due to lack of money or the lack of other resources. The highest percentages were observed in Sub-Saharan Africa, while high percentages were observed in South Asia, Latin America and Middle East and North Africa as well (Table 4) (FAO, 2020a).

Goal 3: Good health and well-being

Ensure healthy lives and promote well-being for all at all ages.

Health is defined as "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*" (WHO, 1946). According to Sigerist's (1941) definition, a "*healthy individual is a man who is well-balanced bodily and mentally, and well-adjusted to his physical and social environment. […] Health therefore is not simply the absence of disease; it is something positive, a joyful attitude towards life, and a cheerful acceptance of the responsibilities that life puts upon the individual*." (Salomon et al., 2003).

Well-being is a concept that doesn't have a specific and universally accepted definition (McGillivray & Clarke, 2006). In the literature, it has been identified with the concept of happiness, or the concept of wellness and good health -physical and mental (Tov, 2018); the term is also used to refer to every aspect of life that is well-evaluated (Gasper, 2007). Two approaches that conceptualize well-being have been analyzed: *hedonic* or *subjective* well-being, where the persons evaluated their own life, in terms of pleasant feeling and satisfaction, and *eudaimonic* well-being, which evaluates well-being based on certain necessary needs and qualities for the growth and development of an individual (Tov, 2018).

Health and well-being are essential for every person in the world, at every age and stage of life. Good health is necessary to achieve high levels in every aspect of well-being (Salomon et al., 2003). At the moment, in the world, significant health inequalities exist and the levels of health that people enjoy vary, depending on the person's background, the social group they belong to and the country they reside (Arcaya et al., 2015). Poverty can also be viewed as a factor that leads to health problems and reduced well-being; two concepts that are inextricably linked (Murray, 2006).

The 3rd SDG aims to ensure health and well-being for everyone and for all ages, setting a variety of targets for its implementation (Table 5). The reduction of maternal mortality ratio is included in 3.1 target of the 3rd SDG. Maternal mortality ratio was higher in Sub-Saharan Africa (534 per 100,000 live births in 2017), while every other region in the world had significantly lower ratios for the same year (World Bank, 2020). Target 3.2 refers to the reduction of neonatal mortality rate. In the world, the mortality rate of newborns that haven't reached 28 days of age for 2019 was 17.5, while the highest rates were observed in Sub-Saharan Africa and South Asia (Table 6) (World Bank, 2020).

Table 5: SDG 3 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
3.1	Reduce global maternal mortality ratio	- Maternal mortality ratio - Proportion of births attended by skilled health personnel
3.2	End preventable deaths of newborns and children under 5 years of age	- Under-five mortality rate - Neonatal mortality rate
3.3	End the epidemics of AIDS, tuberculosis, malaria and tropical diseases and combat hepatitis and other communicable diseases	- Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations - Tuberculosis incidence per 1,000 population - Malaria incidence per 1,000 population - Hepatitis B incidence per 100,000 population - Number of people requiring interventions against neglected tropical diseases
3.4	Prevent, treat and reduce premature mortality from non-communicable diseases and promote mental health and well-being	- Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease - Suicide mortality rate
3.5	Prevent and treat substance abuse (narcotic drug abuse and use of alcohol)	- Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders - Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol
3.6	Reduce global deaths and injuries from road traffic accidents	- Death rate due to road traffic injuries
3.7	Ensure universal access to sexual and reproductive health-care services and integrate reproductive health into national strategies	- Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods - Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group
3.8	Achieve universal health coverage and access to safe, effective, quality and affordable essential medicines and vaccines	- Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population) - Proportion of population with large household expenditures on health as a share of total household expenditure or income
3.9	Reduce the number of deaths and illnesses from hazardous chemicals, pollution and contamination	- Mortality rate attributed to household and ambient air pollution - Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services) - Mortality rate attributed to unintentional poisoning
3.a	Reinforce the implementation of the World Health Organization Framework Convention on Tobacco Control everywhere	- Age-standardized prevalence of current tobacco use among persons aged 15 years and older
3.b	Support the research and development of vaccines and medicines and provide access to affordable essential medicines and vaccines for all	- Proportion of the population with access to affordable medicines and vaccines on a sustainable basis - Total net official development assistance to medical research and basic health sectors
3.c	Increase health financing and recruit health workforce in developing countries	- Health worker density and distribution
3.d	Strengthen the capacity of all countries for proper management of health risks	- International Health Regulations (IHR) capacity and health emergency preparedness

Table 6: Mean change of SDG3 indicators, per region

Target	Region	Mean change (2000-2017)	Target	Region	Mean change (2000-2019)
Maternal mortality ratio	World	-8.21	Mortality rate, neonatal	World	-0.68
	Sub-Saharan Africa	-20.7		Sub-Saharan Africa	-0.65
	Latin America & Caribbean	-1.31		Latin America & Caribbean	-0.34
	Middle East & North Africa	-2.495		Middle East & North Africa	-0.47
	East Asia & Pacific	-2.71		East Asia & Pacific	-0.675
	Europe and Central Asia	0.13		Europe and Central Asia	-0.31
	North America	0.32		North America	-0.05
	South Asia	-13.93		South Asia	-1.11

Goal 4: Quality education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Education is a human right that is linked directly to people's wellbeing (Du Preez, 2012) and everyone should have access to it. According to the Universal Declaration of Human Rights (1948), education should aim for human personality's full development, as well as for the reinforcement of respect towards human rights and all fundamental freedoms (Curren, 2009).

Education has various benefits, including better health and well-being, changes in social attitudes and civic participation. It also provides capabilities and competences, with significant benefits for the individual (Bynner et al., 2003). Education is also significantly important for the development of a country in general, since it has been linked to economic growth, income distribution and political stability, as well as to more equal opportunities, skilled human resources, better health and low crime rates (Ojiambo, 2009).

Table 7: SDG 4 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
4.1	Ensure that all girls and boys complete free, equitable and quality primary and secondary education	- Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
4.2	Ensure that all girls and boys have access to early childhood development and pre-primary education	- Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex - Participation rate in organized learning (one year before the official primary entry age), by sex
4.3	Ensure equal access for all women and men to technical, vocational and tertiary education	- Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
4.4	Increase the number of youth and adults who have relevant skills employment and entrepreneurship	- Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
4.5	Eliminate gender disparities in education and ensure equal access to education for the vulnerable	- Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated
4.6	Ensure the achievement of literacy and numeracy of all youth and a significant number of adults	- Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
4.7	Ensure the acquisition of knowledge and skills needed to promote sustainable development	- Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment
4.a	Build and upgrade education facilities and provide safe and inclusive learning environments	- Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)
4.b	Expand the number of scholarships available to developing countries for enrolment in higher education	- Volume of official development assistance flows for scholarships by sector and type of study
4.c	Increase the proportion of qualified teachers in developing countries	- Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country

Basic education (including basic education for adults), as well as further education, is a right for everyone (Du Preez, 2012). Still, significant inequalities exist regarding the sector of education as well. Even though strategies and policies regarding access and equal opportunities for education for all are supported and promoted, studies have shown that international aid is not well targeted towards the sector of primary education. Improved and well targeted aid could have significant benefits, including an increase in the quantity of children that are enrolled in primary school, higher completion rates and gender parity (D'Aiglepierre & Wagner, 2013).

SGD 4 aims to achieve inclusive and equitable quality education and promote lifelong learning opportunities for everyone (Table 7). The enrollment rate in primary school in the world was 89.4% for 2018, while the enrollment rate in secondary school for the same year was 66.27%. Sub-Saharan Africa had the lowest rate of students enrolled in primary school, even though a remarkable progress was made during a decade (data were not available after 2009) (World Bank, 2020). Youth literacy rate in the world, meaning the percentage of people aged 15-24 who have the ability to read and write, was 91.73% in 2019 (Table 8) (World Bank, 2020).

Table 8: Mean change of SDG4 indicators, per region

Target	Region	Mean change (2000-2018)	Target	Region	Mean change (2000-2018)
Primary school enrollment	World	0.338	Secondary school enrollment	World	0.694
	Sub-Saharan Africa *(2000-2009)*	1.82		Sub-Saharan Africa	0.894
	Latin America & Caribbean	-0.031		Latin America & Caribbean	0.739
	Middle East & North Africa	0.48		Middle East & North Africa	0.628
	East Asia & Pacific	0.12		East Asia & Pacific	0.99
	Europe and Central Asia	0.021		Europe and Central Asia	0.306
	North America	-0.06		North America	0.285
	South Asia	0.666		South Asia	1.3

Target	Region	Mean change (2000-2019)
Youth literacy rate	World	0.272
	Sub-Saharan Africa	0.537
	Latin America & Caribbean	0.184
	Middle East & North Africa	0.278
	East Asia & Pacific	0.048
	Europe and Central Asia	0.04
	South Asia	0.967

Goal 5: Gender equality

Achieve gender equality and empower all women and girls.

Table 9: SDG 5 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
5.1	End all forms of discrimination against all women and girls	- Whether or not legal frameworks are in place to promote, enforce and monitor equality and non□discrimination on the basis of sex
5.2	Eliminate all forms of violence against all women and girls	- Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age - Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence
5.3	Eliminate all harmful practices, such as early and forced marriage and female genital mutilation	- Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18 - Proportion of girls and women aged 15-49 years who have undergone female genital mutilation/cutting, by age
5.4	Value unpaid care and domestic work	- Proportion of time spent on unpaid domestic and care work, by sex, age and location
5.5	Ensure women's participation and equal opportunities for leadership in political, economic and public life	- Proportion of seats held by women in national parliaments and local governments - Proportion of women in managerial positions
5.6	Ensure access to sexual and reproductive health and reproductive rights	- Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care - Number of countries with laws and regulations that guarantee women aged 15-49 years access to sexual and reproductive health care, information and education
5.a	Give women equal rights to economic resources, access to ownership, financial services and inheritance and natural resources	- (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure - Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control
5.b	Enhance the use of enabling technology to promote the empowerment of women	- Proportion of individuals who own a mobile telephone, by sex
5.c	Adopt sound policies and legislation for the promotion of gender equality and the empowerment of all women and girls	- Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment

Inequalities between persons can sometimes be caused by their gender, with women being usually the more disadvantaged individuals, compared to men (Lorber, 2001). Gender inequality has been defined as "*the greater status and power of men than women that often emerges in the control of women's sexuality and other aspects of their behavior*" (Wood & Eagly, 2002). Gender inequality is a result of gender stereotypes, that perpetuate the idea of men being more competent than women and having a higher status (Ridgeway, 2011) and is a situation that includes a variety of different but interconnected problems (Sen, 2001).

Gender inequality can be found in various forms: in the work environment, a woman frequently receives lower wages compared to a man offering the same job, while having less chances for promotion and advancement and getting less recognition for an achievement. In the household, women usually undertake most responsibilities regarding housework and childcare. In addition, gender inequality is present in sectors such as education, where boys are most likely to receive education, even compared to girls of the same social class, and in the health sector, where sometimes priority is given to men regarding health care services. Violence against women and its different forms is also included in the gender inequality situation (Lorber, 2001).

Gender inequality is present in the world for centuries; despite that, it is a situation that changes across time and place and improvements are possible, after collective action and institutional change (Seguino, 2000). The 5th SDG aims to achieve gender equality and empower every girl and woman in the world and targets have been set towards this direction (Table 9).

Table 10: Mean change of an SDG5 indicator, per region

Target	Region	Mean change (2000-2020)
Proportion of seats held by women in national parliaments	**World**	0.585
	Sub-Saharan Africa	0.69
	Latin America & Caribbean	0.878
	Middle East & North Africa	0.743
	East Asia & Pacific	0.217
	Europe and Central Asia	0.666
	South Asia	0.603
	North America *(2001-2020)*	0.48

The issue of violence against women is addressed in target 5.2, highlighting the importance of its elimination. Even though universal data regarding the proportion of women that have been subjected to physical and/or sexual violence in the last 12 months are not available, based on the data provided for individual countries, we can conclude that in most European countries, the percentage of women aged 15-49 who were subjected to violence was under 10% for the years 2005-2017, while the highest percentages were mainly observed in African and South Asian countries (UNSD, 2020). Regarding the proportion of women who were married before age 15, we can also easily conclude that since 2000, high percentages of women aged 20-24 that were first married by age 15 were observed in African countries and in specific South Asian countries (UNSD, 2020). Target 5.5 refers to women's participation in political, economic and public life and uses the proportion of seats held by women in national parliaments as an indicator, in order to evaluate this specific target. In 2020, 25.17%

of parliamentary seats in the world were held by women, a percentage significantly increased compared to twenty years ago (Table 10) (World Bank, 2020).

Goal 6: Clean water and sanitation

Ensure availability and sustainable management of water and sanitation for all.

Table 11: SDG 6 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
6.1	Achieve universal access to safe and affordable drinking water	- Proportion of population using safely managed drinking water services
6.2	Achieve access to adequate sanitation and hygiene and end open defecation	- Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water
6.3	Improve water quality by reducing pollution and the proportion of untreated wastewater and increasing recycling and safe reuse	- Proportion of wastewater safely treated - Proportion of bodies of water with good ambient water quality
6.4	Increase water-use efficiency and address water scarcity, ensuring sustainable withdrawals and supply of freshwater	- Change in water-use efficiency over time - Level of water stress: freshwater withdrawal as a proportion of available freshwater resources
6.5	Implement integrated water resources management	- Degree of integrated water resources management implementation (0-100) - Proportion of transboundary basin area with an operational arrangement for water cooperation
6.6	Protect and restore water-related ecosystems	- Change in the extent of water-related ecosystems over time
6.a	Expand international cooperation and support activities for water and sanitation for developing countries	- Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan
6.b	Support the participation of local communities in the improvement of water and sanitation management	- Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

Clean water, sanitation and wastewater management should be available for all, so that development and life quality are reinsured (Tortajada & Biswas, 2018). Access to water and sanitation services are an undeniable human right: they protect public health, they maintain basic living conditions and provide conditions that are vital for survival (Castro et al., 2012).

Lack of access to clean water and lack of hygiene can cause illness and even death, especially in developing countries (Bartram et al., 2005). More specifically, the diseases that are linked with the lack of clean water and sanitation include cholera, typhoid, diarrhea, dengue and yellow fever, malaria, gastrointestinal and hepatic illnesses and many more, while a significant percentage of infant mortality is also linked with this problem (Montgomery & Elimelech, 2007).

Water's contamination is not only a problem that occurs at the water source; it can happen during its collection or its transportation, during its storage or even during the serving of the water, due to self-hygiene problems (Komarulzaman et al., 2017).

Several factors can determine people's access to clean water and sanitation:

- Institutions: Institutions that take into consideration the needs of population and can make long-term investments, can provide the necessary services to the population.
- Legal & regulatory frameworks: The adoption of policies, governance and innovations, as well as financial support and politics can contribute to the supply of such services.
- Other external drivers: Factors such as economic growth, social changes, urbanization, climate change and environmental problems can have an impact on water's quality and quantity (Tortajada & Biswas, 2018).

Reinsuring access to clean water and sanitation is necessary for public health and is one of the least expensive means that can contribute to this goal (Montgomery & Elimelech, 2007). Improvements at a household and community level are simple and low-cost solutions that can have a notable impact on the improvement of water quality and on the reduction of health problems (Thompson et al., 2003).

SDG 6 aims to ensure availability and sustainable management of water and sanitation for everyone in the world (Table 11). Target 6.1 focuses on universal access to safe water for everyone; in the world, the percentage of people using safely managed drinking water services was estimated at 70.64% in 2017 (World Bank, 2020). In the same pattern, target 6.2 focuses on universal access to sanitation and hygiene for everyone; in 2017, only 44.99% of the world's population used improved sanitation facilities (Table 12) (World Bank, 2020).

Table 12: Mean change of SDG6 indicators, per region

Target	Region	Mean change (2005-2017)	Target	Region	Mean change (2005-2017)
People using safely managed drinking water services	**World**	0.56	**People using safely managed sanitation services**	**World**	1.12
	Sub-Saharan Africa	0.61		**Sub-Saharan Africa**	0.21
	Latin America & Caribbean	1.65		**Latin America & Caribbean**	1.42
	Middle East & North Africa	0.594		**Middle East & North Africa** *(2008-2017)*	0.64
	Europe and Central Asia	0.257		**Europe and Central Asia**	0.44
	North America	0.0089		**North America**	0.14
				East Asia & Pacific	2.17

Goal 7: Affordable and clean energy

Ensure access to affordable, reliable, sustainable and modern energy for all.

Table 13: SDG 7 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
7.1	Ensure universal access to affordable, reliable and modern energy services	- Proportion of population with access to electricity - Proportion of population with primary reliance on clean fuels and technology
7.2	Increase the share of renewable energy	- Renewable energy share in the total final energy consumption
7.3	Improve energy efficiency	- Energy intensity measured in terms of primary energy and GDP
7.a	Facilitate access to clean energy research and technology and promote investments in energy infrastructure and clean energy technology with international cooperation	- International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
7.b	Expand infrastructure and upgrade technology for sustainable energy in developing countries	- Investments in energy efficiency as a percentage of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

Energy is an important part of life. It is required in the production of goods and services (Lambert et al., 2014) and it can improve poverty and inequality problems, human health and food security, income and education and climate change issues (Nussbaumer et al., 2012). It is, therefore, obvious that energy is necessary for population's well-being, for development and for the functionality and evolution of societies (Brand-Correa & Steinberger, 2017; Smil, 2019).

Access to electricity can have a positive impact in the problem of poverty, since it affects the socio-economic conditions occurring in rural areas and improves quality of life drastically, especially in developing countries. Studies have shown that electricity is positively correlated with GDP as well as with the Human Developing Index, highlighting the importance that access to modern energy services has on people's lives and welfare (Kanagawa & Nakata, 2008).

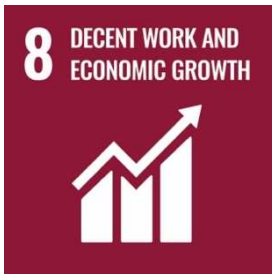
Since the early 1800's, fossil fuels have been the main driver of economic and social growth and the world is still based on them to cover its energy needs (Höök & Tang, 2013). The usage of fossil fuels comes with various disadvantages, since they are finite resources that will be depleted, while they produce high greenhouse gas emissions and contribute to global warming; because of that, the past few years, the significance of transitioning to renewable energy sources is more and more discussed (Abas et al., 2015) and is now known that renewables' usage will be extremely important for the future of the world. Renewables can improve energy supply reliability, leading to increased living standards and levels of employment and promoting, thus, sustainable development (Panwar et al., 2011).

The 7th SDG aims to ensure access to affordable, reliable, sustainable and modern energy for everyone in the world (Table 13). Target 7.1 addressed the issue of accessibility to affordable, reliable and modern energy services for anyone in the world. In 2018, 89.57% of world's population had access to electricity; a percentage improved compared to 2000, when the same percentage of population was 78.3% (World Bank, 2020). Target 7.2 focuses on the significance that higher rates of renewable energy have and identifies the indicator "Renewable energy share in the total final energy consumption" for its evaluation. The share of renewables in the world's total final consumption was 18.05% in 2015, which was maintained at about the same levels since 2000 (Table 14) (World Bank, 2020).

Table 14: Mean change of SDG7 indicators, per region

Target	Region	Mean change (2000-2018)	Target	Region	Mean change (2005-2015)
Access to electricity	World	0.612	Renewable energy consumption	World	0.015
	Sub-Saharan Africa	0.983		Sub-Saharan Africa	-0.167
	Latin America & Caribbean	0.375		Latin America & Caribbean	-0.066
	Middle East & North Africa	0.37		Middle East & North Africa	-0.054
	Europe and Central Asia	-0.004		Europe and Central Asia	0.4
	North America	0		North America	0.275
	East Asia & Pacific	0.277		East Asia & Pacific	-0.616
	South Asia	1.899		South Asia	-1.12

Goal 8: Decent work and economic growth



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Economic growth has been defined as "*an increase in the productive capacity of an economy as a result of which the economy is capable of producing additional quantities of goods and services*" (Palmer, 2012). In other words, economic growth can be identified with an increase in real national income per capita and in real national output (Hess, 2013).

Table 15: SDG 8 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
8.1	Sustain per capita economic growth	- Annual growth rate of real GDP per capita
8.2	Achieve higher levels of economic productivity, focusing on diversification, technological upgrading and innovation	- Annual growth rate of real GDP per employed person
8.3	Promote policies for development that support productive activities, decent job creation and entrepreneurship and encourage the SME	- Proportion of informal employment in non□agriculture employment, by sex
8.4	Improve resource efficiency in consumption and production and decouple economic growth from environmental degradation	- Material footprint, material footprint per capita, and material footprint per GDP - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
8.5	Achieve full and productive employment and decent work for everyone	- Average hourly earnings of female and male employees, by occupation, age and persons with disabilities - Unemployment rate, by sex, age and persons with disabilities
8.6	Reduce the proportion of youth not in employment, education or training	- Proportion of youth (aged 15-24 years) not in education, employment or training
8.7	Take measures to eradicate forced labour, end modern slavery and human trafficking and end child labour	- Proportion and number of children aged 5□17 years engaged in child labour, by sex and age
8.8	Protect labour rights and promote safe and secure working environments for everyone	- Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status - Increase in national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
8.9	Implement policies to promote sustainable tourism	- Tourism direct GDP as a proportion of total GDP and in growth rate - Number of jobs in tourism industries as a proportion of total jobs and growth rate of jobs, by sex
8.10	Expand access to banking, insurance and financial services by strengthening domestic financial institutions' capacity	- Number of commercial bank branches and automated teller machines (ATMs) per 100,000 adults - Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider
8.a	Increase Aid for Trade support for developing countries	- Aid for Trade commitments and disbursements
8.b	Develop a global strategy for youth employment and implement the Global Jobs Pact of the ILO	- Total government spending in social protection and employment programmes as a proportion of the national budgets and GDP

A strong connection exists between economic growth and human development (Ranis et al., 2000). Higher income levels lead to higher living standards, as well as to better health and life quality (Acemoglu, 2012). Economic growth has been found to reduce poverty in developing countries; strong negative linkages exist between poverty and economic growth, when measured in terms of changes in mean income (consumption), while negative but weaker linkages exist between the two factors, when economic growth is measured in terms of GDP per capita changes (Adams, 2004). In addition, economic growth and welfare are increased by the accumulation of physical capital (Halkos, 1992; Halkos & Paizanos, 2015).

Sustainable growth refers to a situation where population's needs are met, while maintaining the ability of future generation to meet their needs (Armeanu et al., 2017). In

order to achieve sustainable growth, the natural resources used as well as the toxic materials and all the waste and pollutants generated must be minimized, throughout the entire process of production and consumption (United Nations, 2015b).

Employment is an important part of life. Individuals need to work to gain income that will satisfy their basic needs (food, health, clothing, residence), to be integrated into the community and to acquire skills and competences. At the same time, it is necessary to reinsure that everyone has access to a decent work, that respects the human rights and human dignity and contributes to human development (Frey & MacNaughton, 2016). Decent work and full employment will be a key element in the process of poverty reduction, according to the International Labour Organization (ILO, 2020).

SDG 8 aims to promote inclusive and sustainable economic growth, as well as employment and decent work for all (Table 15). Target 8.1 refers to countries' economic growth and proposes the usage of the annual growth rate of real GDP per capita to assess that. In 2019, the world's annual growth rate of GDP per capita was 1.39% (World Bank, 2020). Employment is also an issue addressed by the 8th SDG; target 8.5 focuses on the achievement of full and productive employment and decent work for all. In 2020, total unemployment in the world was at 5.42% and this percentage has been relatively stable since 2000 (Table 16) (World Bank, 2020).

Table 16: Mean change of SDG8 indicators, per region

Target	Region	Mean change (2000-2019)	Target	Region	Mean change (2000-2020)
GDP per capita	World	-0.022	Total unemployment	World	-0.025
	Sub-Saharan Africa	-0.168		Sub-Saharan Africa	-0.022
	Latin America & Caribbean	-0.098		Latin America & Caribbean	-0.062
	Middle East & North Africa	-0.115		Middle East & North Africa	-0.099
	Europe and Central Asia	-0.0788		Europe and Central Asia	-0.0985
	North America	-0.007		North America	-0.03
	East Asia & Pacific	0.0096		East Asia & Pacific	-0.016
	South Asia	0.096		South Asia	0.006

Goal 9: Industry, innovation and infrastructure

Built resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Table 17: SDG 9 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
9.1	Develop quality, reliable, sustainable and resilient infrastructure to support economic development and human well-being	- Proportion of the rural population who live within 2 km of an all-season road - Passenger and freight volumes, by mode of transport
9.2	Promote inclusive and sustainable industrialization and raise industry's share of employment and GDP	- Manufacturing value added as a proportion of GDP and per capita - Manufacturing employment as a proportion of total employment
9.3	Increase the access to financial services of small-scale industrial and other enterprises, especially in developing countries	- Proportion of small-scale industries in total industry value added - Proportion of small-scale industries with a loan or line of credit
9.4	Upgrade infrastructure to make it sustainable, increasing the resource-use efficiency and adopting clean and environmentally sound technologies and processes	- CO2 emission per unit of value added
9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors everywhere and encourage innovation	- Research and development expenditure as a proportion of GDP - Researchers (in full-time equivalent) per million inhabitants
9.a	Facilitate sustainable and resilient infrastructure development through financial, technological and technical support to developing countries	- Total official international support (official development assistance plus other official flows) to infrastructure
9.b	Support technology development, research and innovation in developing countries	- Proportion of medium and high-tech industry value added in total value added
9.c	Increase access to information and provide universal and affordable access to the Internet	- Proportion of population covered by a mobile network, by technology

Different hazard events have been seen to cause damages and losses to communities and regions (Lounis & McAllister, 2016). Especially climate change and its impacts, such as the rise of sea-level, extreme weather events and temperature changes can put pressure on infrastructure (Vallejo & Mullan, 2017). Due to that, the need for resilience in infrastructure is more urgent than ever, in order to reduce the extend of the caused damage (Lounis & McAllister, 2016). Resilience can be defined as "*the ability of a system to withstand external perturbation(s), adapt, and rapidly recover to the original or a new level of functionality*" and the concept has attracted a lot of attention the last two decades (Gardoni & Murphy, 2020).

Resilient infrastructure can contribute to people's better health, education and livelihood, while economic prospects, well-being and life quality can also be positively affected (Hallegatte et al., 2019). It is therefore obvious that sustainable development is supported by reliable and efficient infrastructure (Vallejo & Mullan, 2017), since failures in infrastructures can lead to human and economic losses (Cedergren, 2013).

Sustainable industrialization is also an important element of sustainable development. Rapid industrialization that has been taking place in developing countries these past few years had significant environmental impacts (natural resources depletion, pollution, etc.), making thus the concept of sustainable industrialization more and more promoted (Le Heron & Hayter, 2018). The term of sustainable industrialization refers to "*an industrialized economy that contributed to wealth creation, social development and environmental sustainability*" (Saxena, 2019), while providing the benefits of industrialization, including economic growth, employment opportunities and income poverty eradication (United Nations, 2015b).

For sustainable development to be achieved, focus should be given on research and innovation as well, since they are factors that can actually change the systems of production and consumption and provide valuable assistance in meeting the goals of sustainability (Von Geibler et al., 2019). Technological progress and innovation can lead to improvements regarding sustainability, including resource and energy efficiency. The usage of new technologies can lead to more environmentally sustainable industries that pollute a lot less (Kynčlová et al., 2020); therefore, investments in innovation and research are very important for the achievement of the 9th SDG.

Table 18: Mean change of SDG9 indicators, per region

Target	Region	Mean change (2000-2019)	Target	Region	Mean change (2000-2018)
Manufacturing, value added	**World** *(2000-2018)*	-0.076	**Research and development expenditure**	**World**	0.0075
	Sub-Saharan Africa	-0.125		**Latin America & Caribbean** *(2000-2017)*	0.0136
	Latin America & Caribbean	-0.2087		**Europe and Central Asia**	0.0164
	Middle East & North Africa *(2000-2018)*	-0.305		**North America**	0.011
	Europe and Central Asia	-0.145		**East Asia & Pacific**	0.0068
	North America *(2000-2017)*	-0.2096		**South Asia**	-0.0034
	East Asia & Pacific *(2004-2018)*	-0.215			
	South Asia	-0.045			

SDG 9 aims to promote resilient infrastructures, sustainable industrialization and foster research and innovation (Table 17). Target 9.2 focuses on inclusive and sustainable industrialization and on industry's share of employment and gross domestic product. In 2018, the world's MVA share in GDP was at 16.82%, having slightly dropped since 2000 (World Bank, 2020). Target 9.4 focuses on the sustainability of infrastructure and industries; the World Bank database provides IEA data regarding CO_2 emissions from manufacturing industries and construction, as a percentage of total fuel combustion, were available until 2014. In that year, 19.96% of the world's total fuel combustion originated from manufacturing and construction; the same percentage was estimated at 17.37% for 2000 (World Bank, 2020). The 9th SDG also promotes the enhancement of scientific research and the upgrade of the technological capabilities of industrial sectors, in target 9.5. In the world, the expenditures for research and development, as a percentage of GDP was at 2.27% for 2018, being slightly increased compared to 2000, when it was 2.06% (Table 18) (World Bank, 2020).

Goal 10: Reduced inequalities

Reduce inequality within and among countries.

Table 19: SDG 10 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
10.1	Achieve income growth of the bottom 40 per cent of the population	- Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population
10.2	Empower and promote the social, economic and political inclusion of everyone	- Proportion of people living below 50 per cent of median income, by age, sex and persons with disabilities
10.3	Ensure equal opportunities for everyone and reduce inequalities of outcome	- Proportion of the population reporting having personally felt discriminated against or harassed within the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law
10.4	Adopt fiscal, wage and social protection policies to achieve equality	- Labour share of GDP, comprising wages and social protection transfers
10.5	Improve and strengthen global financial markets and institutions' regulation and monitoring	- Financial Soundness Indicators
10.6	Ensure representation and voice in global institutions' decision-making for developing countries	- Proportion of members and voting rights of developing countries in international organizations
10.7	Facilitate safe and responsible migration and mobility of people	- Recruitment cost borne by employee as a proportion of yearly income earned in country of destination - Number of countries that have implemented well-managed migration policies
10.a	Implement principles based on WTO agreements regarding differential treatment for developing countries	- Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff
10.b	Encourage official assistance and financial flows for development, in particular to least developed countries	- Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)
10.c	Reduce the transaction costs of migrant remittances and eliminate remittance corridors	- Remittance costs as a proportion of the amount remitted

Inequality can be defined as "*the state of not being equal, especially in status, rights, and opportunities*" (UN DESA, 2015) and is one of the most urgent problems of the society. It is a concept very generic that can take various forms (Coulter, 2019). It has a multidimensional nature and can be economic, social or ecological (Kuhn, 2019).

Economic inequalities can impact people's well-being, in terms of material wealth or of their living economic conditions in general, as well as in terms of unequal opportunities (UN DESA, 2015). Wealth inequalities and disparities can prevent people's access to basic human rights, such as food, health care and clean environment, as well as liberty, civil rights and life itself (Oestreich, 2018).

Inequality drivers are different from country to country. Wage inequalities between skilled and unskilled workers seem to have increased due to technological innovation. Trade liberalization, as well as capital account liberalization and the financialization of the economy also have worsen the situation in the world (Justino & Martorano, 2016). Inequality is also linked with human mobility; it can be seen as a driver of people's movements and migration, while mobility can either increase or reduce inequalities (Hackl, 2018).

Inequalities used to be examined by considering factors such as people's income, education and health. Lately, inequalities are viewed from a wider scope and other factors are also evaluated, such as discrimination, lack of fiscal, wage and social protection policies and lack of representation (Pandey et al., 2020).

The reduction of inequality will have a positive impact in the world: it is a basic requirement for the reduction of extreme poverty and it positively correlates with socio-economic indicators, that are significantly important for sustainable development (Apel, 2020). In addition, inequality reduction is essential for the achievement of inclusive growth. In order to achieve that, efficient fiscal measures are required and governance reform that will lead to equal opportunities, as well as a model of growth that is more employment-friendly (Kanbur et al., 2014).

Table 20: Mean change of an SDG10 indicator, per region

Target	Region	Mean change (2005-2017)
Labour share of GDP	**World**	-0.129
	Australia and New Zealand	-0.12
	Central and Southern Asia	-0.33
	Eastern and South-Eastern Asia	0.037
	Europe	-0.105
	Latin America and the Caribbean	0.273
	Northern Africa	0.0278
	Northern America	-0.19
	Oceania (exc. Australia and New Zealand)	-0.17
	Sub-Saharan Africa	0.195
	Western Asia	0.253

SDG 10 aims to reduce inequality within and among countries (Table 19). Target 10.1 focuses on the bottom 40 per cent of the population and on their income growth. Based on the available data regarding the annualized average growth rate in per capita income for the bottom 40% of the population, we can observe that some of the highest growth rates during the time period 2015-2018 were observed in Romania, China, Malaysia, Estonia and Latvia (World Bank, 2020). Regarding the indicator proposed in target 10.2, that is the proportion of people living below 50 percent of median income (%), we can conclude, based

on the available data, that some of the highest percentages were observed in Latin American countries, as well as in certain African countries (World Bank, 2020).

Target 10.4 promotes the adoption of fiscal, wage and social protection policies that will lead to greater equality and uses the labour share of GDP to assess that. Based on UNSD data, the share of labour in GDP in the world was estimated at 51.41% in 2017; having a small decrease since 2005, when it was estimated at 53.05% (Table 20) (UNSD, 2020).

Goal 11: Sustainable cities and communities

Make cities and human settlements inclusive, safe, resilient and sustainable.

In 2019, 55.7% of the world's population lived in cities (World Bank, 2020) and this number is expected to increase even more by 2050, leading to unprecedented levels of urban growth (Van der Berg, 2018). It is therefore obvious that the world is in a rapid urbanization orbit (Devisscher et al., 2020).

Cities have exceptionally high ecological footprints. They account for high percentages of world's energy consumption and resource consumption and they lead to high carbon emissions and pollution, they have a negative impact on biodiversity and on local climate, they lead to environmental degradation and they even affect public safety and human health (Devisscher et al., 2020; Bibri & Krogstie, 2017).

Despite their high ecological footprint, cities have potential to contribute and become drivers of sustainability (Klopp & Petretta, 2017); they can contribute to resource demand management, as well as to urban climate-related strategies, such as adaptation and mitigation (Al-Zu'bi et al., 2018). The concept of sustainable urban growth includes cities that are smart, resilient, green, sustainable and low carbon (Sanchez Rodriguez et al., 2018).

A sustainable city can be defined as a city that "*reduces energy consumption, protects the environment, promotes urban density, eases traffic congestion, lessens urban heat island effects, champions urban agriculture, recycles waste, provides clean water, expands parkland, creates 'walkable' neighborhoods, generates local employment, supports human health and well-being, celebrates civic engagement and enhances efficient information management*" (Joss, 2015). In other words, a sustainable city is a city that reduces its negative effects on the environment, that promotes better life quality for the citizens and is long-term sustainable social, economically and environmentally (Martos et al., 2016). Sustainable urban development is necessary for the achievement of social and environmental well-being in the long run (Yigitcanlar & Dizdaroglu, 2015).

The 11th SDG aims to make cities inclusive, safe, resilient and sustainable (Table 21). Target 11.1, that focuses on adequate and safe housing, uses the percentage of population living in slums for evaluation. In 2018, 29.24% of world's population lived in houses that were lacking water and/or sanitation, sufficient living area and/or housing durability. This percentage has not changed significantly since 2014, when it was estimated at 29.63% (World

Bank, 2020). Exposure to fine particulate matter (PM2.5 and PM10) is an issue addressed in target 11.6. Mean annual exposure to PM2.5 was estimated at 45.53 micrograms per cubic meter in the world, for 2017, based on data retrieved from the World Bank database (Table 22) (World Bank, 2020).

Table 21: SDG 11 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
11.1	Ensure access to adequate, safe and affordable housing and basic services for all	- Proportion of urban population living in slums, informal settlements or inadequate housing
11.2	Provide access to safe, affordable, accessible and sustainable transport systems for all	- Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities
11.3	Enhance inclusive and sustainable urbanization and capacity for human settlement planning and management everywhere	- Ratio of land consumption rate to population growth rate - Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
11.4	Protect the world's cultural and natural heritage	- Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
11.5	Reduce the number of people affected by disasters, and decrease the economic losses, protecting especially the poor and vulnerable	- Number of deaths, missing persons and persons affected by disaster per 100,000 people - Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of basic services
11.6	Reduce the per capita environmental impact of cities	- Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities - Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
11.7	Provide access to safe, inclusive and accessible, green and public spaces for everyone	- Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities - Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months
11.a	Support development planning that create positive economic, social and environmental links between urban, per-urban and rural areas	- Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city
11.b	Increase the number of cities that adopt policies towards inclusion, resource efficiency, resilience to disasters, and implement disaster risk management (in line with the Sendai Framework for Disaster Risk Reduction 2015-2030)	- Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 - Number of countries with national and local disaster risk reduction strategies
11.c	Provide financial and technical assistance for building sustainable and resilient buildings for least developed countries	- Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials

Table 22: Mean change of an SDG11 indicator, per region

Target	Region	Mean change (2010-2017)
PM2.5 air pollution, mean annual exposure	World	-0.762
	Sub-Saharan Africa	1.09
	Latin America & Caribbean	-0.761
	Middle East & North Africa	0.848
	East Asia & Pacific	-1.965
	Europe and Central Asia	-0.387
	South Asia	-1.056
	North America	-0.3397

Goal 12: Responsible consumption and production

Ensure sustainable consumption and production patterns.

Production and consumption are at the heart of global economy. The wealth generated from productive activities can provide food security and medicine, infrastructure and services, reduces poverty and promotes people's welfare (Chan et al., 2018). Despite that, unsustainable production and consumption come with a high negative environmental impact. The industrial sector leads to pollution of water, air and land, while environmental problems can also come from final consumption activities related to the sectors of mobility, food and energy use (Tseng et al., 2013; Tukker et al., 2008). It is, therefore, an urgent need to find solutions and change the patterns of consumption and production in a way that economic productivity will not lead to environmental degradation (Guevara & Julián, 2019).

Sustainable Consumption and Production (CSP), as defined at the Oslo symposium on Sustainable Consumption in 1994, refers to "*the use of services and related products, which respond to basic needs and bring a better quality of life while minimizing the use of natural resources and toxic materials as well as the emissions of waste and pollutants over the life cycle of the service or product so as not to jeopardize the needs of future generations*" (Norwegian Ministry of Environment, 1994). In other words, Sustainable Consumption and Production aims to promote well-being and reduce the environmental impact for which the different socio-economic activities are responsible for (Akenji & Bengtsson, 2014).

Table 23: SDG 12 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
12.1	Implement programmes on sustainable consumption and production everywhere, with developed countries taking the lead	- Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies
12.2	Achieve natural resources' sustainable management and efficient use	- Material footprint, material footprint per capita, and material footprint per GDP - Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
12.3	Reduce per capita global food waste at the consumer level and food losses at the production level	- Global food loss index
12.4	Achieve chemicals and all wastes' environmentally sound management throughout their life cycle and reduce their release to protect human health and the environment	- Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement - Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
12.5	Reduce waste generation	- National recycling rate, tons of material recycled
12.6	Encourage companies to adopt sustainable practices	- Number of companies publishing sustainability reports
12.7	Promote sustainable public procurement practices	- Number of countries implementing sustainable public procurement policies and action plans
12.8	Ensure information and awareness for sustainable development	- Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
12.a	Strengthen developing countries' scientific and technological capacity to move towards sustainable consumption and production	- Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies
12.b	Develop tools to monitor sustainable development impacts for sustainable tourism	- Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools
12.c	Rationalize inefficient fossil-fuel subsidies by removing market distortions and taking into account the needs and conditions of developing countries	- Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels

To achieve sustainable production, changes should happen on production processes or products, that will reduce their environmental impact. To achieve sustainable consumption, consumer awareness is significantly important, in order to change their consumption behavior, values and motivations (Barber, 2007).

The topic of Sustainable Consumption and Production has been discussed a lot the past four decades, but all the undertaken measures were relatively weak (Schröder et al., 2020). The 12th SDG aims to ensure sustainable consumption and production patterns (Table 23). Target 12.2 focuses on efficient use of natural resources and assesses the material footprint per capita. The world's material footprint per capita in 2017 was 12.18 tonnes, increased compared to 2000, when it was estimated at 8.76 tonnes per capita (UNSD, 2020). The same target also assesses the domestic material consumption. The world's domestic material consumption per capita was estimated at 12.17 tonnes, increased compared to 2000, when it was estimated at 8.74 tonnes (Table 24) (UNSD, 2020).

Table 24: Mean change of an SDG12 indicator, per region

Target	Region	Mean change (2000-2017)
Domestic material consumption per capita	World	0.22
	Australia and New Zealand	-0.43
	Central and Southern Asia	0.118
	Eastern and South-Eastern Asia	0.668
	Europe	-0.0038
	Latin America and the Caribbean	0.197
	Northern America	-0.582
	Sub-Saharan Africa	0.015
	Western Asia	0.377

Goal 13: Climate action

Take urgent action to combat climate change and its impacts.

Since 1970, world's greenhouse gas emissions have been rapidly increasing (IPCC, 2014b); only CO_2 emissions were increased from 14862.351 kt in 1970 to 35998.939 kt in 2016 (World Bank, 2020). Electricity and heat producers were the biggest contributor of these emissions, while the transport and industry sector followed (IEA, 2020). GHG emissions that come from human activities are one of the biggest drivers of climate change (Doni et al., 2020).

Climate change has been defined as "*a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods*" (United Nations, 1992).

Table 25: SDG 13 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
13.1	Strengthen every country's resilience and adaptivity to climate-related hazards and natural disasters	- Number of deaths, missing persons and persons affected by disaster per 100,000 people - Number of countries with national and local disaster risk reduction strategies - Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
13.2	Integrate climate change measures into policies and strategies	- Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
13.3	Improve education and raise awareness on climate change mitigation and adaptation	- Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula - Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions
13.a	Implement the UNFCCC commitment and mobilize jointly $100 billion annually by 2020 to implement mitigation actions in developing countries	- Mobilized amount of United States dollars per year starting in 2020 accountable towards the $100 billion commitment
13.b	Promote raising-capacity mechanisms for effective climate change planning in least developed countries	- Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities

Climatic changes and extreme climate events affect both natural and human systems. According to IPCC, they can lead to "*floods, droughts, and sea level rise*", while they can have an impact on "*lives, livelihoods, health, ecosystems, economies, societies, cultures, services, and infrastructure*" (IPCC, 2014a). Climate change could also deteriorate some of the biggest challenges that the world faces today, such as poverty, hunger, inequalities, etc. (Zhenmin & Espinosa, 2019). Climate change affects every place in the world (Doni et al., 2020) and is a threat that is clear and present for everyone (Zhenmin & Espinosa, 2019).

A global cooperation and collective action are required, in order to efficiently mitigate climate change, as opposed to the promotion of the individual interests of each country independently (IPCC, 2014b). Adaptation to climate change will have positive impacts, since it will protect the ecosystems, the human health and the economy from every risk that climate change poses and will, in general, contribute to social well-being. To achieve that and in order to develop an effective adaptation policy, the variations of climate change effects on each region or across demographic groups should be taken into consideration. Every climate change effect should be examined taking into consideration every stressor and factor, as well as every risk and opportunity that poses. Every adaptation policy comes at a cost and effectiveness can vary; additionally, the development of an adaptation policy can be difficult due to the climate impacts' systematic nature, requiring a lot of attention, since maladaptation will lead to serious negative effects. It is also highlighted that adaptation policies can have positive impacts and make sense to be implemented, even when climate

change effects are not realized (Scheraga & Grambsch, 1998). Halkos and Tzeremes (2013), in their study of the effect that Kyoto protocol had on the environmental efficiency of various countries, found that a non-linear relationship exists between the levels of emissions reduction that countries are obligated to achieve and countries' environmental efficiency.

SDG 13 aims to combat climate change and its impacts, by taking urgent action and promoting the integration of climate change measures into every national policy and strategy (Table 25). Target 13.1, that focuses on natural disasters and hazards related to climate, proposes the evaluation of an indicator related to the number of people that were affected by natural disasters. In 2010, the country where the number of deaths and missing persons attributed to disasters per 100,000 population was the highest was Bhutan, where 397.1 people per 100,000 died or went missing. This number dropped to 171.99 people per 100,000 in 2015 and in 2019, only 3.67 persons per 100,000 died or went missing due to disasters in Bhutan (UNSD, 2020).

Goal 14: Life below water

Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Oceans cover more than 70% of the surface of Earth (Lovelock & Rapley, 2007) and are essential for every type of life on Earth. Among others, they generate oxygen and absorb carbon dioxide, they regulate climate, recycle nutrients and ensure food and livelihood (Bari, 2017). Oceans are, therefore, an ecosystem that provide goods and services that have been proven to be basic for the whole society's well-being (Holthus & Council, 1999).

Climate change poses a serious challenge for the seas and oceans: sea levels are rising, sea ice cover is disappearing, the temperature of sea water has changed and storms are more frequent, to name a few (Philippart et al., 2011). All these outcomes will have a significant impact on the benefits that oceans have:

- Capture fisheries and aquaculture will face changes in fish and shellfish populations, challenging thus food security.
- Coastal communities and habitats will be threatened due to sea level rise and storm frequency, leading to damaged infrastructures and even human life loss.
- The profitable industries of tourism and recreation will be impact and will face high economic losses (Ruckelshaus et al., 2013).

In addition to the challenge of climate change, the usage of the marine environment is unsustainable, since societies lately put more pressure on the oceans and seas. The economic maritime activities are now expanded and more intense, compared to previous years, while new activities have also developed, leading to severe environmental problems for the oceans (pollution, overexploitation, etc.) (Wright et al., 2017).

Marine ecosystems provide significantly valuable services (Bernhardt & Leslie, 2013) and it is extremely important to conserve them, since they can contribute to poverty reduction and provide food security and sustainable livelihoods (Diz et al., 2019); it is therefore important to use them in a sustainable way.

Table 26: SDG 14 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
14.1	Prevent and reduce marine pollution of all kinds	- Index of coastal eutrophication and floating plastic debris density
14.2	Sustainably manage and protect marine and coastal ecosystems, strengthen their resilience and act towards their restoration	- Proportion of national exclusive economic zones managed using ecosystem-based approaches
14.3	Minimize the impacts of ocean acidification	- Average marine acidity (pH) measured at agreed suite of representative sampling stations
14.4	Regulate harvesting, end overfishing and restore fish stocks through science-based management plans	- Proportion of fish stocks within biologically sustainable levels
14.5	Conserve coastal and marine areas	- Coverage of protected areas in relation to marine areas
14.6	Prohibit or eliminate certain forms of fisheries subsidies contribute either to overcapacity and overfishing or to illegal, unreported and unregulated fishing	- Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing
14.7	Increase developing and least developed countries' economic benefits from marine resources' sustainable use	- Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries
14.a	Improve ocean health and enhance marine biodiversity' contribution to countries' development, by increasing scientific knowledge, developing research capacity and transferring marine technology	- Proportion of total research budget allocated to research in the field of marine technology
14.b	Provide access to marine resources and markets for small-scale fishers	- Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries
14.c	Enhance oceans' conservation and sustainable use by implementing international law based on UNCLOS	- Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources

Table 27: Mean change of an SDG14 indicator, per region

Target	Region	Mean change (2016-2018)
Marine protected areas	**World**	1.387
	Latin America & Caribbean	7.4
	Middle East & North Africa	0.089
	East Asia & Pacific	0.43
	Europe and Central Asia	0.413
	South Asia	0.0000257
	North America	-0.006

The 14th SDG aims to conserve the oceans, seas and marine resources based on the principles of sustainability (Table 26). Target 14.5 focuses on the conservation of coastal and marine areas. In 2018, 11.4% of the world's territorial waters were identified as marine protected areas, increased compared to 2016, when the same percentage was at 8.63% (Table 27) (World Bank, 2020).

Goal 15: Life on land

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Table 28: SDG 15 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
15.1	Ensure terrestrial ecosystems' conservation, restoration and sustainable use	- Forest area as a proportion of total land area - Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
15.2	Promote the sustainable management of forests, reduce deforestation, restore degraded forests and increase afforestation and reforestation	- Progress towards sustainable forest management
15.3	Combat desertification, restore degraded land and soil and promote a land degradation-neutral world	- Proportion of land that is degraded over total land area
15.4	Ensure mountain ecosystems' conservation, so that they provide benefits essential for sustainable development	- Coverage by protected areas of important sites for mountain biodiversity - Mountain Green Cover Index
15.5	Reduce natural habitats' degradation and prevent biodiversity loss and the extinction of threatened species	- Red List Index
15.6	Promote fair sharing of genetic resources' benefits and appropriate access to such resources	- Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits
15.7	End poaching and trafficking of protected species of flora and fauna	- Proportion of traded wildlife that was poached or illicitly trafficked
15.8	Prevent and reduce the impact of invasive alien species on land and water ecosystems	- Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species
15.9	Integrate ecosystem and biodiversity values into strategies and planning	- Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020
15.a	Mobilize and increase financial resources for biodiversity and ecosystems' conservation and sustainable use	- Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
15.b	Mobilize resources for sustainable forest management and provide incentives to developing countries to advance such management	- Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
15.c	Enhance global support to act against protected species' poaching and trafficking	- Proportion of traded wildlife that was poached or illicitly trafficked

Trees and forests are an element of nature that is irreplaceable. They provide all sorts of services: social and economic, ecological, climatic and they even have aesthetic benefits to humankind. They provide food provision, air pollution mitigation and health improvements; all of them are basic services for life (Bonan, 2008; Tyrväinen et al., 2005). Additionally, they provide an assistance in climate change mitigation, soil conservation, as well as biodiversity preservation (Chakravarty et al., 2012).

Population growth, growth of needs and climate change, are drivers that can influence forest coverage and condition (Sayer et al., 2019). Deforestation can be defined as "*the conversion of forested areas to non-forest land use such as arable land, urban use, logged area or wasteland*" (Tejaswi, 2007). Direct causes of deforestation include, among others, farming land expansion, logging and fuel wood, overgrazing, fires and mining, urbanization and industrialization, air pollution and tourism, to name a few (Chakravarty et al., 2012). Deforestation is found to be a significant driver of climate change, as well as of biodiversity loss (Strassburg et al., 2010).

Land degradation refers to a "*long-term loss of ecosystem function and productivity caused by disturbances from which land cannot recover unaided*" (Bai et al., 2008). In other words, "*when land becomes degraded, its productivity declines unless steps are taken to restore that productivity and check further losses*" (Blaikie & Brookfield, 2015). Land degradation can be driven by a variety of natural and anthropogenic factors including, among others, climate, soil erodibility, unsustainable land management, poverty, population density, land tenure and infrastructure development, market access, international policies, etc. (Nkonya et al., 2016).

Biodiversity is defined as "*the number, variety and variability of living organisms in a given assemblage*" (Pearce & Moran, 1994) and is found at the core of human societies, which depend on it for their survival and good life quality (Díaz et al., 2006; Opoku, 2019). Biodiversity loss is a severe problem in the world; it can have a major negative impact on the functions of ecosystems and on the goods that they provide (Cardinale et al., 2012). It can be a result of habitat change and invasive species, climate change, overexploitation and pollution (Mazor et al., 2018).

Table 29: Mean change of SDG15 indicators, per region

Target	Region	Mean change (2000-2016)	Target	Region	Mean change (2016-2018)
Forest area	World	-0.0276	Terrestrial protected areas	World	0.088
	Sub-Saharan Africa	-0.14		Sub-Saharan Africa	0.205
	Latin America & Caribbean	-0.169		Latin America & Caribbean	0.178
	Middle East & North Africa	0.0144		Middle East & North Africa	0.064
	Europe and Central Asia	0.042		Europe and Central Asia	0.016
	North America	0.0266		North America	0.0044
	East Asia & Pacific	0.037		East Asia & Pacific	0.1296
	South Asia	0.062		South Asia	-0.00056

The conservation and restoration of terrestrial ecosystems and all the services that they provide, as well as their sustainable usage, is a major challenge in the world. The 15th

SDG aims to protect, conserve and restore terrestrial ecosystems and their services and manage them in a sustainable way (Table 28). Target 15.1 focuses on the conservation of forests and assesses the forest area, as a proportion of total land area. Forests accounted for 30.72% of the world's total land area in 2016, a percentage similar but a little reduced compared to the one in 2000 (31.17%) (World Bank, 2020). The same target uses an indicator of terrestrial protected areas for evaluation. In 2018, 14.73% of total land area were terrestrial protected areas (Table 29) (World Bank, 2020).

Goal 16: Peace, justice and strong institutions

Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Peace is essential, in order to ensure population's health, productivity and development worldwide (Wesley et al., 2016). Poverty, development, life expectancy and education can be negatively impacted by violence and conflicts; therefore, the achievement of peace and security is necessary, in order to ensure sustainable development (Hope Sr, 2019; Huff et al., 2016).

Good governance and strong institutions are able to promote policies and strategies that benefit their citizens and the national development goals in general (Bolaji-Adio, 2015); thus, they are required, in order to reduce poverty and hunger, improve human health and access to sanitation, promote education for all and gender equality and mitigate climate change (Dasandi & Mikhaylov, 2019).

Peace, justice and security are all concepts that are difficult to be defined and measured (Wesley et al., 2016), creating thus major challenges in monitoring and evaluating their impacts and the general progress of the 16th SDG, that includes these elements in its core (Dasandi & Mikhaylov, 2019).

More specifically, the 16th SDG aims to promote peace, justice and strong institutions in a society (Table 30). The achievement of the 16th SDG is necessary, in order to achieve all the other SDGs and sustainability (Wesley et al., 2016). Target 16.1 focuses on the reduction of violence and death rates, including the number of victims of intentional homicide. The number of intentional homicides per 100,000 people in the world for 2018 was estimated at 5.8; a rate that was relatively stable since 2010 (Table 31) (UNODC, 2020). Target 16.5 refers to the reduction of corruption and bribery. Data regarding the percentage of firms from which informal payments to public officials were expected for 2019 indicate that 20.59% of firms in the world are expected to get involved in such activities (World Bank, 2020).

Table 30: SDG 16 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
16.1	Reduce all forms of violence and related death rates everywhere	- Number of victims of intentional homicide per 100,000 population, by sex and age - Conflict-related deaths per 100,000 population, by sex, age and cause - Proportion of population subjected to physical, psychological or sexual violence in the previous 12 months - Proportion of population that feel safe walking alone around the area they live
16.2	End children's abuse, exploitation, trafficking, violence and torture	- Proportion of children aged 1-17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month - Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation - Proportion of young women and men aged 18□29 years who experienced sexual violence by age 18
16.3	Promote the rule of law and ensure equal access to justice for everyone, everywhere	- Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanisms - Unsentenced detainees as a proportion of overall prison population
16.4	Reduce illicit financial and arms flows, strengthen stolen assets' recovery and combat organized crime	- Total value of inward and outward illicit financial flows (in current United States dollars) - Proportion of seized, found or surrendered arms whose illicit origin or context has been traced or established by a competent authority in line with international instruments
16.5	Reduce corruption and bribery	- Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months - Proportion of businesses that had at least one contact with a public official and that paid a bribe to a public official, or were asked for a bribe by those public officials during the previous 12 months
16.6	Develop institutions that are effective, accountable and transparent	- Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar) - Proportion of the population satisfied with their last experience of public services
16.7	Ensure decision-making that is responsive, inclusive, participatory and representative	- Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions - Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group
16.8	Strengthen developing countries' participation in global governance institutions	- Proportion of members and voting rights of developing countries in international organizations
16.9	Provide legal identity for everyone	- Proportion of children under 5 years of age whose births have been registered with a civil authority, by age
16.10	Ensure public access to information and protect fundamental freedoms	- Number of verified cases of killing, kidnapping, enforced disappearance, arbitrary detention and torture of journalists, associated media personnel, trade unionists and human rights advocates in the previous 12 months - Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public access to information

16.a	Strengthen national institutions for building capacity to prevent violence, terrorism and crime, especially in developing countries	- Existence of independent national human rights institutions in compliance with the Paris Principles
16.b	Promote non-discriminatory laws and policies	- Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law

Table 31: Mean change of an SDG16 indicator, per region

Target	Region	Mean change (2010-2018)
Victims of intentional homicide	**World**	-0.027
	Europe	-0.067
	Africa	0.025
	Asia	-0.085
	Northern America	0.063
	South America	0.095
	Australia & New Zealand	-0.0217

Goal 17: Partnerships for the goals

Strengthen the means of implementation and revitalize the global partnership for sustainable development.

A global partnership can play a key role to the successful achievement of every SDG (Bull & McNeill, 2019). A partnership will set a common framework of principles and guidelines so that the SDGs' implementation will be facilitated and long-term results will be achieved (Kim, 2015).

A partnership can be successful, when there exist clearly defined reasons, as well as trust, shared vision and goals and joint planning. Roles and responsibilities should be clearly articulated, while the recognition of each partner's strengths and weaknesses is also important. Other key elements in an effective partnership are equity, accountability and sustainability (Sliney, 1977). For a successful progress towards sustainable development, it has been found that global partnerships should focus on issues regarding foreign aid, trade and investments, as well as migration from rural areas to urban areas (Huang & Quibria, 2015).

Table 32: SDG 17 - Targets and Indicators (Source: United Nations, 2015b)

Target No.	Targets	Indicators
17.1	Strengthen domestic resource mobilization to improve domestic capacity for tax and other revenue collection	- Total government revenue as a proportion of GDP, by source - Proportion of domestic budget funded by domestic taxes
17.2	Implementation of developed countries' official development assistance commitments	- Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee donors' gross national income (GNI)
17.3	Mobilize additional financial resources for developing countries	- Foreign direct investments (FDI), official development assistance and South-South Cooperation as a proportion of total domestic budget - Volume of remittances (in United States dollars) as a proportion of total GDP
17.4	Assist the attainment of long-term debt sustainability by developing countries and assist poor countries that are highly indebted to reduce debt distress	- Debt service as a proportion of exports of goods and services
17.5	Adopt and implement regimes for investment promotion for least developed countries	- Number of countries that adopt and implement investment promotion regimes for least developed countries
17.6	Enhance international cooperation and access to science, technology and innovation	- Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation - Fixed Internet broadband subscriptions per 100 inhabitants, by speed
17.7	Promote the development of environmentally sound technologies and their transfer, dissemination and diffusion to developing countries	- Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies
17.8	Operationalize the technology bank and capacity-building mechanism in science and technology for least developed countries and enhance the use of enabling technology	- Proportion of individuals using the Internet
17.9	Support the implementation of effective capacity-building in developing countries and national plans to implement the sustainable development goals	- Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries
17.10	Promote a trading system that is universal, rules-based, open and non-discriminatory	- Worldwide weighted tariff-average
17.11	Increase the exports of developing countries	- Developing countries' and least developed countries' share of global exports
17.12	Implement duty-free and quota-free market access for all least developed countries and contribute to market access facilitation	- Average tariffs faced by developing countries, least developed countries and small island developing States
17.13	Enhance macroeconomic stability globally	- Macroeconomic Dashboard
17.14	Strengthen coherence in policy for sustainable development	- Number of countries with mechanisms in place to enhance policy coherence of sustainable development
17.15	Respect each country's leadership to implement sustainable development and poverty eradication policies	- Extent of use of country-owned results frameworks and planning tools by providers of development cooperation
17.16	Enhance the global partnership for sustainable development, that includes multi-stakeholder partnerships that share knowledge and expertise	- Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals
17.17	Promote effective partnerships in public, public-private and civil society	- Amount of United States dollars committed to public-private and civil society partnerships

17.18	Enhance capacity-building support to developing countries, to increase the availability of high-quality, timely and reliable data	- Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics - Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics - Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding
17.19	Develop measurements of progress on sustainable development based on existing initiatives	- Dollar value of all resources made available to strengthen statistical capacity in developing countries - Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years; and (b) have achieved 100 per cent birth registration and 80 per cent death registration

The 17th SDG aims to revitalize the global partnership for sustainable development and strengthen their means of implementation (Table 32). Target 17.1 proposes the indicator of total government revenue as a proportion of GDP for assessment. In 2018, revenues accounted for 24.34% of world's GDP (World Bank, 2020). In order to assess Target 17.8 that focuses on enhancing the use of enabling technology, the proportion of individuals using the Internet is proposed; it is observed that 49% of world's population were using the internet in 2017 (World Bank, 2020). Target 17.10 promotes an open, non-discriminatory and equitable multilateral trading system and proposes the usage of the worldwide weighted tariff-average for evaluation. The world's weighted mean applied tariff rate was estimated at 2.59% in 2017, decreased compared to 2000, when it was at 4.96% (Table 33) (World Bank, 2020).

Table 33: Mean change of SDG17 indicators, per region

Target	Region	Mean change (2010-2018)	Target	Region	Mean change (2000-2018)
Revenue, excluding grants	**World**	0.22	**Individuals using the Internet**	**World** *(2000-2017)*	2.486
	Sub-Saharan Africa *(2015-2017)*	-0.588		**Sub-Saharan Africa** *(2000-2017)*	1.237
	Latin America & Caribbean	-0.015		**Latin America & Caribbean**	3.524
	Europe and Central Asia	0.054		**Middle East & North Africa**	3.39
	North America	0.138		**Europe and Central Asia**	3.65
	East Asia & Pacific *(2010-2017)*	0.536		**North America**	1.8467
	South Asia	0.0868		**East Asia & Pacific** *(2000-2017)*	3.162
				South Asia	1.394

Target	Region	Mean change (2000-2017)
Tariff rate, applied, weighted mean, all products	World	-0.127
	Sub-Saharan Africa	-0.195
	Latin America & Caribbean	-0.367
	Middle East & North Africa	-0.555
	Europe and Central Asia	-0.042
	East Asia & Pacific	-0.167
	South Asia	-1.032

4. Progress realization

The United Nations have provided the Sustainable Development Goals Progress Chart 2020, a report which provides evaluations for targets included in each one of the 17 SDGs, regarding the progress that has been made in the world and in different regions. In addition, our trend analysis and the mean changes that were extracted for various indicators, can also assist in the evaluation of the progress made in the realization of each SDG.

SDG 1: According to the Sustainable Development Goals Progress Chart 2020, a fair progress has been made in the world in extreme poverty eradication, although acceleration is needed. Both the situation on extreme poverty eradication and the achievement of substantial social protection coverage are found to be at a moderate distance to the final targets. Sub-Saharan Africa and Central and Southern Asia are still very far from the targets' achievement (United Nations, 2020a).

Based on the trend analysis that we performed for the years 1990-2018, the highest negative mean change of the percentage of population living with under $1.90/day was observed in East Asia and the Pacific; the mean change in the world was estimated at -1.08, while the lowest negative mean change was observed in Middle East and North Africa, among the other world regions.

SDG 2: A deterioration has been observed regarding access to safe, nutritious and sufficient food for all and the world is at a moderate distance to the final target, with Sub-Saharan Africa being very far from achieving it. Regarding the goal of reducing the number of stunted children under 5 years by 40% (compared to 2012), the world is far from the target and even though a fair progress was made, acceleration is needed. Sub-Saharan Africa, Central and Southern Asia and the Pacific Island countries[2] are still very far from its achievement (United Nations, 2020a).

The mean change of prevalence of undernourishment for the years 2001-2018 in the world was estimated at -0.33; the highest negative mean change was observed in East Asia and the Pacific (-0.485), followed by Sub-Saharan Africa and South Asia.

[2] Pacific Island counties include Oceania, excluding Australia and New Zealand (United Nations, 2020a)

SDG 3: The world is on track and has done substantial progress on reducing under-5 mortality to at least 25 per 1,000 live births and on increasing the coverage of births attended by skilled health personnel; the world is at a moderate distance of achieving the first target (only Sub-Saharan Africa is very far from its achievement) and is close to achieving the second target. In addition, regarding the end of malaria and the increase of vaccine coverage among 1-year-olds (diphtheria-tetanus-pertussis), the world is far from achieving the first one (Sub-Saharan Africa and the Pacific Island countries are still very far from its achievement) and at a moderate distance of the latter (the Pacific Island countries are very far from its achievement) (United Nations, 2020a).

The mean change of the maternal mortality ratio for the years 2000-2017 in the world was estimated at -8.21; the highest negative mean change was observed in Sub-Saharan Africa (-20.7), followed by South Asia (-13.93). Regarding the mean change of neonatal mortality rate for the years 2000-2019 in the world, it was estimated at -0.68; the highest negative mean changes were observed in South Asia (-1.11).

SDG 4: According to the Sustainable Development Goals Progress Chart 2020, the world is far from achieving its target of ensuring that every girl and boy completes primary education; Sub-Saharan Africa and the Pacific Island countries are still very far from achieving the target (United Nations, 2020a).

The mean change of primary school enrollment for the years 2000-2018 in the world was estimated at 0.338; the highest positive mean change was observed in Sub-Saharan Africa (1.82), while South Asia followed. Regarding the mean change of secondary school enrollment for the years 2000-2018, it was estimated at 0.694 for the world; the highest positive mean changes were observed in South Asia and in East Asia and the Pacific. The mean change of youth literacy rate in the world for the years 2000-2019 was estimated at 0.272; the highest positive mean changes were observed in South Asia and in Sub-Saharan Africa.

SDG 5: The world is at a moderate distance of achieving the elimination of child marriage (Sub-Saharan Africa is far from its achievement) and women's full participation and equal opportunities in national parliaments (the Pacific Island counties are still very far from the target) and, while a fair progress has been made, acceleration is needed (United Nations, 2020a).

The mean change of the proportion of seats held by women in national parliaments for the years 2000-2020 in the world was estimated at 0.585; the highest positive mean change was observed in Latin America and the Caribbean, followed by Middle East and North Africa.

SDG 6: The world is at a moderate distance of achieving universal access to safely managed drinking water services but far from achieving universal access to safely managed sanitation services. Sub-Saharan Africa is still very far from achieving the second target (United Nations, 2020a).

The mean change of people using safely managed drinking water services for the years 2005-2017 in the world was estimated at 0.56, while the highest positive mean change was observed in Latin America and the Caribbean (1.65), among the other studied world regions for which data were available. At the same time, the mean change of people using safely managed sanitation services for the same year in the world was estimated at 1.12, with the highest mean change being observed in East Asia and the Pacific (2.17).

SDG 7: The world is at a moderate distance of achieving universal access to electricity and of doubling the global rate of improvement in energy efficiency. The Pacific Island countries are very far from achieving the first target, while Sub-Saharan Africa is very far from the achievement of both targets (United Nations, 2020a).

The mean change of the percentage of population with access to electricity for the years 2000-2018 in the world was estimated at 0.612. The highest positive mean change was

observed in South Asia (1.899), followed by Sub-Saharan Africa (0.983). At the same time, the mean change of the renewable energy consumption for the years 2005-2015 in the world was estimated at 0.015. The highest positive mean change was observed in Europe and Central Asia (0.4), while the highest negative mean change was observed in South Asia (-1.12).

SDG 8: The world is close to sustain per capita economic growth and achieve full and productive employment. Sub-Saharan Africa, Latin America and the Caribbean and the Pacific Island countries are still very far from the achievement of the first target (United Nations, 2020a).

The mean change of GDP per capita growth for the years 2000-2019 in the world was estimated at -0.022. The highest positive mean change was observed in South Asia (0.096), while the highest negative mean change was observed in Sub-Saharan Africa (-0.168). At the same time, the mean change of total unemployment for the years 2000-2020 in the world was estimated at -0.025; the highest negative mean change was observed in Middle East and North Africa and Europe and Central Asia, while South Asia was the only one among the studied regions where a positive mean change was observed.

SDG 9: The world is close in significantly raising industry's share of GDP and in increasing access to mobile networks, and at a moderate distance of increasing the expenditure for scientific research and development, as a proportion of GDP (only Sub-Saharan Africa is still very far from achieving the latter target) (United Nations, 2020a).

The mean change of the value added of manufacturing for the years 2000-2019 in the world was estimated at -0.076; the highest negative mean change was observed in Middle East and North Africa (-0.305), followed by East Asia and the Pacific. Regarding research and development expenditure, the mean change for the years 2000-2018 in the world was estimated at 0.0075; the highest positive mean change was observed in Europe and Central Asia (0.0164).

SDG 10: The world is at a moderate distance of reducing inequality within countries and faces limited or no progress regarding its achievement; countries in Latin America and the Caribbean are very far from its achievement (United Nations, 2020a).

The mean change of labour share of GDP for the years 2005-2017 in the world was estimated at -0.129. The highest positive mean change was observed in Latin America and the Caribbean (0.273), while the highest negative mean change was observed in Central and Southern Asia (-0.33).

SDG 11: The world is far from achieving the reduction of the proportion of urban population living in slums, as well as the reduction of the levels of fine particulate matter in cities. Northern Africa and the whole Asia are very far from achieving the second target, while Sub-Saharan Africa is very far from achieving both targets (United Nations, 2020a).

The mean change of the mean annual exposure to PM2.5 air pollution for the years 2010-2017 in the world was estimated -0.762. The highest negative mean change was observed in East Asia and the Pacific (-1.965), while the highest positive mean change was observed in Sub-Saharan Africa (1.09), followed by Middle East and North America.

SDG 12: The world is at a moderate distance of reducing the domestic material consumption per unit of GDP (Sub-Saharan Africa, the Pacific Island countries and Central, Southern and Eastern Asia are still very far from its achievement) and is close at rationalizing inefficient fossil-fuel subsidies per unit of GDP (Northern Africa and Western Asia, as well as Central and Southern Asia are very far from the target's achievement) (United Nations, 2020a).

The mean change of the domestic material consumption per capita for the years 2000-2017 in the world was estimated at 0.22; the highest positive mean change was observed in

Eastern and South-Eastern Asia (0.668), while the highest negative mean change was observed in Northern America (-0.582).

SDG 13: The world is far from reducing global greenhouse gas emissions and a deterioration was observed in its progress (United Nations, 2020a). No data were available for each individual region, so further evaluation was not feasible.

SDG 14: The world is far from increasing the proportion of fish stocks within biologically sustainable levels and limited or no progress has been observed in its progress. At the same time, the world has managed to meet/almost meet the target regarding the conservation of at least 10 per cent of coastal and marine areas by 2020 (United Nations, 2020a).

The mean change of marine protected areas as a percentage of territorial waters for the years 2016-2018 in the world was estimated at 1.387. The highest positive mean change was observed in Latin America and the Caribbean (7.4).

SDG 15: The world is at a moderate distance of ensuring the conservation, restoration and sustainable use of terrestrial ecosystems (the Pacific Island countries were very far from its achievement) as well as of protecting and preventing the extinction of threatened species, even though these targets were to be achieved by 2020 (United Nations, 2020a).

The mean change of forest area for the years 2000-2016 in the world was estimated at -0.0276; the highest negative mean change was observed in Latin America and the Caribbean (-0.169), while the highest positive mean change was observed in South Asia (0.062). At the same time, the mean change of terrestrial protected areas for the years 2016-2018 in the world was estimated at 0.088; the highest positive mean change was observed in Sub-Saharan Africa (0.205), while South Asia was the only region among the studied ones where a small negative mean change was observed (-0.00056).

SDG 16: The world is far from reducing homicide rates and the proportion of unsentenced detainees; a fair progress was made in the first target but acceleration is needed (Sub-Saharan Africa and Latin America and the Caribbean are still very far from its achievement), while deterioration was observed in the progress of the latter (Sub-Saharan Africa and Central and Southern Asia are still very far from its achievement). At the same time, the world is at a moderate distance of increasing the number of countries that include independent national human rights institutions, that are in compliance with the Paris Principles (the Pacific Island countries are still very far from its achievement) (United Nations, 2020a).

The mean change of the number of victims of intentional homicide for the years 2010-2018 in the world was estimated at -0.027. The highest negative mean change was observed in Asia (-0.085), while the highest positive mean change was observed in South America (0.095).

SDG 17: The world is at a moderate distance of enhancing access to technology with the increase of internet use (Sub-Saharan Africa is still very far from its achievement, although progress was made), as well as of increasing the proportion of countries that have a fully funded national statistical plan; although limited or no progress was made for the second target. At the same time, the world is far from ensuring full implementation of the net official development assistance disbursements by donor countries and limited or no progress has been made in that area (United Nations, 2020a).

The mean change of revenue (excluding grants) as a percentage of GDP for the years 2010-2018 in the world was estimated at 0.22; the highest positive mean change was observed in East Asia and the Pacific (0.054), while the highest negative mean change was observed in Sub-Saharan Africa (-0.588). At the same time, the mean change of individuals using the internet for the years 2000-2018 in the world was estimated at 2.486; the highest

positive mean change was observed in Europe and Central Asia (3.65), followed by Latin America and the Caribbean (3.524). Regarding the weighted mean applied tariff rate, the mean change in the world for the years 2000-2017 was estimated at -0.127; the highest negative mean change was observed in South Asia (-1.032), followed by Middle East and North Africa (-0.555).

All these data highlight the fact that, while progress has been made in specific areas, the world has still a long way to go in order to achieve the 17 Sustainable Development Goals. Even though developed countries are closer in achieving the targets that have been set, developing countries, especially countries in Sub-Saharan Africa and Pacific Island countries require acceleration. Based on the Sustainable Development Goals Progress Chart 2020 that the United Nations provided, we can conclude that the world should focus on the improvement of the 4th SDG regarding education, the 11th SDG regarding sustainable cities and communities, as well as on the 13th SDG, regarding climate change. At the same time, improvements are required in the 16th SDG for peace and justice, in the 2nd SDG for hunger and in the 6th SDG for water and sanitation (United Nations, 2020a).

It is also significantly important that a measurement of sustainability is developed and used, so that the world's progress on sustainable development and on the achievement of the 17 SDGs is efficiently monitored (Halkos & Managi, 2017).

5. Conclusions

The 17 Sustainable Development Goals (SDGs) aim to tackle socio-economic and environmental issues and promote sustainable development all over the world, for developed and developing countries, addressing issues that have serious impacts on people's lives and well-being. Since 2015, the 17 SDGs put the world in a more sustainable trajectory, aiming to achieve significant results by 2030.

This paper presented an overview of each individual goal, pointing out basic elements and the importance of its implementation, presenting the targets and indicators that were set by the United Nations in order to monitor each goal's progress, as well as recent data regarding the situation that is occurring currently in the world and their mean changes, that were extracted through a trend analysis that we performed.

This overview, the mean changes, as well as the report that the United Nations published on the SDGs (United Nations, 2020b) indicate that even though progress has been made in specific areas by 2020, the world is not on track and still has a long way to go, in order to achieve the goals that were set, by 2030. More focus should be given on the improvement of the 4th, 11th and 13th SDGs, as well as on the progress of the 16th, 2nd and 6th SDGs. The situation is even more difficult due to the COVID-19 pandemic: new challenges have appeared regarding human health, the economy and the whole society, making it harder for the world to continue in a sustainable path.

The whole world should promote further coordinated actions and global cooperation, in order to successfully address the pandemic and get on track, as well as in order to promote sustainability and properly mitigate the social, economic and environmental problems in the world.

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