ADAPTATION STRATEGIES TOWARDS SUSTAINABLE DEVELOPMENT PRINCIPLES IN HYDROCARBON EXPLORATION AND EXPLOITATION ENTERPRISES

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DECLARATION OF THE AUTHOR OF A DIPLOMATIC THESIS

I, the undersigned Efstratiou Vasiliki, hereby declare that I am the sole author of this thesis.

To the best of my knowledge, this thesis contains no material previously published by any other person except where due acknowledgement has been made. This thesis contains no material that has been accepted as part of the requirements of any other academic degree or non-degree program, in English or any other language.

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Abstract

This thesis analyzes the topic "Adaptation strategies towards sustainable development principles in hydrocarbon exploration and exploitation enterprises". In Chapter A, one will find information related to the European Green Deal, the investment challenges, the policy that exists for the industry, the mobilization of the industry for the Clean and Circular Economy, as well as the actions to achieve it. At the end of this chapter, a just transition mechanism is mentioned, while the final remarks are not omitted. In Chapter B, in the first part, reference is made to the 2030 Agenda for Sustainable Development, as the 17 sustainable goals are briefly mentioned. In the second part of this chapter, the application of agility systems in the oil and gas industry is analyzed. These mainly consist of the application of available technology, production strategies, human resources, and the management environment. In Chapter C, 10 Oil and Gas companies are mentioned, which are China Petroleum and Chemical Corp. (Sinopec), Phillips 66, Saudi Aramco, Shell plc, BP, ExxonMobil, Total Energies, Chevron, Gazprom, and Marathon. In all these companies, one will find at the beginning a brief historical review, followed by the sustainable strategies, which are divided into applications for agility and sustainable development goals. In Chapter D, which is the last chapter of this work, a brief analysis is made of what benchmarking is and the categories it is divided into, while benchmarking is carried out for the 10 companies, which were analyzed in Chapter C, on the applications for agility and sustainable development goals. Finally, some conclusions from the comparisons of the companies are mentioned.

Keywords: Final project, European Green Deal, Sustainable development goal, SDGs, companies, industry, agility, China Petroleum and Chemical Corp (Sinopec), Phillips 66, Saudi Aramco, Shell plc, BP, ExxonMobil, TotalEnergies (Total), Chevron, Gazprom, Marathon, Benchmarking

Give thanks

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Contents

CHAPTER A

European Green Deal

As is being proven, environmental degradation and climate change are the most significant threats to the European Union and the whole world. The climate is changing every year, and there is a gradual warming of the atmosphere. While one million of the eight million species on the planet are at risk of extinction, the oceans are polluted, and the forests are destroyed. (Sources: (i) Intergovernmental Panel on Climate Change (IPCC): Special Report on the impacts of global warming of 1.5°C; (ii) Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services: 2019 Global assessment report on biodiversity and ecosystem services; (iii) The International Resource Panel: Global Resources Outlook 2019: Natural Resources for the Future We Want; (iv) European Environment Agency: the European environment — state and outlook 2020: knowledge for transition to a sustainable Europe). These challenges are set to be overcome by the European Green Deal, which is Europe's new growth strategy that will transform the Union into a competitive, resource-efficient economy. Also, it aims to make Europe climate neutral by 2050 and use green technology to help stimulate the economy. (European Commission, Brussels 11.12.2019)

In general, the European Commission aims to protect the health and well-being of citizens from the effects of the environment. Because of the substantial change it will bring, the active participation and trust of citizens in the transition to a more sustainable society are important. (European Commission, Brussels 11.12.2019)

The new development strategy is the Sustainable Europe Investment Plan, through which the transition to a climate-neutral and green economy will take place. This plan is divided into the following three dimensions:

- Firstly, in the form of sustainable investments, more than 1 trillion euros will be mobilized throughout the coming decade via the European Union's budget, in which a greater share of public spending will be devoted to climate and the environment than previously. Through the utilization of guarantees in private funding and the Just Transition Mechanism (JTM), socio-economic impacts resulting from the transition can be mitigated. (European Commission, Brussels 14.1.2020)

- Secondly, the plan enables a framework for private and public sector investors, helping to provide a cost effective, efficient, and socially balanced transition. This framework provides the tools required to properly identify sustainable investments. (European Commission, Brussels 14.1.2020)

- Thirdly, tailored support will be provided to public administrations and project promoters throughout the identification, structuring, and execution of sustainable projects, which contribute to the implementation of the Sustainable Development Goals. (European Commission, Brussels 14.1.2020)

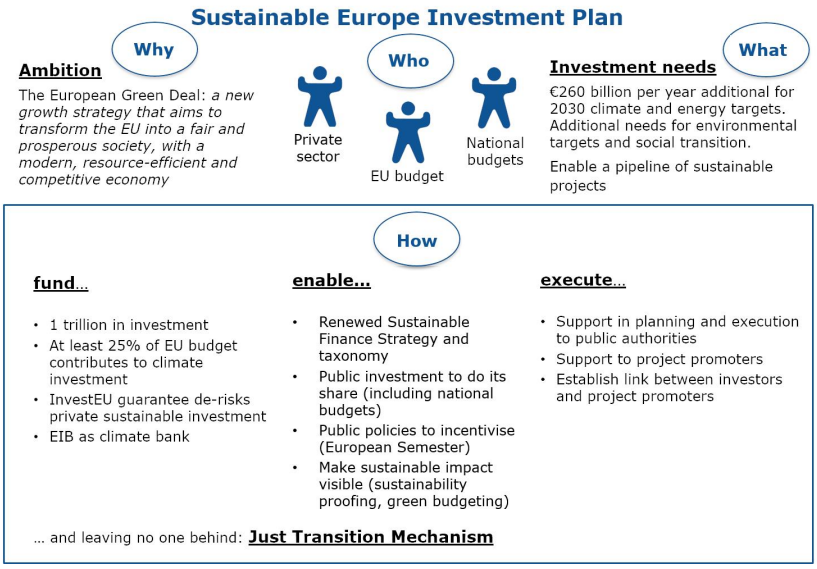

Figure 1. The Sustainable Europe Investment Plan. (European Commission, Brussels 14.1.2020)

The Sustainable Europe Investment Plan, also illustrated in Figure 1, is consistent with the EU's commitment to follow the Sustainable Development Goals for its policy and action. It therefore contributes to the implementation of the Sustainable Development Goals. (European Commission, Brussels 14.1.2020)

The investment challenges

The investment challenges for Europe's transition to a climate-neutral, resilient, and environmentally sustainable economy are many. This transition requires investments with a total cost of €260 billion per year. The most important investment concerns the renovation and creation of energy - efficient buildings. (European Commission, Brussels 14.1.2020)

The investments do not include the preservation of the ecosystem and its restoration, nor biodiversity. Also, significant investment needs in agriculture and climate adaptation are not included. Finally, human capital and social investments related to the transition will be protected. (European Commission, Brussels 14.1.2020)

A key factor in the Green Deal is investment in digitization. Innovative and tailored solutions will be provided to tackle climate-related problems if substantial investments are made in the development of leading digital technologies, as well as in European strategic digital capabilities. (European Commission, Brussels 14.1.2020)

In the future, there will be even greater investment needs. This will happen because a new plan has been announced in the European Green Deal, which sets a further increase in the EU's 2030 greenhouse gas emission reduction target. With further analysis carried out, additional investment may be required by 2040, up to 2% of GDP. (European Commission, Brussels 14.1.2020)

An industrial policy for the European Green Deal

For the socio-political acceptance and support of the European Green Deal, the goal of climate neutrality by 2050 is needed to ensure new jobs and a long-term economy that is highly competitive globally. This EU industrial policy towards the European Green Deal is structured with a three-pronged strategy. (Grégory Claeys, Bruegel 2019)

The first priority is to promote disruptive innovation, which will be motivated by the decarbonization of industry. To achieve climate neutrality, Europe will have to invest more and better. For most investments, Europe's R&D spending remains lower than GDP. Although Europe is considered a world leader in innovation in various sectors

(automotive industry, biopharma, etc.) it should also devote itself to its development in digital and electronic technology. This move will further help clean mobility, clean energy and smart building solutions. (Grégory Claeys, Bruegel 2019)

Under the European Green Deal, there are two existing EU initiatives that could increase business R&D investment. The first innovation tool of the European Green Deal is the European Innovation Council (EIC), which is inspired by the US Advanced Research Projects Agency (DARPA). The purpose of its design is to financially support, through grants, innovators who develop high-risk innovations. To do this, from 2021 to 2027, the EIC needs to allocate at least €15 billion under Horizon Europe. (Grégory Claeys, Bruegel 2019)

The second innovation tool of the European Green Deal is the Innovation Fund (IF), established under the EU ETS for the period 2021-2030. The IF is designed to demonstrate various innovative technologies and processes related to low carbon emissions in the context of industry, carbon capture and carbon storage (CCU and CCS). It holds at least 450 million carbon rights, which is equivalent to €11 billion. (Grégory Claeys, Bruegel 2019)

The second strategy is related to the creation of conditions for the flowering of innovative European markets in a receptive market. DARPA's success and limited budget prove that it is important to create favorable conditions for products with public funding. The EU has three main tools at its disposal in order to create more favorable conditions for companies. (Grégory Claeys, Bruegel 2019)

As the first tool, the concept of the integration of the EU internal market is defined. Obstacles to the scaling up of European companies are support measures for clean technologies, energy taxation, etc. The basic action to eliminate these is the creation of a regulatory framework. To achieve this, there should be coordination between national industrial policies. (Grégory Claeys, Bruegel 2019)

The second tool is public contracts, which, given their scale, are important for promoting innovation, and in the EU, they are stimated at around 16% of GDP. (European Commission, 2018) Carbon-based contracts are defined as a third tool. (Grégory Claeys, Bruegel 2019)

The third and final strategy is to export the European Green Deal. The EU's total gas emissions account for 10% of global emissions. Therefore, the European Green Deal should be promoted beyond its borders to equalize global temperature levels. Achieving this strategy requires two key steps. (Grégory Claeys, Bruegel 2019)

As a first step, the rapid establishment of the Neighborhood, Development, and International Cooperation Instrument (NDICI) could be considered. For the period 2021-2027, this random enactment has been proposed by the European Commission as part of the discussions on the EU budget, and for the same period, the Commission has proposed a budget of €89.2 billion for NDICI, as 3 billion of euros per year will be allocated to climate actions. In contrast, the European Parliament requested €93 billion. (Grégory Claeys, Bruegel 2019)

As a second step, the further consolidation and application of the principles of rationality in EU development financing but also in climate actions outside Europe could be considered. This could be done by developing a single entity, such as the European Bank for Climate and Sustainable Development. This was proposed by the Council of the European Union (2019) and gave three options:

i) building on the EBRD and the external financing activities of the EIB
ii) creating a new, well-capitalized institution with mixed ownership (including the European Commission, EIB, EBRD, EU countries and others)
iii) creating it as an EIB subsidiary.

All these approaches would help the EU achieve its goal. Initially, it would provide funding for climate action and create commitments to reduce gas emissions in most countries. Channels would then be developed for the EU industry to enter new,

pioneering markets. Finally, it would provide a foreign policy dividend for the EU, helping the economic development of its countries. (Grégory Claeys, Bruegel 2019)

Mobilizing industry for a Clean and Circular Economy

Mainly, 50% of the total gas emissions are attributed to resource extraction but also to the processing of material resources, food, and fuel. These factors also affect biodiversity, as a 90% loss of it is observed. Also, only 12% of EU materials come from recycling. A key parameter is inclusion in the digital and green transformations, as they theoretically go hand in hand and have the potential to expand sustainable economic activity. (ESDN, "The European Green Deal", December 2020)

According to the Industrial Strategy, which was released in March 2020, three key priorities are outlined. The first reflects climate neutrality by 2050; the second outlines maintaining global competitiveness and maintaining a level playing field; and the last is the digitization of Europe. (European Commission, Brussels, 10 March 2020)

Actions

In this context, the main challenge is to develop a series of actions and projects aligned with the European Green Deal.

1. Climate action

As mentioned above, climate action is at the heart of the European Green Deal. By 2050, EU aims to be climate neutral and as a result all Member States are required to implement climate policies. In exchange, The European Commission will help the nations design and implement reforms that support their climate ambitions. (European Commission, "Reform Support.")

2. Environment and oceans

Europe's main concern is to protect the environment, seas and oceans, which are a source of natural and economic wealth. The European Green Deal prioritizes the protection of biodiversity and ecosystems and reducing air, water and soil pollution. (European Commission, "Protecting the environment and oceans with the Green Deal.")

3. Energy

With the main goal of transitioning to clean energy, this agreement focuses on 3 basic principles that will also contribute to improving the quality of life of citizens. The first basic principle is to ensure a secure and affordable EU energy supply. The second principle is the development of a fully integrated, digitalised and interconnected EU energy market. The last principle is to prioritize energy efficiency. (European Commission, "Energy and the Green Deal.")

4. Transport

The percentage of transport emissions corresponds to 25% of the total EU greenhouse gas emissions and has been continuously increasing in recent years. In addition to transport emissions, there is noise, congestion and traffic accidents. The EU's goal by 2050 is to be the first climate-neutral continent, and a 90% reduction in greenhouse gas emissions requires ambitious changes in transport. (European Commission, "Transport and the Green Deal.")

5. Agriculture

The sustainability strategy links the health of society and people to a healthy planet and therefore puts sustainable food systems at the heart of the European Green Deal. This design aims to stimulate the economy and improve people's quality of life and health, while at the same time taking care of nature. Therefore, the transition to a sustainable food system can bring socio-economic, environmental and clearly health benefits. A key objective of the EU is to reduce the environmental and climate footprint of the food system and to strengthen the resilience. (European Commission, "Agriculture and the Green Deal.")

6. Finance and regional development

To achieve the targets set by the European Green Deal, the Commission should commit at least €1 trillion in sustainable investment over the next decade. At least 37% of the financing EU countries receive, must be dedicated to investments and reforms that support climate goals. Sustainable finance measures will help the European Green Deal by boosting private sector investment in green and sustainable projects. The financing measures include the Classification Regulation for the classification of green investments. (European Commission, "Finance and the Green Deal.")

7. Industry

The main goal of the European Green Deal is to achieve climate neutrality by 2050. To make this happen, all industrial value chains will have to play a key role, and global markets will have to tap into the significant potential to produce technologies with lower emissions and more sustainable products and services. Therefore, the full mobilization of industry is needed to achieve a climate-neutral and circular economy. (European Commission, "Industry and the Green Deal.")

8. Research and innovation

The role of research and innovation in the European Green Deal is to drive transformative change. It is an opportunity to turn to a fair and sustainable future, but also to modernize the EU's socio-economic standards. The necessary transitions will be made through research and innovation, while at the same time, de-risking solutions will take place. (European Commission, "Research and innovation for the European Green Deal.")

A Just Transition Mechanism

Decarbonizing the energy system is important to achieving the EU's 2030 and 2050 climate targets, but it must be affordable for consumers and businesses. To do this, the energy systems of the Member States should rely heavily on renewable sources. Also, through the member states, it is necessary to promote investments in clean energy and energy efficiency. (European Commission, Brussels 14.1.2020)

Through all these movements, the extraction and exploration of fossil fuels, as well as activities with high emissions of gases, will undergo a profound transformation. Areas where such activities take place are important for reshaping their industries. (European Commission, Brussels 14.1.2020)

The Commission, in order to help address the challenges faced by certain regions, proposes a just transition mechanism, which consists of three pillars (Figure 2). These pillars are:

- a Just Transition Fund, which will be used to provide mainly grants.

- a dedicated just transition scheme under InvestEU , which will leverage private investment.
- a new public sector loan facility for additional investments to be leveraged by the European Investment Bank, which will effectively leverage public funding.

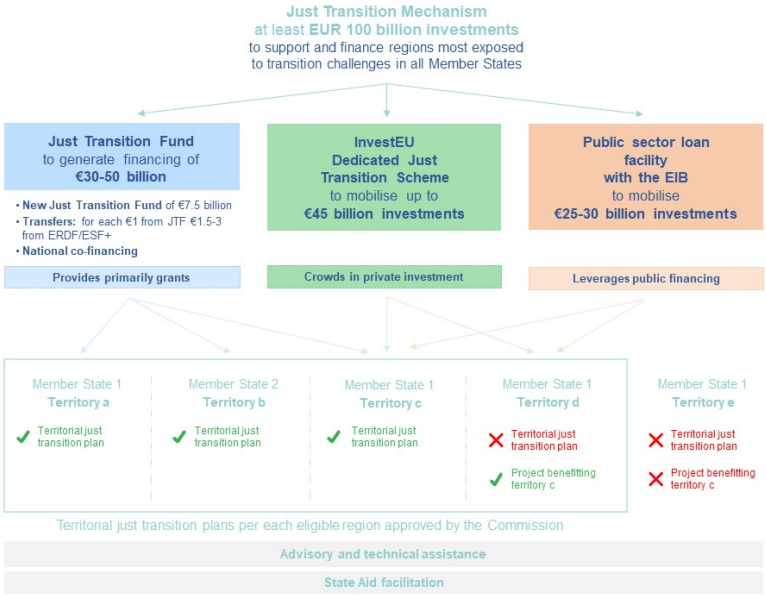

Figure 2. Financing the Just Transition Mechanism. *(European Commission, Brussels 14.1.2020)*

This mechanism could help transition challenges of around €100 billion over the period 2021-2027. The Commission also aims to review the regulations for the Coal and Steel Research Fund. This means using part of the assets of the European Steel and Coal Community under liquidation, thus maintaining a research program totaling €40 million. (European Commission, Brussels 14.1.2020)

Concluding remarks

The EU's adherence to the European Green Deal leads to success. This success is determined by the push of the states towards getting rid of carbon emissions, accompanied by economic and industrial transformation. If these strategies achieve climate neutrality and make industry more sustainable, then it is easy to spread the European Green Deal beyond its borders.

Global expansion is difficult, but not impossible. Citizens, companies, and states in general should be guided clearly and safely towards a sustainable future. Also, various mechanisms should be put in place to support more vulnerable members of society so that they too can be fellow travelers in the development.

Therefore, the promotion of the European Green Agreement as an effective redistribution mechanism, which will strengthen investment transfers and promote the substitution of labor as a key sector of the economy, is considered a necessary act.

CHAPTER B

The 2030 Agenda for sustainable development

At the United Nations General Assembly, which took place in September 2015, countries around the world signed the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs). Together with the 2030 Agenda, the Paris Agreement on Climate Change forms the foundations of international cooperation for sustainable development and socio-economic and environmental dimensions. Continued progress towards the SDGs is vital. Through this, the EU's promotion and commitment to sustainable development take place. (European Commission, 'The EU and the Nations – common goals for a sustainable future")

Figure 3. 17 Sustainable development goals. (European Commission, 'The EU and the Nations – common goals for a sustainable future")

The 2030 agenda includes a political declaration, a set of 17 Sustainable Development Goals (SDGs), and 169 targets. Key actions are those related to the well-being of people, with the aim of eradicating poverty and hunger, tackling inequalities, and protecting human rights. Also equally important are the actions for the permanent protection of the planet and its natural resources. (United Nations Resolution , 2015)

The UN resolution asserts that the successful completion of the SGD is a national responsibility. The EU has a key, active role as a cohesive factor for the implementation of the SDG in development cooperation and provides statistics and indicators that can be used. (United Nations Resolution , 2015)

Figure 4. Goal 1. No poverty, The Global goals, available at https://www.globalgoals.org/goals/1-no-poverty/

Goal 1. End poverty in all its forms everywhere.

As is well known, almost 50% of the world's population faces the problem of poverty and a lack of clean water and food. This results in thousands of people dying every day. Eradicating poverty is seen as an act of justice, not charity. This act aims to provide food and basic necessities, eliminate diseases, and create a new, productive, and rich life. The 7 targets of the first goal describe exactly the steps so that these people end up having a favorable life. (The Global goals, available at https://www.globalgoals.org/goals/1-no-poverty/)

All targets are limited to the fact that they have been implemented by 2030. Initially, the elimination of extreme poverty is sought. People in this category are estimated to spend less than $1.25 per day. Subsequently, the aim is to reduce by at least 50% the population of all groups (men, women, and children of all ages) living in poverty. Also, the creation and implementation of the necessary social protection measures to cover the poor, vulnerable population are essential. This part also includes ensuring the rights of these people to financial resources as well as access to various services. (United Nations Global Compact, 2022 Supported by Sweden Sverige)

Figure 5. Goal 2. Zero hunger, The Global goals, available at https://www.globalgoals.org/goals/2-zero-hunger/

Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

A continuation of poverty is hunger, which is considered the main cause of death. There are millions of malnourished people on the planet. This is a result of the mismanagement of the resources offered by the earth. Equitable distribution of these will ensure health and eliminate hunger. Here are eight targets that, if implemented correctly by 2030, will ensure that no one will suffer from hunger ever again. (The Global goals, available at https://www.globalgoals.org/goals/2-zero-hunger/)

Access for vulnerable people to adequate, nutritious food year-round is a key concern. This step implies the end of all forms of malnutrition. Until 2025, according to the internationally agreed goals, the care of children under 5 years old, teenage girls, pregnant women, breastfeeding women, and the elderly is sought. In order to meet these needs, an increase in agricultural production is required and, consequently, a corresponding increase in the incomes of food producers. At the same time, it is necessary to ensure sustainable food production systems, while at the same time, it is necessary to implement sustainable agricultural practices to increase production and productivity. The application of sustainable agricultural practices is also useful. This will enhance adaptation to climate change and extreme weather events such as droughts, floods, and other disasters while helping to preserve ecosystems. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/2-zero-hunger/)

Figure 6. Goal 3. Good health and well-being, The Global goals, available at https://www.globalgoals.org/goals/3-good-health-and-well-being/

Goal 3. Ensure healthy lives and promote well-being for all at all ages.

The purpose of the goal is to reduce deaths from all diseases, prevent diseases, and promote healthy lifestyles. According to research, it has been found that child deaths have halved in the last 15 years. Based on this fact, it turns out that it is possible to conquer almost any disease. The promotion of a healthy lifestyle and the development of preventive and modern measures to achieve this are essential. In the third objective, 13 targets are developed, which are sought to be implemented by 2030 for effective health care. (The Global goals, available at https://www.globalgoals.org/goals/3-good-health-and-well-being/)

Priority is given to reducing maternal mortality and ending the death of newborns worldwide. At the same time, it is essential to prevent the death of children under the age of 5. The initial goal is to reduce the mortality rate at these ages to at least 25 per 1,000 live births. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

In addition, it is imperative to end sexually transmitted diseases, such as AIDS, but also to combat other communicable diseases, such as water-borne diseases, hepatitis, and malaria. At the same time, it is required to reduce premature mortality from non-communicable diseases by at least a third of the existing rate and to also take care of the use of various substances harmful to human health. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

Access to various health care services is important, with sexual and reproductive care being the most important. This includes informing, educating, and creating programs and strategies to integrate reproductive health globally. Much attention is given to reducing the diseases and deaths due to the contamination of the air, soil, and water and diseases caused by various dangerous chemicals, as well as the reduction of deaths worldwide from traffic accidents and injuries from these accidents. The increase in public health financing in developing countries is important, but mainly in less

developed countries and small island developing states. Finally, the implementation of the World Health Organization convention, which is related to tobacco control, should be strengthened. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

Figure 7. Goal 4. Quality education, The Global goals, available at https://www.globalgoals.org/goals/4-quality-education/

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Education is of fundamental importance for the development of people and the broadening of their horizons. It is the key to a world full of new opportunities, which can create a progressive and healthy society. Another important benefit is that it promotes self-esteem and frees the imagination. For them and for many other reasons, it is essential that everyone has access to learning. The 10 targets for achieving this result by 2030 are then analyzed. (The Global goals, available at https://www.globalgoals.org/goals/4-quality-education/)

As a first step, the access of all genders to a quality, comprehensive, and free education with successful learning outcomes and knowledge of numeracy and literacy is recorded. Of course, both education and vocational training should be equally accessible to vulnerable people, i.e., people with disabilities, indigenous peoples, or children brought up in vulnerable situations. The cultural diversity, morals, customs, and traditions of all states will be accepted and appreciated. This will be directly helped by international cooperation and the supply of teachers. A substantial increase in qualified teachers is needed both in developing countries and, more so, in small island states and less developed countries. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/4-quality-education/)

At the same time, it is necessary to renovate educational facilities or create new facilities in order to make them easier to access for people with disabilities. Also, global expansion of scholarships and increasing the number of scholarships given to developing and less developed countries are essential. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/4-quality-education/)

Figure 8. Goal 5. Gender equality, The Global goals, available at https://www.globalgoals.org/goals/5-gender-equality/

Goal 5. Achieve gender equality and empower all women and girls.

Among the goals is the achievement of gender equality, with the main aim of empowering girls and women. Socio-economic and political equality is a benefit for everyone and also for the female population to live like everyone else, without any exception. Thus, nine targets were developed for the elimination of prejudices and the development of equal rights for all, which will be treated with respect. (The Global goals, available at https://www.globalgoals.org/goals/5-gender-equality/)

A key concern is the elimination of any form of discrimination against women and girls and the elimination of violence in all its forms. This part includes the trafficking of female sex, sexual exploitation, and any other types of exploitation. At the same time, it is important to end all harmful practices. These include female genital mutilation, early childhood, and forced marriage. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/5-gender-equality/)

Within it all, there is domestic work and unpaid care. There must be, as appropriate, at the national level, recognition and appreciation of these through social protection policies and various public benefits, services, and infrastructure so as to promote shared responsibility within households and families. At the same time, it is essential to strengthen technology and its rational use, and the possibility of leadership and full, effective participation in everything related to decision-making, i.e., whether in political, economic, or public life, should be given. Also, according to national legislation, participation and equal rights to economic resources, access to various forms of property and inheritance, and land control will be beneficial. Finally, sound policies and legislation should be adopted to promote gender equality. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/5-gender-equality/)

Figure 9. Goal 6. Clean water and sanitation, The Global goals, available at https://www.globalgoals.org/goals/6-clean-water-and-sanitation/

Goal 6. Ensure the availability and sustainable management of water and sanitation for all.

Enormous efforts have been made to give people access to clean drinking water, but a lack of sanitation seeks to insidiously and methodically undermine these advances. One in three people on the planet survives without sanitation facilities, thus leading to unnecessary illnesses and even death. To eliminate this phenomenon, eight targets were created, which are sought to be realized by 2030 in order to stop the suffering and the loss of both people and lives. (The Global goals, available at https://www.globalgoals.org/goals/6-clean-water-and-sanitation/)

The primary concern is the universal, fair, and economic access of all to safe, quality, and potable water. Undoubtedly, the efficiency of water use should increase significantly in all sectors. To address water scarcity, sustainable withdrawal and provision of fresh water should be ensured, as this will also significantly reduce the proportion of people suffering from its loss. Also, the implementation of integrated water management is important at all levels, even cross-border cooperation, where this is considered necessary. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

Combined with the previous ones, the restoration of ecosystems and the protection of those related to water resources have been imposed since 2020. These include wetlands, lakes, rivers, forests, mountains, and aquifers. Of course, fair and adequate access to sanitation for all is important in order to end open defecation, paying particular attention to the needs of women and all those in vulnerable situations. Finally, local communities need to be supported in order to strengthen their participation in the proper management of water and sanitation. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

Figure 10. Goal 7. Affordable and clean energy, The Global goals, available at https://www.globalgoals.org/goals/7-affordable-and-clean-energy/

Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all.

The current reliance of states on fossil fuels leads to an unreliable, unsustainable, and environmentally harmful situation. For this reason, radical changes will have to be made in the way energy is produced and consumed in order to implement the new energy solutions that will benefit dealing with the biggest threat, climate change. After all, these solutions are more economical, reliable, accessible, and effective. Thanks to these benefits, five targets are being developed that aim to be realized by 2030. (The Global goals, available at https://www.globalgoals.org/goals/7-affordable-and-clean-energy/)

First, everyone's access to energy services, which are characterized, as mentioned above, as reliable, more efficient, and affordable, is essential. Consequently, a significant increase in the share of renewable energy sources worldwide is required. At the same time, international cooperation is considered essential, which will facilitate the research and development of technology for clean energy, as this will more easily promote the investments that are to take place in the energy infrastructure. Finally, the expansion of infrastructure and technology in developing and less developed countries through various support programs is essential. (United Nations Global Compact, 2022, Supported by Sweden Sverige)

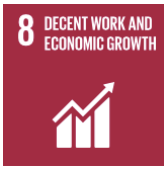

Figure 11. Goal 8. Decent work and economic growth, The Global goals, available at https://www.globalgoals.org/goals/8-decent-work-and-economic-growth/

Goal 8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Global economic growth brings a positive trend across the planet. From this fact, it is understood that the creation of new jobs that are more dignified ensures economic progress. The rights of workers must be protected, and child labor must be denounced and stopped. The creation of new positions and their access to financial and banking services will have the consequence of ensuring entrepreneurship and the existence of innovation for everyone. The 12 targets that have been created aim

at ensuring a decent job and more sustainable economic development. (The Global goals, available at https://www.globalgoals.org/goals/8-decent-work-and-economic-growth/)

According to national circumstances, it is important to maintain per capita economic growth and, in least-developed countries, to have an increase of at least 7% per year in gross domestic product. At the same time, with the help of technology upgrading, innovation, and diversification, it is easy for the levels of economic productivity to be higher. Additionally, strengthening domestic financial institutions to help and encourage everyone to access various services as well as making a gradual improvement in resource efficiency worldwide, both in production and consumption, At the same time, measures should be taken to end forced labor and modern slavery. These include human trafficking and the prohibition of any form of child labor. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/8-decent-work-and-economic-growth/)

Moreover, productive employment for all individuals is sought, without any exception, with equal ideals, equal values, and equal remuneration. Then, the development and promotion of a safe working environment are included, as is the protection of labor rights within this environment. Finally, it is considered necessary to develop policies aimed at promoting sustainable tourism, which creates new jobs and helps promote local culture. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/8-decent-work-and-economic-growth/)

Figure 12. Goal 9. Industry, innovation and infrastructure, The Global goals, available at https://www.globalgoals.org/goals/9-industry-innovation-and-infrastructure/

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.

A community that is considered successful consists of durable and functional infrastructure. A key concern is the upgrading of infrastructure and industrial facilities in order to promote sustainable industry. The 8 targets are mentioned below, which will help to perform various actions that will bring about the

desired results. (The Global goals, available at https://www.globalgoals.org/goals/9-industry-innovation-and-infrastructure/)

A primary role is played by the creation of durable infrastructure, which will be durable, sustainable, of better quality, and reliable. These infrastructures include both cross-border and regional ones, and existing industrial facilities and infrastructure are recommended to be upgraded as soon as possible, with completion by 2030. For this to happen, all countries should take the necessary measures and act with the respective capabilities they possess. Countries that are developing or less developed, including African countries and small island developing states, need to be facilitated through financial aid. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/9-industry-innovation-and-infrastructure/)

Research, innovation, and domestic technological development in developing and least-developed countries require a degree of support in order to ensure a sufficiently favorable policy environment. In addition to technological development, increased access to information related to technology and communication, as well as a universal and affordable Internet connection, should be provided. (United Nations Global Compact) (2022 Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/9-industry-innovation-and-infrastructure/)

Figure 13. Goal 10. Reduce inequality, The Global goals, available at https://www.globalgoals.org/goals/10-reduced-inequalities/

Goal 10. Reduce inequality within and among countries.

Most of the world's wealth is shared among very small entities, and this quite often results in socio-economic discrimination. All necessary and basic goods and materials are important to be available to all people without any restriction or discrimination. In order for states and nations to flourish, 10 targets were developed to eliminate inequality. (The Global goals, available at https://www.globalgoals.org/goals/10-reduced-inequalities/)

A key target, which is sought to be achieved by 2030, is for 40% of the income of the lowest social and economic strata to receive a gradual increase, the rate of which will

be higher than the national average. Necessary attention needs to be given to ensuring equal opportunities for all. Also, through immigration policies 7, the safe, responsible, and orderly movement of immigrants is enforced. (United Nations Global Compact) (2022 Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/10-reduced-inequalities/)

Regarding the World Trade Organization agreements for developing and least developed countries, it is considered important to apply the principles of special and differential treatment. Also, increased monitoring of institutions and financial markets is required in order to implement the various regulations. Furthermore, with regard to least-developed countries, their encouragement and assistance in foreign investment and financial flows are inevitable. Finally, it is necessary to reduce the cost of migrants' remittances to less than 3% by 2030, as it is essential to eliminate remittances costing more than 5%. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/10-reduced-inequalities/)

Figure 14. Goal 11. Sustainable cities and communities, The Global goals, available at https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable.

The fact that there is a continuous increase in the world's population requires the creation of sustainable and modern infrastructure in order to accommodate everyone without discrimination. The following 10 targets were produced with the aim of creating more sustainable communities by 2030. (The Global goals, available at https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/)

First of all, the slums should be upgraded, and new, sustainable, safe, and affordable buildings should be developed that are accessible to all. The expansion of public transport and the improvement and maintenance of the road surface are required, as this will also provide greater safety for the movement of citizens. Public transport should be upgraded to make travel more sustainable and ecological. Also, the needs of people in vulnerable situations, people with disabilities, and the elderly should be taken into

account and given special attention. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/)

It is considered necessary to provide citizens of all countries with safe access to public spaces, such as, for example, parks, which will strengthen their mental health and their socialization. Efforts are also necessary to promote and strengthen the protection of public spaces of natural heritage and the preservation of cultural heritage. Next, it is important to strengthen the development of national and regional planning by supporting the links (environmental, social, and economic) between areas belonging to the urban and rural classes. Finally, it is required to implement comprehensive plans and policies for the inclusion of citizens, as well as to adopt and implement resource efficiency, climate change mitigation and people's adaptation to it, the management of various risks that pose disasters, resilience, and coping. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/11-sustainable-cities-and-communities/)

Figure 15. Goal 12. Responsible consumption and production, The Global goals, available at https://www.globalgoals.org/goals/12-responsible-consumption-and-production/

Goal 12. Ensure sustainable consumption and production patterns.

Natural resources are offered in abundance by the planet, yet thoughtless and irresponsible use by citizens is found. Overconsumption leads to the deterioration of resources, the lack of short periods of time, their rapid depletion, and even the disappearance of some species. The 11 targets are analyzed, which indicate various ways of action for responsible consumption of goods and their correct production until 2030. (The Global goals, available at https://www.globalgoals.org/goals/12-responsible-consumption-and-production/)

The first and basic step for more sustainable production and consumption in the future is the inclusion of all countries in various programs with a duration of 10 years. Also, it is extremely useful to achieve the correct, efficient use and management of natural resources. Both at the retail and wholesale levels, it is necessary to reduce the per capita waste of goods by at least half. A corresponding reduction in losses is also imposed on

the food production, supply, and exploitation chains, as damages and losses are detected during the collection and gathering of the products. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/12-responsible-consumption-and-production/)

t is required, according to the international frameworks that have been agreed upon, the correct and reduced use of chemical substances, as well as the correct management of all waste towards the environment during its cycle. It is also important to stop the release of substances into the environment and the atmosphere. Thus, various diseases occurring in humans will be minimized, and the impact on the environment will be reduced. The recycling of various wastes and their reuse after processing would be essential. It is inevitable to promote public contracts characterized as affordable, durable, and sustainable. At the same time, monitoring the progress of sustainable development and its effects is very important. These movements are possible through the development of various tools and their systematic application. Finally, according to national conditions, it is deemed necessary to justify with reasonable documentation the existence of ineffective fossil fuel subsidies. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/12-responsible-consumption-and-production/)

Figure 16. Goal 13. Climate action, The Global goals, available at https://www.globalgoals.org/goals/13-climate-action/

Goal 13. Take urgent action to combat climate change and its impacts.

Climate change is a phenomenon that has been quite visible in recent years. It is characterized as an existential threat that, if not dealt with soon, can destroy entire civilizations. As is evident, its effects will be disastrous in the future if the necessary measures are not taken and urgent actions are not taken. In order to combat climate change, five targets were developed. (The Global goals, available at https://www.globalgoals.org/goals/13-climate-action/)

First, there is a need to strengthen resilience to many hazards directly related to climate change and to develop the adaptive capacities of all areas for natural disasters. Also, the planning of several measures in the policies and strategies of all nations, their integration, and proper implementation are essential in order to deal with a large part

of the problem. In least-developed countries, small island developing states, and marginalized local communities, it is necessary to develop a sense of security and support to promote the mechanisms and proper management of capacities that will bring about more effective planning. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/13-climate-action/)

At the same time, the mitigation and response to climate change are supported through education and public awareness. These two pillars bring about results in adapting individuals to the existing situation, prevention, early warning, and impact reduction. Recognizing that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum, the commitments developed to jointly mobilize $100 billion annually for the needs of countries in need and the development of substantial actions to tackle climate change. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/13-climate-action/)

Figure 17. Goal 14. Life below the water, The Global goals, available at https://www.globalgoals.org/goals/14-life-below-water/

Goal 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.

70% of the Earth's surface is covered by oceans and seas, which are essential for the existence of human beings. People take advantage of this abundant supply for their daily needs, which are food, water, and energy. But reckless exploitation has had significant impacts and problems for the precious resources provided and for the individuals themselves. Water pollution must be tackled for the existence of healthy oceans and seas. For the preservation of the oceans and their sustainable use, 10 basic targets were created. (The Global goals, available at https://www.globalgoals.org/goals/14-life-below-water/)

Four of the 10 targets, which were created in 2015, were implemented by 2020. The first concerned the management and protection of coastal and marine ecosystems, taking measures to restore and strengthen their resilience, and the second sought to preserve at least 10% of these areas. The third called for an end to illegal, unsustainable fishing to implement measures to protect aquatic life and restore stocks, and the last

was the prohibition of certain subsidies that led to excess, illegal fishing. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/14-life-below-water/)

Subsequently, the goal that is sought to be achieved by 2025 concerns the prevention of marine pollution, its significant reduction, and its elimination. In order to reduce and deal with the effects caused by pollution, it is necessary to strengthen the cooperation of the appropriate scientists who have received the necessary training, as scientific knowledge and research ability have the potential to identify and predict hazards, thereby protecting marine waters and underwater life. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/14-life-below-water/)

Moreover, by 2030, the proposal is for developing and less developed countries, as well as small developing island states, to increase government revenues and, more generally, the economic benefits from the proper exploitation of marine resources, aquaculture, fishing, and tourism. Furthermore, the conservation and sustainable use of marine resources and oceans are essential. Finally, the legal framework for the conservation and use of water and resources is also stated in UNCLOS, which is mentioned in paragraph 158 of The Future We Want. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/14-life-below-water/)

Figure 18. Goal 15. Life on land, The Global goals, available at https://www.globalgoals.org/goals/15-life-on-land/

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems; sustainably manage forests; combat desertification; and halt and reverse land degradation and halt biodiversity loss.

The people who inhabit the planet need to thrive. But a huge part of the planet has been irreparably damaged by land degradation, deforestation, fires, and various other natural disasters. The key to survival is to promote biodiversity conservation and sustainable use of subsystems. To achieve this, 12 targets were developed to protect and restore life on land. (The Global goals, available at https://www.globalgoals.org/goals/15-life-on-land/)

5 of the 12 targets were implemented by 2020. The first to be implemented was the conservation of terrestrial ecosystems, mainly forest, dryland, mountain, and freshwater ecosystems. The second target was the restoration of degraded terrestrial ecosystems and the end of deforestation at a global level. In addition, the third required the establishment of measures to prevent and eliminate the effects of the invasion of foreign species in ecosystems. The next target seeks the protection of endangered species and the preservation of biodiversity, and the last requires the integration of various values into ecosystems and the development of strategies and processes to eradicate poverty. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/15-life-on-land/)

There are two targets that need to be implemented in the given time period, up to 2030. First, special importance must be given to soils and degraded land in order to rehabilitate them and stop desertification. Next, it is necessary to preserve biodiversity and ensure the protection of mountain ecosystems. In applying these, the main benefits essential to life will be enhanced and multiplied. Over time, it is necessary to promote the correct and fair distribution of the benefits derived from the use of resources, as well as the equal access of all to them. Of course, it is considered necessary to increase and mobilize financial and important resources from all sources and at all levels. Finally, it is recommended to take and strengthen actions to reduce and enforce the end of the smuggling of protected species as well as various species of flora and fauna. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/15-life-on-land/)

Figure 19. Goal 16. Peace, justice and strong institutions, The Global goals, available at https://www.globalgoals.org/goals/16-peace-justice-and-strong-institutions/

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels.

Justice, respect, morality, and compassion are the basic tools to make a society fair and democratic. Violence, criminality, injustice, arrogance, abuse of power, corruption, and many more trample and degrade the essence of civilization. To implement, promote, and ensure these principles, 12 different targets were developed. (The Global goals, available at https://www.globalgoals.org/goals/16-peace-justice-and-strong-institutions/)

The first target is the global reduction and end of violence and the death rates that result from it. A connecting link is the torture of children, their abuse, the exploitation of those in vulnerable situations, and even human trafficking. At the same time, at the national, international, and global levels, it is considered prudent to promote and ensure access to justice without restrictions. At similar levels, it is important when making decisions to ensure the participation of all citizens, which you will use as a representative basis for these claims. For all this to happen, responsible and effective institutions should be developed and promoted, which will involve and cover all levels. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/16-peace-justice-and-strong-institutions/)

Undoubtedly, the expansion and strengthening of the active participation of developing countries is essential to global governance. In general, access to various information is necessary for citizens, based on national legislation and international agreements, in order to ensure the fundamental protection of their liberties. It is considered necessary to eliminate all forms of bribery and corruption. At the same time, enforcing laws and strengthening national institutions will eliminate discrimination, reduce violence, and prevent and fight crime. Additionally, by 2030, an end to terrorist attacks, illegal arms sales, organized crime, and the return of stolen assets will be necessary. Finally, everyone should be provided with a legal ID that includes birth registration. (United Nations Global Compact, 2022) (Supported by Sweden Sverige, The Global goals, available at https://www.globalgoals.org/goals/16-peace-justice-and-strong-institutions/)

Figure 20. Goal 17. Partnerships for the goals, The Global goals, available at https://www.globalgoals.org/goals/17-partnerships-for-the-goals/

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

The development of cooperation and international investments are the ways that will help to successfully implement the Global Goals. Especially for developing countries, support is needed to ensure the development of innovative technology. There are 19 targets in this category that are divided into 5 subcategories. (The Global goals, available at https://www.globalgoals.org/goals/17-partnerships-for-the-goals/)

a. Finance

The first five targets are classified in the finance category. A major concern of developing countries is strengthening, mobilizing, and improving domestic resources and increasing domestic capacity in order to collect tax revenues and various other revenues. As far as the developed countries are concerned, it is necessary to implement the commitments, which they themselves have formalized, for the assistance they are going to provide to the development of other countries. Developed countries are pursuing the target of 0.7% of ODA/GNI that they have set for developing countries and 0.15-0.2% of ODA/GNI for least developed countries, as the maximum provision is considered by the authorities. (United Nations, 21 October 2015)

b. Technology

The next three targets are separated in the technology chapter. The international cooperation and sharing of knowledge, under certain conditions, as well as everyone's access to the development of technology, science, and innovation, are critical. At the same time, under the regime of mutually agreed-upon and privileged terms, it is naturally necessary to develop, disseminate, and transfer information related to the development of technology among developing countries. Finally, for less developed countries, it is prudent to strengthen and promote new development mechanisms related to science, innovation, communication, and information technology. (United Nations, 21 October 2015)

c. Capacity-building

This section, which is related to capacity building, refers to strengthening the implementation of targeted capacities in order to support national plans for the implementation of the Sustainable Development Goals between North-South, South-South, and triangular cooperation. (United Nations, 21 October 2015)

d. Trade

In the category of commercial transactions, three targets are analyzed. Within the framework of the World Trade Organization, a harmonious trade system is promoted that is based on specific rules and characterized as open, universal, and impartial. In developing countries, it is necessary to increase the amount of exports, while in less developed countries, it is necessary to double the share of world exports. Finally, the

permanent access of the least developed countries to the market, as well as the assurance of simple preferences and light regulations concerning the origin of goods imported from the least developed countries. (United Nations, 21 October 2015)

e. Systemic issues

This category is divided into political and institutional cohesion, multi-stakeholder partnerships, and finally data, monitoring, and accountability. The targets mentioned are a total of 6. (United Nations, 21 October 2015)

Firstly, a key concern is the strengthening of economic stability at the global level, while at the same time, coherence and coordination of policies are required to achieve sustainable development. Secondly, multi-stakeholder partnerships have the potential to strengthen partnerships worldwide, and it is also essential to encourage the cooperation of the private sector, the public sector, and citizens, thus developing strategies that will help partnerships. (United Nations, 21 October 2015)

Finally, under the third sub-category, the goal by 2020 was to support the capacities of assisted countries and states to have high availability of the correct quality and reliable data by income, age, nationality, and other relevant characteristics of national contexts. As for developing countries, until 2030, it is necessary to take into account initiatives concerning the progress of sustainable development that develop statistical capacities and seek to complement the GDP. (United Nations, 21 October 2015)

Application of agility systems in the oil and gas industry

After the global crisis and the volatility of oil and natural gas prices, every oil company wants to restructure, become more competitive, and develop its country. Achieving this is attributed to the flexibility that develops and maintains maximum responsiveness. The implementation of agility systems is characterized as a future industrial revolution and consists mainly of production strategies, human resources and their level, management systems, and available technology. (Ibrahim Hassan Garbie, 2011)

a. Analysis of the application of available technology

The term technology means the knowledge and use of a collection of technological methods, systems, and productive tools that will help solve unforeseen problems and meet various needs. The application of available technology resources is done through the qualified and specially trained human resources of each company. An oil and gas company, in order to increase its productivity, seeks to improve flexibility through its resources, techniques, tools, and skills. During the implementation of these in the context of the industry, the resolution of many issues is achieved. First, through the use of new technologies, for example, electromagnetic or seismic methods, the time to explore an area is reduced while it is done in a more efficient way. Consequently, the exploitation of the available resources takes place earlier, the processing stage will be carried out earlier, and therefore the time of delivery of the resources to the respective customer will be reduced. A key issue is the implementation of technological achievements to be developed as quickly as possible and at the lowest cost. (Ibrahim Hassan Garbie, 2011)

b. Analysis of human resources

As mentioned above, the correct use of the technology can be carried out by a specially trained team. For successful implementation, the primary concern of industries is to examine and analyze the degree of qualifications possessed by prospective workers before hiring them. Then, after a proper investigation of the abilities, it is important to consider how to deal with each one individually in situations under pressure, with an increased sense of anxiety. Finally, continuous training should be provided in order to enrich the knowledge of human resources as well as to develop various incentives for attending seminars, conferences, and trainings. (Ibrahim Hassan Garbie, 2011)

c. Analysis of production strategies

In order to achieve a successful analysis of production strategies, it is necessary to examine the past way of production so that, from the point of reference, future better strategies can be created. A company engaged in the research and exploitation of hydrocarbons should take care of their research, mining, exploitation, storage, and finally transportation. During the research stage, the aim is to identify a geological structure with the necessary specifications for the first drilling. The first drilling, called exploratory, aims to verify the first stage. Once it is confirmed that the deposit is

economically exploitable, more wells are developed so that the stage of exploitation and its storage can begin. The final stage is the transfer of the production to each customer. (Ibrahim Hassan Garbie, 2011)

d. Analysis of the management environment

This analysis will help maintain or increase productivity within a company that is already characterized by high performance. It includes research on new mining points, on the stage of organization of human resources tasks and the cooperation of the people who make it up, on the way of applying innovative technologies, on the organizational structure and strategic plans of an organization, and on the control of the way of management of the company's. (Ibrahim Hassan Garbie, 2011)

CHAPTER C

In this chapter, ten oil and gas companies are analyzed. These are the following:

1. China Petroleum and Chemical Corp (Sinopec)
2. Phillips 66
3. Saudi Aramco
4. Shell plc
5. BP
6. ExxonMobil
7. TotalEnergies (Total)
8. Chevron
9. Gazprom
10. Marathon

In the analysis of each company, a brief historical overview will be developed, along with the agility and strategy it follows in order to incorporate the 17 sustainable goals.

1. China Petroleum and Chemical Corp (Sinopec)

Brief historical review

China Petroleum & Chemical Corporation or Sinopec Limited, founded in February 2000, is a Chinese oil and gas enterprise based in Beijing. It is listed in Hong Kong and Shanghai, where it was completed in June 2001. The Group (the parent company) is the biggest oil and gas refining and petrochemicals company in the world. Sinopec Ltd has been categorized as a downstream oil company as it is the biggest oil refinery in Asia by volume. (available at: https://en.wikipedia.org/wiki/Sinopec#cite_note-15)

The company has signed many deals in Africa. In 2004, a deal was signed with Gabonese president to explore three onshore fields. (Agencies, 4 February 2004) In 2005, the company announced plans to purchase oil fields in Sudan. In 2006, the company acquired Shengli Petroleum and in 2013 it bought 33% stake in Apache Corporation's oil and gas business. (Reuters, 30 August 2013) Also, in 2013, they purchased Marathon Oil Corp's Angolan oil and gas field. (available at: https://en.wikipedia.org/wiki/Sinopec#cite_note-15) Since 2021, green hydrogen plant has been getting constructed in Kuqa, which is projected to provide 20k tons to Sinopec's refinery, and it includes a pipeline network and a storage tank. (Reuters, 30 November 2021)

Sinopec has invested in the rest of the world though. In 2011, they acquired Daylight Energy in Canada and 30% stake of Brazilian unit of Galp Energia SGPS SA. In 2012, they purchased 20 oil wells from Total E&P and invested in Talisman Energy UK. In 2013, they sold a 30% stake of their fields in Myanmar to Taiwan's CPC Corp, whereas in 2021 they signed a deal to supply Venture Global with LNG for 20 years. (available at: https://en.wikipedia.org/wiki/Sinopec#cite_note-15)

It is worth noting that in 2004 the company was criticized for the methods used in Gabon by environmentalists. As a result, they had to redo their environmental studies with a Gabonese group called Enviropass and then resumed production in 2007 with more environmentally friendly methods. The same year, in China, they had to pay a pollution fine and they had to stop operations due to chronic river pollution. In 2008, they were issued a red warning due to the excessive emissions emitted. (available at: https://en.wikipedia.org/wiki/Sinopec#cite_note-15)

Sustainable strategies

The company, according to the annual report and sustainability report it published for the year 2021, is observed to carry out various applications with the aim of becoming more sustainable and flexible, following the flexibility systems and the 17 sustainable goals.

- Applications for agility

a. *Analysis of the application of available technology*

The Company's goal is to develop as much as possible in the field of technology. This is achieved as it follows a strategy based on innovation and applies digital transformation intelligently and correctly. In particular, it has focused on the technological development of hydrocarbon research and production, trying to stabilize the exploitation of oil and increase natural gas, emphasizing the reduction of production costs but the increase of efficiency. The Company, during the year 2021, achieved the leading role, compared to its previous advances, in industrial development, in terms of science and technology. It emphasized the reforms of the technology and science

systems and increased the proportion of its investments in them, achieving significant results. (Sinopec Corp., Annual Report and Accounts 2021)

b. Analysis of human resources

As a whole, it has developed some innovative strategies that seek to improve itself and its employees. For the year 2021, it pursued sustainable development and risk management while conducting continuous internal audits. Based on the published sustainability report, the company has successfully managed to fully integrate some development concepts that have contributed to the improvement of its governance structure and policies. These concepts are related to safety, its development strategy, production, reduction of carbon emissions, environmental protection, and, in general, its operation. Its security is intertwined with risk management. Thus, it seeks to strengthen the risk management system through various mechanisms that recognize and respond quickly to them. The company has fully identified primary and significant risks, resulting in no major risk incidents and improving effective, ongoing internal controls. (Sinopec Corp., Sustainability Report 2021) Based on this, it contributed to special actions, one of which included a three-year program concerning the safety of companies' activities and their production "One hundred days without accidents" and promoted the project "Industrial Internet plus Safe Production". (Sinopec Corp., Annual Report and Accounts 2021)

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c. Analysis of production strategies

The Company during the research managed to enhance the discovery of new natural gas and oil traps, which include the oil wells of continental shale formations of the Bohai Bay Basin, in the North Jiangsu and Sichuan Basins. At the same time, LNG agreements were signed aimed at increasing the supply of gas abroad. Production reached 479.74 million barrels, of which 249.60 million barrels are domestic crude oil, the price of which remains stable, and 1,199.4 billion cubic feet of natural gas, the price of which on an annual basis saw an increase of 11.9%. (Sinopec Corp., Annual Report and Accounts 2021)

In the upstream, the progress for the theory of exploration was remarkable, as in its application a technology necessary for the development and exploration of the Shunbei

area and the Sichuan basin was discovered. In the context of refining, the world's first industrial trial of "catalytic cracking of full distillate crude oil" was successfully carried out, as the application of MFP technology, production of more propylene and fuel with lower sulfur content, was an equally important invention. The development and production of needle coke products is considered successful. On the chemical side, testing of direct cracking of crude oil to ethylene was achieved in China. Other achievements and innovations are the development of 15 lightweight products for vehicles to protect the environment as well as development of hydrogenated styrene thermoplastic elastomer. 4,868 patents were granted out of 8,045 applications. In 2021, National Scientific and Technological Progress Award won 1 first prize and 5 second prizes, 1 gold, 4 silver and 11 Chinese patent excellence awards, and for 2020 National Technological Invention Award won 1 second prize. (Sinopec Corp., Annual Report and Accounts 2021)

Driven by demand, in the refining stage, particular importance was given to the increased yield of the chemical raw materials as well as to the specialties of refining. An increase was detected in the production of chemical raw materials and gasoline, providing a basis for maintaining a high percentage of their use and reducing procurement costs. Also, while production was growing at a rapid pace and structural adjustments were being promoted, the Company built a total of 6 facilities for the purification and filling of hydrogen. It processed 255 million tons of crude oil, thus providing 146 million tons of refined petroleum products. Of these, 65.21 million tons were gasoline production and 45.41 million tons were light chemical feedstock.

(Sinopec Corp., Annual Report and Accounts 2021)

The recovery of the domestic consumption of the products gave the company a lead to create an integrated marketing network for the continuous improvement of quality and production. In order to expand sales, various precision strategies were implemented, which led to the optimization of the network layout. Finally, a new network of energy services has blossomed after promoting the construction of proper structured gas stations, which include natural gas, electricity, oil, hydrogen and non-fuel businesses.

(Sinopec Corp., Annual Report and Accounts 2021)

d. Analysis of the management environment

At the same time, another goal of the Company is the optimal transition to technological innovation, operation, development and production. Regarding the field of research and production, Sinopec seeks to strengthen risk finding, research and development processes as it aims to quickly, successfully and economically build a gas exploitation, storage, marketing and supply system. These goals will result in increased natural gas production, more economical production and increased efficiency. To increase the production of crude oil, the Company is investigating peak production in the Shunbei and Tahe oil fields. In Jiyang, it plans to rapidly build a shale oil demonstration zone. In order to increase natural gas production, it will strengthen research in the Dongsheng and Western Sichuan fields, continue the exploitation of the Puguang and Yuanba fields, and finally adjust the development of the Fuling field. Finally, it will delve into changing the farm's approach in order to improve quality, achieve low-cost production and make customer purchases more efficient. (Sinopec Corp., Annual Report and Accounts 2021)

- Sustainable development goals

In its entirety, it has embodied the 17 sustainable goals. It has taken several actions in order to contribute goods and services to vulnerable groups, it has tried to eliminate stereotypes and inequalities as it has shown that it has an ecological conscience. Its actions towards the environment and people characterize it as a "Sustainable Company".

For each goal, perform several actions. In order to help eradicate poverty, it dispatched 349 work groups with a total of 925 volunteers working on it, while supporting rural development by contributing 581 million RMB and procuring products worth a total of 949 million RMB from poor areas (Goal 1). In rural areas, in 10 townships of Dongshan County, Gansu Province, it cultivated more than 16,175 mu of quinoa, helping to increase the income of about 4,964 households (Goal 2). Also in the same locations it built the roads in the villages and spent a total of 100 million RMB. In conjunction with this, it cooperated with energy vehicle manufacturing industries with the benefit of optimal construction of energy charging facilities, hydrogen refueling stations and vehicle exchanges (Goal 11). (Sinopec Corp., Sustainability Report 2021)

Subsequently, it ensured the health, safety and welfare of the entire workforce, as during the Covid-19 pandemic there was no group infection, while providing systematic checks, examinations, prevention and special intervention for high-exposure workers. To promote the mental health of staff, it developed a mental health committee and provided medical supplies to better protect employees and customers (Goal 3). To promote training, the company developed 46 training programs for 94 times for employees, with 51.43 million hours, with centralized training 5,122 participants and 6,152,000 accumulated online training participants. It provided financial assistance, through scholarships, to 1,560 students from low-income families and in poverty-stricken areas and funded RMB 89.63 million to renovate education facilities (Goal 4). (Sinopec Corp., Sustainability Report 2021)

It has managed to support gender equality, eliminate any discrimination and take care of their special needs. Specifically, it established the "Women Employees Committee" to protect women's rights within the Company, encouraged the female gender through promotions and recruitment, and paid attention to women's needs during maternity and pregnancy (Goal 5). It prohibited the existence of discrimination on the grounds of different religious beliefs, nationalities and regions, as recruitment was carried out that sought the diversity of employees (Goal 10). In addition, it created jobs for immigrant workers, minority people and women, the number of which exceeded 1,400 opportunities. The creation of jobs proves the company's effort to support economic development. Finally, it sought to support it through various investments, increase local supplies, payments of all taxes (Goal 8). (Sinopec Corp., Sustainability Report 2021)

As a company it aimed at the clean and green development of its business activities and the prevention of pollution. This is demonstrated through the creation of new clean energy businesses but also through the increase in the share of natural gas in its energy supplies. The total production of hydrogen reached 16,000 cubic meters per hour and the total capacity of bio-jet fuel reached 100,000 tons per year (Goal 7). Through the creation of new infrastructure and modern services, a low-carbon energy system has been built, thus supporting the promotion of hydrogen energy transport and green transport. About 20,000 Sinopec service stations have been set up with smart, pilot digitized gas stations as 6 factories have been set up through smart construction.

Finally, an investment of a total value of 21.1 billion in R&D was made, thus acquiring 4,853 patents (Goal 9). (Sinopec Corp., Sustainability Report 2021)

The compliance and protection of the environment and the safety of the workplace are key factors of the company and thus provided a basis for HSE management, while also providing a basis for occupational health. To promote responsible, green procurement and increase sustainability performance there was collaboration with various suppliers (Goal 12). The company's respect for the environment is evident from the promotion of technologies that seek to reduce carbon emissions, management and continuous monitoring. The conversion of the CCUS industrial chain to clean energy to save more energy and realize the industrialization of CO_2 resource utilization technology is also deafening. The result of this is to save 967,000 tons of standard carbon, reduce carbon dioxide emissions by 2.38 million tons and create 544 projects to improve energy efficiency (Goal 13). (Sinopec Corp., Sustainability Report 2021)

Sinopec has demonstrated its respect for water quality and life in aquatic and terrestrial ecosystems. The practice of this was demonstrated by the investment made to upgrade water facilities and transport quality water to various villages in Dongxiang County, Gansu Province, which exceeded RMB 67 million. Furthermore, the goal related to the reduction by 1% or more of the annual withdrawal of fresh water in industry was set (Goal 6). To protect marine life, visits were made to various enterprises located along the Yangtze River, Yellow River and various river systems. It participated in the Alliance to End Plastic Waste (AEPW), took measures to prevent marine accidents, especially oil spills, and tried to recycle and reuse more wastewater (Goal 14). In order to protect the terrestrial ecosystem, it carried out extensive environmental impact checks on all new projects and those under construction to avoid ecologically sensitive areas and provided a basis for ecological restoration work on as many decommissioned facilities as necessary, after the evaluations (Goal 15). (Sinopec Corp., Sustainability Report 2021)

An additional goal of the company was to promote peace, justice and ensure strong institutions. To satisfy these, it sought to improve its policies to ensure its integrity. In order to eliminate corruption and any violations, it adopted a policy of zero tolerance, while for the existence of total security, it called on human resources and partners to

promote these efforts (Goal 16). Finally, to demonstrate respect for common goals and cooperation to achieve them, there was continuous support for various global initiatives and clearly the UN Global Compact. To promote cooperation, it participated in trade associations, international organizations and invested in various platforms to support online trade, such as EPEC or Sinopec Chememall (Goal 17). (Sinopec Corp., Sustainability Report 2021)

According to the above, it is reasonable to conclude that Sinopec wants to ensure clean, green energy with zero footprint, following a development strategy that is beneficial enough for this purpose while respecting the environment. He is inclined to promote innovative methods, policies and principles, to keep pace with the development of technology, as well as to help its development in any way possible. It respects its human resources and their rights, while seeking to ensure their health and their wishes. All in all, it deserves to be described as a sustainable company.

2. Phillips 66

Brief historical review

The Phillips 66 Company is an American multinational energy company with headquarters in Westchase, Houston, Texas. The company is working predominantly with natural gas liquids (NGL) petrochemicals (including refining, transporting, and marketing). It was founded in 1917 in Oklahoma and had assets $3 million and only 27 employees. Today it has approximately 14000 employees. (available at: https://en.wikipedia.org/wiki/Phillips_66#History)

Phillips was among the first oil companies to introduce "TropArtic" in 1954. This was a multi-grade motor oil, which could be used year-round, as opposed to single grades which could be used depending on the weather. (available at: https://en.wikipedia.org/wiki/Phillips_66#History)

Phillips opened their first service station in 1927 in Kansas. In 1946, the company purchased Wasatch Oil Co. and in 1966 Tidewater Oil Co.'s refining and marketing

properties, which gave them opening in the West coast. (M'Cutcheon, George Barr, (26 July 1866–23 Oct. 1928) In 2000, they created a joint venture with Chevron Corporation.

In the United States, the company operates Conoco, Phillips 66 and 76 stations. The company also operates stations across all of Europe, under different names including Coop in Switzerland and Jet in the UK. They also own 13 refineries with a net crude oil capacity of 2.2 million barrels per day (350×10^3 m^3/d), 10,000 branded marketing outlets, and 15,000 miles (24,000 km) of pipelines. (available at: https://en.wikipedia.org/wiki/Phillips_66#History)

Sustainable strategies

The company, according to the sustainability report and the "Year in Review" published for the year 2021, is observed to carry out various applications for its sustainability and flexibility, faithfully following the systems of flexibility and 13 of the 17 sustainable development goals.

- Applications for agility

a. *Analysis of the application of available technology*

Phillips 66 has developed an organization, called Energy Research & Innovation (ERI), which helps research and develop new technologies as well as their commercialization. The workforce, located at the research center in Bartlesville, Oklahoma, researches the development of new technologies with sustainable solutions, such as air, water and even energy. These solutions include the development of technologies for the use of batteries and solid oxide fuel cells (SOFCs), which are a method of storing electricity. 2020 saw the first demonstration and installation on a pipeline of this available technology, while a second installation will be on a marketing site. Also, the Company through the AdvantEdge66 program, which deals with digital transformation, intends to utilize all its digital capabilities in order to offer flexibility and efficiency with the use of artificial intelligence and machine learning. The improvement of the already existing functions will bring positive results to the sustainability of the business. (Phillips 66, Sustainability Report 2022)

During Midstream, available technology is used to ensure performance improvement, both operational and human. One part of the technology used is Deep Learning, which is an optimization solution and provides the possibility of fractionation to improve performance. In addition, the start and stop of pipelines as well as their manual entry is done automatically by the Control Center. This results in improved flow rates, more accurate performance and reduced pipeline wear and tear. The use of available technology has enabled the wireless connection and the use of sensors aimed at continuous monitoring of activities, automatic notification of the existence of risks, enhancing reliability and safety in refineries. (Phillips 66, Sustainability Report 2022)

Another application of the technology is Digital Operations & Maintenance (DOM). Through the DOM program, which evaluates available and new technologies, the opportunity to increase efficiency and optimize processes is given. The first critical application of this was the digitization of records, which until 2021 were written on paper, providing direct access to field workers. Second application, where its launch was in 2021 and its completion is expected in 2023, was the integration of human factor principles to optimize processes, reduce risk and make implementation easier. The pipelines also have state-of-the-art leak detection technology, which models conditions in real time, and pipeline inspectors, or "pigs" which send images of the pipeline's condition, identifying areas in need of maintenance. Finally, the use of drones allows tracking and locating items in an easy and safe way. These are used by the Company for inspections, such as elevated structures, environmental conditions, tanks. It is also useful for measuring volumes, such as a coke stack or a tank embankment. (Phillips 66, Sustainability Report 2022)

b. Analysis of human resources

In order to maintain employee safety, the Safety Days program was developed in 2021. This was aimed at training employees on safety issues, understanding and improving the Company's rules. Part of the training was based on previous incidents and referred to hazard recognition in difficult situations, protection methods for a safe fall, practicing with real fire extinguishers. Another training program is Shield Your Future, which trained new contractors to understand security protocols and had three key principles. The first was for workers to recognize the consequences of their actions, the second

referred to stopping work and developing the right to speak when they are unsure of the outcome or identify a safety problem and finally to recognize and avoid risks. (Phillips 66, Sustainability Report 2022)

c. Analysis of production strategies

The Gray Oak Pipeline is a pipeline with a total length of 862 miles that has the capacity to transport 900,000 BPD of crude oil. The transport originates in the Permian and Eagle Ford and ends in the Texas Gulf Coast, which includes the Sweeny refinery and its access ends in the Houston Corpus and Christi markets. The total effective participation rate in the pipeline is 42.25%. It is worth noting that the Sweeny Hub is located on the US Gulf Coast and has easy access to global fuel, natural gas and petrochemical markets. The Sweeny Hub fracturing complex averaged 378,000 BPD while operating Fracs 2 and 3. The construction of Frac 4 and the future completion of the 150,000 BPD fractionator will give Sweeny Hub a fracturing capacity of 550,000 BPD. Phillips 66's largest Beaumont terminal is located on the US Gulf Coast in Nederland, Texas. It is connected to 13 crude oil pipelines, has access to six refineries, the terminal berth capacity is 800,000 BPD and the total storage capacity is 16.8 million barrels. (Phillips 66, Year in Review 2021)

d. Analysis of the management environment

During refining, 84% of production capacity was utilized. In 2021, a new record total of 168 cargoes was achieved, from the Freeport LPG Export Terminal. In the same year, the global use of CPChem's Olefins and Polyolefins (O&P) chemicals reached 95%. which works to predict risks that may affect policies, development strategy, forecasting and capital allocation decisions, including governance. The board of directors is provided with detailed and timely information on the aforementioned matters guiding the company to make sound decisions. (Phillips 66, Sustainability Report 2022)

- Sustainable development goals

The most fundamental advance for the technology was the use of solid oxide fuel cells. SOFCs tend to produce electricity in an efficient way, managing to oxidize for example natural gas mainly through electrochemical reactions rather than using combustion.

Electricity is produced reliably from an abundant and economical fuel source providing high efficiency and a 50% reduced carbon footprint. Considered the appropriate method for sequestering carbon dioxide (CO_2), during their silent operation they do not produce combustion emissions and can be combined with other energy sources, such as solar or wind, ensuring energy production at any time. (Goal 7) (Phillips 66, Sustainability Report 2022)

Phillips 66 recognizes the need to contribute to climate change. In California, at the beginning of 2020, it created the first crude oil refinery, which will be converted, by the beginning of 2024, into a renewable fuel business and will be one of the largest in the world. In other words, it is converted into facilities for the treatment of waste fats, various renewable raw materials and UCO. Upon completion, it will have the capacity to produce 800 million gallons of renewable diesel, sustainable aviation fuel (SAF) and renewable gasoline annually. This conversion will help meet the needs for transportation fuels, both renewable and conventional. It is worth noting that Rodeo's facilities were ENERGY STAR certified. (Goal 12) (Phillips 66, Sustainability Report 2022)

In addition to meeting the demand, gas emissions from the plant's activities will also be significantly reduced as projects will be developed to capture carbon and harness solar energy to provide electricity during the processes taking place. For Carbon Capture and Storage (CCS) the Company, during 2021, joined with several companies to achieve this common goal that involved the industrial area of Houston, Texas. With this action, an annual sequestration and storage of approximately 100 million tons will be achieved by 2040. (Goal 13, Goal 17) (Phillips 66, Sustainability Report 2022)

The development of Health, Safety and Environment (HSE) policy acts as a foundation for HSEMS. HSE is the commitment to protect the workforce and society. HSEMS guides employees by providing them with a framework to prevent risks, increase performance while at the same time ensuring the implementation of the Company's core values and policies. Essentially, it develops an internal awareness for the protection of the environment and ensures the proper functioning of processes with increased monitoring of environmental performance in terms of impact reduction. Frequent inspections are carried out, both by properly trained staff of the Company itself and by third party auditors, for the safety and health of the staff. Corresponding audits are

carried out to assess environmental impacts, focusing on issues such as leak detection and water treatment, air monitoring and how waste is managed. 5 billion dollars have been invested since 2017 in order to improve or create new projects to protect the environment. More than $800 million was invested in 2021 to develop environmental, safety and reliability projects. (Goal 8, Goal 13) (Phillips 66, Sustainability Report 2022)

Phillips 66 has developed a group called the Contractor Safety Alliance that works to ensure the safety and retention of the Company's leadership. This group seeks to meet frequently to discuss issues related to contractor safety and performance, while educating new contractors on the prevailing rules. (Goal 8) (Phillips 66, Sustainability Report 2022)

Water plays an important role in facilities and production. In order to ensure the sufficiency of water resources in the future, Phillips 66 has best practices in its use. More specifically, its facilities have recycling and treatment systems for salty, non-fresh or brackish water. 12 units and 15 plants operate in the UK and North America for biological water purification and pretreatment respectively. It also has a steam-to-water conversion system to reduce losses, since the refineries produce 15 million pounds of steam per hour. A conventional unit, called a closed circuit reverse osmosis (CCRO) is used to process concentrated brine, about 900 gallons per minute, for use in boilers. The CCRO recycles the water until it contains a certain amount of salt. At the same time, the Remediation Management team is responsible for treating the contaminated water. In 2021 more than 48 million barrels of water were treated and recycled (Goal 5) (Phillips 66, Sustainability Report 2022)

Phillips 66 has developed long-standing relationships with a variety of national organizations that share the common goal of conserving and protecting biodiversity. Such organizations are Ducks Unlimited, the Wildlife Habitat Council, the National Fish and Wildlife Foundation, and Trees For Houston. For wildlife protection and bird restoration he contributes annually to various groups such as Treehouse Wildlife Center, Texas Wildlife Center, Wild West Rehabilitation Center and others. Also in the spring of 2021, the Society provided volunteers and sponsorships to plant more than 100 trees at the Edwardsville Children's Museum Micro Forest project, located near the Wood River Refinery, in Roxana. The museum's goal by 2033 is to provide a full 2-

acre forest preserve and forest exhibit, funded by the refinery. At the same time, in 2022 at the headquarters, located in Houston, more than 600 milkweed plants, various host and nectar plants were planted to protect monarch butterflies. Finally, about 3 billion birds migrate each spring, and an estimated one-third travel from Texas. For this reason, the company turns off the bright lights at night in support of the Lights Out Texas initiative. (Goal 15) (Phillips 66, Sustainability Report 2022)

For life in the water and next to it, the Company sponsors the creation of shelters for waterfowl during their migration. This construction takes place in ZooMontana and is located near the Billings Refinery. The exhibit will consist of an underwater area where native fish can be easily observed, decks for general observation, and visitor information on wetland conservation will be available. A partnership was formed with the Louisiana Coastal Conservation Association (CCA) to restore the marshes at Prien Lake Park. 10 floating islands were created by various volunteers, on each of which around 150 native plants were planted and then floated on Lake Prien. Finally, Society volunteers in partnership with CCA helped restore the Louisiana coastline by building the Plaquemines Oyster Reef. (Goal 14) (Phillips 66, Sustainability Report 2022)

Phillips 66 has developed a Code of Conduct that upholds respect for human rights and dignity, limits discrimination, bribery, abuse, boycotts, harassment and promotes a climate of confidentiality with fair dealing. It fully complies with and follows laws related to minimum wage, working hours, child labor as its priority is to ensure fair and decent wages, eliminate human trafficking, discrimination and provide good health and safety to its workforce her. All of its activities work with other businesses to provide equal opportunities, participating in minority elimination and female empowerment organizations such as the National Minority Supplier Development Council and the National Women's Business Council respectively. Enhancing diversity is accomplished by the supplier diversity program established by the Company and developed by partnering with a variety of suppliers to meet business needs. (Goal 5, Goal 8, Goal 10, Goal 16) (Phillips 66, Sustainability Report 2022)

The Society to provide assistance to 400 families in need, in the Northern part of Lake Charles, donated funds and distributed produce, meat and other food items to the total

value of 60,000 pounds. In the spring of 2021, outside the Phillips 66 Research Center in Bartlesville, Oklahoma, part of the Native American Network Employee Resource Group planted three plants (squash, beans, corn). Members of this group claim that these crops constitute the cuisine and agriculture of the natives. Still, in Montana he helped through the grant given for Crow Tribe training to the Plenty Doors Community Development Corporation. Plenty Doors Community Development Corporation is a non-profit organization that provides food access and assistance to small businesses in need. Midstream Human Resources provided assistance to Tulsa schools in partnership with Elevate Our Kids. Elevate Our Kids is a non-profit organization that promotes the education of children in communities in need. $110,000 awarded to the American Indian Science and Engineering Society to continue its work and succeed in enrolling a greater percentage of indigenous students in STEM studies. To promote good health, Phillips 66 employees and their families participated in the Harrington Cancer and Health Foundation's 24 Hours in The Canyon mountain to provide various resources to people who have dealt with cancer while participating in the road bike event held at Palo Duro Canyon in Texas. (Goal 2, Goal 3, Goal 4) (Phillips 66, Sustainability Report 2022)

With the development of the business plan, it is facilitated by the transition of the business to sustainability, resilience and profitability, since key policies on energy efficiency, climate, human capital and issues related to risks, taxes and capital have primarily been studied . The result of the forecasts and decisions is the investment of infrastructure and industry in sustainable reforms to meet the energy needs worldwide. Investments are mainly related to heat recovery materials, regular process controls and available energy dashboards that enable the. Specialized staff to increase energy efficiency in their activities. At Rodeo, located in California, facilities are being retrofitted to produce low-carbon fuels. At the Humber refinery, located in the United Kingdom, production of renewable fuels has been expanded. Corresponding assessments are made for potential future investments related to carbon capture, the EV battery supply chain, and low-carbon hydrogen. (Goal 9) (Phillips 66, Sustainability Report 2022)

3. Saudi Aramco

Brief historical review

Saudi Aramco is a public petroleum and gas company in Saudi Arabia with headquarters in Dhahran. The history of the company traces to the 1920s when the US government started seeking oil sources from abroad. (Owen, E.W. ,1975) SoCal was the first to take advantage of this and it created a whole new subsidiary, the Californian-Arabian Standard Oil, which was renamed to Arabian American Oil Co (Aramco) in the 1940s. In 1951, Aramco found the Safaniya Oil Field, which was the biggest offshore field globally. Most notably though, in 1975, the Saudi Arabia government included a Master Gas Plan in its five-year economic growth plan, which meant Aramco could use a billion standard cubid foot of non-associated gas per day. In 1990, after the Gulf War started, Aramco was called to produce an extra 4.8 million barrels of oil per day to help stabilise the market. (available at: https://en.wikipedia.org/wiki/Saudi_Aramco)

In 2004, the company was producing 8.6 million barrels per day which resulted to it being the biggest company globally, with a value of $781 billion. In 2012, the company suffered a cyber attack that took them several months to recover from, and in 2019 a drone attack happened on two of its plants, which cut 5.7 million barrels a day. In 2020, they fired around 500 of their 70000 employees, due to the COVID-19 pandemic and in 2021, they announced they were planning to achieve net-zero by 2050. (available at: https://en.wikipedia.org/wiki/Saudi_Aramco)

Aramco has been investing in geophysicists and geologist since 1982, as they have been exploring oil and gas reservoirs. In 1993, they were merged with Samarec, and since then they have been using Samarec's refining resources. Their capability is refining 5.4 million barrels per day. The company owns several tankers to ship crude and refined oil, as well as natural gas and LNG across the world. They are looking for joint ventures to achieve their desired goal with regards to the LNG market. (available at: https://en.wikipedia.org/wiki/Saudi_Aramco)

Sustainable strategies

According to the annual report and sustainability report published for the year 2021, various actions are being taken for its sustainability and flexibility, following the flexibility systems and 12 of the 17 sustainable development goals.

- Applications for agility

a. Analysis of the application of available technology

Aramco supports technological development by implementing new solutions for Upstream and Downstream, thus addressing the challenges that exist. The new solutions that have been developed include:

• The liquefaction of chemicals

• The rapid extraction, use and storage of carbon and hydrogen carbon

• The expansion of (non-metallic) applications

• Making transportation sustainable with more efficient engines and low carbon emissions

• The replacement of various solutions based on technological achievements, for example very fast air capture. (Saudi Aramco, Annual Report 2021)

The Company is ranked among the best patent writers, as they have invested heavily in this area. In the year 2021, 864 patents were granted in the US, and Aramco is among the top 50 companies to receive such patents. Also, the inclusion of sustainable technology in the future will increase the company's profits as the markets for its sustainable products expand. With the help of this, it is easier to achieve the reduction of emissions on the planet and reach the required scale. (Saudi Aramco, Sustainability Report 2021)

b. Analysis of human resources

Aramco invests heavily in the development and safety of its employees. It encourages human resources to improve their skills, through various programs organized for this, so that the Company itself can ensure that its capabilities meet its requirements. Thus it separates two dimensions. One is based on activating their aspirations through promoting their skills and abilities and the second focuses on becoming more sustainable through diversity and inclusion. It also prioritizes the safety and well-being of its workforce as they are important virtues for its success. A tragic contractor death occurred throughout 2021, while pursuing zero fatalities, and after a thorough investigation the causes were identified and new action plans were created to prevent

another incident from occurring. Finally, regarding increasing diversity and inclusion (D&I), Aramco has focused quite a lot as it develops various events and programs with over 16,000 participations during 2021. (Saudi Aramco, Annual Report 2021)

c. Analysis of production strategies

Aramco's business consists of a large network of pipelines, which connect production points to each other, several processing, storage and transportation facilities. It deals in Upstream and Downstream and its activities take place in Saudi Arabia and worldwide respectively. Regarding Upstream, the areas that the company works in are near, central and east of the Provinces of the Kingdom. Aramco has started developing an unconventional Jafurah gas field, which is a huge, liquids-rich shale gas field estimated at 200 tscf of gas. (Saudi Aramco, Annual Report 2021)

As a sole supplier of natural gas, it has an extensive distribution network consisting of pipelines, air refueling sites and stations that supply the products to customers. Stations and pipelines are located on the west and east coasts and allow the facilities to communicate with each other. Also, East-West allows the connection of Yanbu', located on the west coast, with facilities located in the eastern province. An extensive pipeline network, called the Master Gas System (MGS), allows the connection of the main production facilities with the processing facilities and has a capacity of 9.6 bcfd of natural gas, which supplies industrial complexes taking place in the center, east and west. (Saudi Aramco, Annual Report 2021)

Regarding Downstream, it deals with the refining, manufacturing of various petrochemicals and lubricants, the sale, distribution, as well as the production and trading of electricity. During this operation, 43% of the production, from the Upstream segment, of crude oil was consumed in 2021. This was easily accomplished during the integration of the Company's two businesses, Upstream and Downstream, as it ensured that the Downstream division could source the highest quality crude oil at the lowest cost. (Saudi Aramco, Annual Report 2021)

The focus of crude oil research is based in the Eastern Province and primarily applies innovative technologies that help evaluate key metrics to identify trends and potential areas for improvement. Non-associated natural gas exploration has produced significant discoveries, identifying new reserves in hydrocarbon-rich basins adjacent to existing fields and production facilities, while exploration in new basins continues. Finally, it is worth noting that it is the only company that supplies its products to the domestic market, but also to countries with high growth, such as China, Southeast Asia, India, the United States, Japan, Europe and South Korea. (Saudi Aramco, Annual Report 2021)

d. Analysis of the management environment

For Upstream the government mandates the company to maintain the Maximum Sustainable Capacity (MSC) and limits its maximum production level. At the end of the year 2021, the government mandated that MSC be increased to 13.0 mmbpd from 12.0 mbpd. Thus, it is sought by 2027 to gradually increase the MSC, allowing additional crude oil to be produced. Excess capacity is also used as a supply alternative, in case production is interrupted in an area. In addition, it aims to meet future needs, replenish hydrogen, contribute to the elimination of greenhouse gases (GHG) and complete Aramco's gas portfolio. New discoveries, addition of reservoirs and re-evaluation of the existing ones are in the plan for the future while focusing on the replacement of some reserves, which contributed to the finding of three conventional natural gas discoveries and two unconventional ones. Finally, the planned expansion of the Master Gas System, named MGS II, together with the extension of the East-West pipeline, will increase the future supply to 12.5 bscfd of natural gas, ultimately delivering 5.2 bscfd of natural gas to areas that are located in the center and west. (Saudi Aramco, Annual Report 2021)

During the exploration stage it is sought to achieve efforts to create the Kingdom's oil and increase the non-connected natural gas. These processes are designed to reduce exploration costs and increase profits, optimize production and products, and accelerate natural gas exploration. Refining turns crude oil and NGL into products for sale. This stage is implemented in order to optimize production and reduce costs, as the company uses the oil it produces. This improves both the refining stage and the products available for sale. (Saudi Aramco, Annual Report 2021)

At the beginning of 2022, it started its cooperation with the Polish company PKN Orlen, which is engaged in refining and retailing of fuels, signing various agreements aimed at promoting its products in Poland in the future. Regulatory approvals are awaited to complete this. At the same time, the company's petrochemicals business is seeking continued growth by expanding its production capacity and increasing its holdings through new investments. This comes with the recent ownership of 70% of SABIC shares by the PIF. This move characterizes it as a key, global producer of petrochemicals, giving it the possibility to further expand the production of petrochemical products and their promotion. In addition, the future goal of the two companies is to cooperate in procurement matters, to develop more efficient raw materials, etc. (Saudi Aramco, Annual Report 2021)

Finally, the company applies its innovative technologies in the Upstream and Downstream sectors. According to Upstream, the application of the technology helps to optimize the methods used for research, economic extraction combined with increasing production and finding new catalysts. In Downstream the application of technology helps to improve the production methods of the products. (Saudi Aramco, Annual Report 2021)

- Sustainable development goals

Aramco's main concern, by 2050, is to achieve a net zero footprint recognizing that it is a big challenge to implement the goals across its businesses. The primary step is to reduce carbon intensity by 15%, i.e. to at least 8.7 kg CO_2e/boe, from 10.2 kg CO_2e/boe in 2018, while seeking to reduce absolute gas emissions from businesses in 67 MMt CO_2e, from 119 MMt CO_2e. In 2019 the company committed to Zero Routine Flaring using the Master Gas System, which achieves a relative elimination of gas flares, for satellite methane detection and UAVs, by 2030. The implementation of the Master Gas System has helped reduce the volume of flue gases to 25.8252 mmscf (2021) from 26.9951 mmscf (2020). (Goal 7, Goal 13) (Saudi Aramco, Sustainability Report 2021)

In terms of renewable energy, various investments were made, some of which were 12 GW of solar, wind and other renewable energy projects, and Renewable Energy

Certificates (RECs) were purchased. By 2030, renewable energy production is set to exceed 58 gigawatts (GW), with 40 GW coming from solar, 16 GW from wind and 2 GW from other renewables. A major boost for Saudi Arabia was in 2021 when the company, through Saudi Aramco Power Company, joined the consortium led by ACWA Power to build the Sudair solar plant, which had a capacity of 1.5 GW. This project will begin to be implemented in 2022 and will be characterized as the largest single-conventional solar photovoltaic unit developed in the world. (Goal 7, Goal 13) (Saudi Aramco, Sustainability Report 2021)

The Company has founded the Oil and Gas Climate Initiative (OGCI), but is also a member of it. OGCI is made up of 12 international and national hydrocarbon companies, which are addressing climate change by implementing various innovative solutions to safely sequester carbon to be used or stored and to reach zero footprint by 2050. (Goal 17) Through OGCI the development of the economy is sought. To ensure economic development, it is necessary to impose a specific price on carbon. This will positively affect investment in technology as it will act as an incentive. For the success of this it is essential to cover any type and sector of gas emissions, to diversify their intensity, to maintain revenue neutrality and to have the possibility of transfer for any credit. (Goal 8) (Saudi Aramco, Sustainability Report 2021)

Corporate responsibility to protect workers emerges through the promotion of well-being and good health. To provide high quality medical care the Work Life Support Program has been developed. Through this, the possibility of communicating with the staff, as well as their families, with a specialized clinical consultant is developed at any time the employees wish, wherever they are, thus receiving digital guidance. Strategies and techniques are given for managing stress, strengthening mental health resilience and even dealing with possible feelings of depression. As an additional support for mental health, facilities are provided for recreation, exercise and even for feeding the human resources and their families. (Goal 3) (Saudi Aramco, Sustainability Report 2021)

The staff employed by the company's businesses consists of a diverse workforce, with more than 85 nationalities. It proves that the Company respects different cultures, treats them with respect, thus promoting innovation and diversity. The promotion of diversity

is also satisfied by the fact that an increase in the female gender is sought, setting as a goal until 2030 to more than double the percentage and 10% of this to hold leadership positions, as well as the inclusion of people with disabilities in the working environment. In the year 2021, the number of people with disabilities was increased, while there was a collaboration with an international school in Vasilios in order to provide services, both educational and therapeutic, to people with special needs. Increased the percentage of female hires to 31% while continuing to work with the STEMania program by awarding university scholarships to girls and helping women to obtain university degrees. (Goal 5, Goal 10) (Saudi Aramco, Sustainability Report 2021)

Quality education is a key driver for the development of new talent and the development of skills. Aramco has created a variety of programs that are offered to employees and students, students or people who wish to acquire a job in the Company, who possess the necessary skills. The Non-Employed Graduate Program (CDPNE) is designed for individuals in academic institutions who are not employed to earn a college degree. Since 1974, the Professional Development Program (PDP) has been developed, which is a postgraduate program and offers the necessary knowledge to join young professionals in various positions within the Company itself. The Construction Safety Diploma Program has been created, which based on reliable criteria has been validated by TÜV Rheinland, and concerns the development of individuals, men and women, who wish to acquire the specialty of safety inspectors. As of 2018, it has helped develop 16 National Training Centers (NTCs) with over 34,500 graduates in 10 different cities. (Goal 4) (Saudi Aramco, Sustainability Report 2021)

The aforementioned strategy serves Aramco's goal of contributing to the development of the economy by increasing education and developing a skilled workforce capable of managing construction or facility financing. An important commitment of the Company is the protection and respect of human rights as it is against child labor, exploitation and any form of slavery. It has developed rules and complies with specific laws related to the processing of personal data. (Goal 8) (Saudi Aramco, Sustainability Report 2021)

Before any action of the business, extensive research is conducted to assess the impact on the environment, how to prevent or reduce these impacts and assessment of other

actions positive for the environment. Environmental regulations and legislation are dutifully followed to close a project and rehabilitate the land where the construction site used to be, to preserve the land or improve the existing condition. Attention has turned to mangrove restoration, planting more than 13.3 million plants along the coasts of the Red Sea and the Arabian Gulf, while since 2018 the planting of 26 different species of trees has begun across the Kingdom totaling one million and will plant even more in the future. The reintroduction of extinct species in the Shaybah Wildlife Sanctuary was significant. (Goal 15) (Saudi Aramco, Sustainability Report 2021)

Important actions are being taken for water management. Efforts are made by the Company to reduce its consumption and its loss by using alternative sources or treated sewage and waste streams. The basic method is the use of sea water for various processes, after desalination has been done first. It is critical to create facilities for the treatment of seawater in order to satisfy all the needs of the Company, avoiding the pumping of fresh water. (Goal 12) To preserve and protect clean water, in addition to conserving reserves, is the establishment of rules and strict measures to prevent the pumping of groundwater and its contamination through activities, as well as the provision of incentives in order to use alternative sources. (Goal 6) For the protection of marine ecosystems, particular importance was given to the regeneration of coral reefs, designing artificial reef structures through which corals will be able to recolonize. (Goal 14) (Saudi Aramco, Sustainability Report 2021)

Aramco demonstrates that it is a responsible supply chain by promoting principles and standards, in a responsible manner, to its suppliers, which are defined by the Company's Supplier Code of Conduct, safely managing the provision of supplies and services. It has also developed the iktva program, which helps increase the overall value added in the Kingdom. In this way, the local supply chain experienced various improvements, such as a 300% increase in the purchases of its services, a twenty-fold increase in investments, and the export of its services to more than 40 countries. Finally, the construction of industrial ecosystems related to energy is sought. (Goal 12) (Saudi Aramco, Sustainability Report 2021)

4. Shell plc

Brief historical review

Shell plc is a British multinational oil and gas company with headquarters in London, England. It was formed in 1907 and by the 1920s it was the biggest oil producer in the world. In the 60s, it was part of the first world wide sea transportation of LNG and in the recent decades, it has improved its gas business and acquired the BG Group in 2016, resulting in the surpass of Chevron. The company is invested in every area of gas and oil, including production, distribution and trading. In 2004, the company overstated its oil reserves and a £17 million fine was issued, followed by a lawsuit. In November of the same year, the corporate structure was simplified and the company moved to a single capital structure. (available at: https://en.wikipedia.org/wiki/Shell_plc#History)

In 2010, Shell formed a joint venture with Cosan, named Raizen, and the business included all of Cosan's Brazilian ethanol and all of Shell's Brazilian retail fuel. In 2016, the company announced the build of an ethane cracker plant in Pennsylvania, whereas in 2017, they sold assets in North Sea to Chrysaor. In 2020 due to Covid-19, Shell had to cut its dividend for the first time since World War II and in February 2021 it announced a $21.7 billion loss. On the 4th of March 2022, during the Russian-Ukraine war, Shell bought Russian Oil at a discount. Of course, this move was severely criticised and on March 8th the company announced a closure of its stations in Russia and that it would stop buying Russian oil. (available at: https://en.wikipedia.org/wiki/Shell_plc#History)

The downstream operations of the company are the main source of profits worldwide, including service stations and oil refining. The upstream operations are managed across geographic units and include the search and recovery of oil and gas. The company also focused a big part on technology projects as well as operations that liquify natural gas. (available at: https://en.wikipedia.org/wiki/Shell_plc#History)

Sustainable strategies

For its transition to a sustainable and flexible company, it has implemented part of the methods for its flexibility and 14 out of 17 sustainable goals.

- Applications for agility

a. Analysis of the application of available technology

With the help of the available and new technology, the aim is to remove carbon from the various activities of the Company and also to reduce emissions. At the same time, new ways are being developed to capture, process and store hydrogen. Shell's CANSOLV CO_2 system, considered one of the leading technologies developed, achieves large-scale carbon sequestration after combustion and releases it as a clean stream, which can be used for other activities or stored. CANSOLV technology has the ability to bind up to 12 million tons of CO_2 each year. (Shell plc, Energy Transition Progress Report 2021) Furthermore, in the year 2021 a digital platform was presented, called the Shell Supplier Energy Transition Hub, which enables any other interested company to share performance, best practices and data for the monitoring of gas emissions. At the end of 2021, 258 of the company's suppliers had registered and 103 of them have set various targets, one of which is to reduce emissions. (Shell plc, Sustainability Report 2021)

b. Analysis of human resources

The Shell People Survey is very important as it measures employee loyalty, motivation and commitment to Shell. The Company's overall response for 2021 was 83% and employee engagement 75%. Both figures for 2021 were down 3.1% and 3% respectively and were mainly affected by the low score of reputation, rewards and research benefits, outlining the uncertainty of the year's reorganization and the day-to-day challenges that arise due to of the COVID-19 pandemic. Finally, during the year 2021, various measures were developed to improve the approach to workers and human rights as well as their safety. (Shell plc, Sustainability Report 2021)

c. Analysis of production strategies

Total production is expected to decrease by 1-2% per year until 2030. Upstream activities research continues for existing sites and focuses mainly on value rather than volume, and process emissions have been reduced by 25% to compared to 2016. In September 2021, the shale production business in the US Permian Basin was sold to ConocoPhillips and the sole production is located in Canada and Argentina. Also, no more oil exploration will be carried out offshore in the Arctic Circle, while at the same

time the abandonment of the Gydan joint venture with Gazprom Neft, in which Shell has a 50% stake, for exploration in northwestern Siberia is also under consideration. (Shell plc, Sustainability Report 2021)

d. Analysis of the management environment

Shell businesses take responsibility for the way health, safety and social performance (HSSE & SP) data is managed, the collection, scope and calculation of data. The mechanisms for ensuring these responsibilities are done through self-assessments, internal audits, reviews, annual meetings of executives for improvement and finally through official signatures from senior management. Some groups have been appointed to ensure and control the management. One of these is the Carbon Reference Committee (CRC), which is tasked with checking that gas emissions measures and measurements comply with legal and regulatory requirements. Another is the Report Review Group, which is made up of independent experts and ensures the correctness, balance, relevance of the reports and their responsiveness to the interests of the stakeholders. Finally, LRQA Limited has provided limited assurance for all three Fields related to gas emissions, meaning that the data is substantially correct. (Shell plc, Sustainability Report 2021)

- Sustainable development goals

Shell has developed a strategy called Powering Progress that aims to create shareholder value, enhance quality of life, promote respect for nature and achieve net-zero emissions. It is based on the values of integrity, honesty, safety and respect. (Shell plc, Sustainability Report 2021)

The Company enables all its human resources to report violations of the code of ethics anonymously and confidentially at any time. The most frequently reported violations are related to conflict of interest, harassment and asset protection issues. Within the code of ethics there are rules to reduce and eliminate corruption and bribery. With these rules, not only the employees but also its suppliers are obliged to operate. In total it has 24,000 suppliers worldwide. Small selected companies, which may not have corresponding regulations, are provided with free training to embody anti-corruption and anti-bribery practices. In the year 2021 it provided training in 16 countries, in more than 1,300 third parties and in 14 languages. (Goal 16) (Shell plc, Sustainability Report 2021)

Partnerships with non-governmental organizations (NGOs), academic institutions, regulatory authorities, governments, industry bodies and other businesses were developed to achieve the various objectives. Collaborations depend on the project and the type of team. (Goal 17) (Shell plc, Sustainability Report 2021)

Shell cares about the good health and safety of its employees. First, for the year 2021, it developed a mandatory training related to life saving rules and more than 100,000 workers completed it. There is close collaboration with the company's contractors to create a strong safety culture. This partnership helps prevent injuries and deaths, as measured every 100 million hours worked. For 2021 the incidence of serious injuries and deaths (SIF-F) was 6.9 while for 2020 it was 6.0. Also for the safety of employees during the COVID-19 pandemic, office equipment was initially given to employees, through the Home Ergonomics program, to work remotely and reduce the spread within the Company. Finally, he strengthened the workers and vulnerable groups by providing them with monetary donations and medical supplies. (Goal 3) (Shell plc, Sustainability Report 2021)

Various long-term, medium-term and short-term goals have been set for climate protection. According to the GHG Protocol's Corporate Accounting and Reporting Standard, there are three fields of greenhouse gas emissions. Field 1 records direct emissions of gases controlled or owned by Shell, Field 2 includes indirect emissions resulting from the production of purchased energy and Field 3 includes other emissions, which are related to the use of various products sold by the Company . The net carbon intensity (NCI) was 77 gCO_2e/MJ for the year 2021, where compared to 2016 it was reduced by 2.5% but compared to 2020 it increased by 2.7%. The reduction from 2016 meets the short-term target set to reduce the NCI by 2-3% at the end of 2021. The increase is, however, due to the inclusion of an improved approach that estimates the strength of the emission intensity sold by the Company . The total emissions of Scope 1 and 2 gases amounted to 68 million tons of CO_2, which marked a decrease of 4% from 2020 and by 18% from 2016. The total emissions of Scope 3 gases, originating from energy products, were 1,299 million tons of CO_2e. (Goal 7, Goal 13) (Shell plc, Sustainability Report 2021)

The acquisition of the title of the Company as a net zero emissions energy company means that it is necessary to reduce the emissions of its activities and the reduction of those from the energy products sold to consumers but to increase the sales of energy products and services that produce reduced carbon emissions. Finally, it is important to capture and store residual emissions. (Goal 9) (Shell plc, Sustainability Report 2021)

Shell for the protection of biodiversity and ecosystems has developed various partnerships with external experts for the right approach of actions. It also places value on assessing and minimizing the impact it has on life in water and on land. It applies a mitigation hierarchy that first includes avoidance, then minimization, then restoration, and finally compensation. (Shell plc, Sustainability Report 2021) In Australia, during the development of the QGC project to offset the impacts on the ecosystem a plan was developed consisting of the acquisition of the Valkyrie property, in which there are wetlands, rivers, many threatened species and vast areas of forest eucalyptus and has an area of 10,000 hectares. Initially 1690 hectares were protected and in 2021 280 hectares of land was secured to offset the impacts of the Company's projects. Also due to the construction of a pipeline in Gladstone, Queensland the cycad plant 'Cycas megacarpa' was affected and the actions taken were to save 290 cycad plants in 2016 and to plant over 2,000 propagated seedlings in the offset area in 2020. After exploitation in the Gulf of Mexico actions will be taken to preserve the ecosystem. He donated a steel frame to the Louisiana Artificial Reef program to help maintain and monitor the reef as it is now a habitat for a variety of marine animals. And a variety of other actions are taking place to restore biodiversity, with one underway to restore two hectares of coral reefs in Mexico. (Goal 14, Goal 15) (available at: https://www.shell.com/sustainability/environment/biodiversity-in-action.html)

Part of responsible consumption and production is reducing and recycling waste and plastics respectively. In 2021, 1,993 thousand tons of hazardous and non-hazardous waste were bound, 399 thousand tons of residual materials were reused and recycled. Carbon-neutral and biodegradable lubricants were promoted again, where they are produced in facilities that capture solar energy for operation and use sustainable, bio-based raw materials to produce while being made from 40% recycled plastic. Chemical recycling is also carried out. Plastics, which are not easy to recycle, are broken down

through pyrolysis and the pyrolysis oil is then used as a chemical feedstock, versus the hydrocarbon feedstock. In November 2021, plans were announced for the creation of a corresponding facility, which will have an annual capacity of 50,000 tons. (Goal 12) (Shell plc, Sustainability Report 2021)

In the same year, a reduction in water consumption was achieved from the 25 million cubic meters it was in 2018 to 22 million cubic meters in the facilities where there was a high level of water consumption. The facilities were the Pearl GTL plant in Qatar, Shell Jurong Island Chemical Plant and Shell Energy and Chemicals Park in Singapore, Tabangao Import Terminal in the Philippines. There was also a decrease in freshwater intake from 171 million cubic meters in 2020 to 166 million. (Goal 6) (Shell plc, Sustainability Report 2021)

Tens of billions of dollars are spent annually on various services and goods to satisfy human potential, as paying taxes to governments helps fund essential services such as education, health care, transportation, and more. The Company's activities employ people in over 70 different countries. In 2021, about $37.5 billion was spent. 83.5% of the amount was spent on purchasing supplies from local suppliers, while $4.2 billion was spent in countries whose annual GDP is below $15,000 per person. About $149 million was spent on social investment, where 63% was given to voluntary investment and the remaining 37% was required by contractual agreements. Shell's operations in Nigeria (SCiN) contribute to the development of the local community, employing 2,500 people as they create new jobs for many more in the networks that supply the company. In addition to spending $986 million on miscellaneous taxes, an additional $33.82 million was given for direct social investments such as education, health, community and other programs. These actions satisfy the economic development of the communities where it operates. (Goal 8) (Shell plc, Sustainability Report 2021)

The Company developed various entrepreneurship and skills programs thereby contributing to economic development and creating employment opportunities. 26,700 people participated in the programs, 700 businesses benefited and 1300 people joined jobs after training. He has also developed two global entrepreneurship programs, which are Shell LiveWIRE and Shell StartUp Engine. The first helps entrepreneurs realize

their ideas, operates in 18 countries and during the year 2021 trained more than 3600 people worldwide, contributed to the creation of more than 2270 new jobs, supported 670 existing businesses and helped develop 125 new ones. The second global program has been given to Brazil, Singapore, France, the United Kingdom and the Netherlands, it is related to innovation in areas related to renewable energy sources, electric mobility, energy storage and 40 start-ups are receiving support. In parallel, a number of programs have been established to support science, technology, engineering and mathematics (STEM) in over 20 countries. NXplorers is active in 18 countries, employed 60,000 students in the year 2021 and seeks to lead young people to a creative, complex thinking, develop their skills. (Goal 4) (Shell plc, Sustainability Report 2021)

According to its publications, Shell supports diversity and equality. First, this is demonstrated by increasing women in senior leadership positions by 1.7% compared to 2020, while aiming for 40% female representation by 2030. Campaigns have also been launched in 14 countries to support LGBT+ community, while seeking to ensure a safe working environment for LGBT+ staff and people with disabilities. In addition, an important goal that has been set to be implemented by 2030 is that the network of gas stations is accessible and inclusive for people with physical disabilities, while until now it was possible to ask for help through an application where it is supported in ten and in more than 3,600 stations. (Goal 5, Goal 10) (Shell plc, Sustainability Report 2021)

5. BP

Brief historical review

BP Plc (the British Petroleum Company) is an oil and gas company with headquarters in London, UK and it is classed an oil and gas "supermajor". (Reuters, 17 February 2021)

The company was formed in 1909, under the name Anglo-Persian Oil Company, due the significant oil interest in the Middle East. (McGill, Kevin, 2 July 2015) In 1912 their first refinery was built in Abadan Island and 3 years later, a controlling interest was bought by the British government, resulting in the British Navy using oil instead of coal for their ships. In 1954, the company gained the name British Petroleum

Company, due the Iranian coup d'etat. In 1979, the British government sold 80million shares of BP at $7.58 and in 1987, another $12.2 billion shares were sold.

In 1981, BP entered the solar technology sector and the 90s they focused on the Russian Market, by acquiring stakes of Sidanco. In the early 2000s, they entered the Azerbaijani market and merged with Amoco, making them the third biggest oil company globally. In 2007, they created a joined venture with AB Sugar and Dupont to open a bioethanol plant near Hull, UK. However, from 2011 till 2015 they announced they would cut down their alternative energy sectors, which they reversed again in 2017 when they acquired the biomethane sector from Clean Energy.

In 2019, they discovered 1billion barrels of oil in their fields in the Gulf of Mexico and in 2020 they sold their petrochemical unit to Ineos. In 2022, because of the Russian invasion to Ukraine, they announced they would sell the stakes they own in Rosneft, but no actions have been taken yet. (Wikipedia, available at: https://en.wikipedia.org/wiki/BP#History)

On 23 March 2005, 15 workers were killed and more than 170 injured in the Texas City Refinery explosion. From 1988 to 2015, BP was responsible for 1.53% of global industrial greenhouse gas emissions. On 20 April 2010, the Deepwater Horizon oil spill, a major industrial accident, happened.

The company's upstream sector includes exploration and production of oil and gas resources in 25 countries globally. Its downstream activites include refining, transportation and trading of crude oil and petroleum products across Europe, America and Asia. Like mentioned above, they have announced multiple times their intent to support clean energy, but a 2022 found that their contribution is insignificant. (Wikipedia, available at: https://en.wikipedia.org/wiki/BP#History)

Sustainable strategies

- Applications for agility

BP focuses on the systematic approach to achieving its sustainability and flexibility as it rests on a strong foundation by faithfully following 15 of the 17 sustainability goals.

a. Analysis of the application of available technology

Technology is a key foundation for the Company's development, which is why BP focuses on improving the existing and developing new methods. Particular importance is given to the measurement and detection of methane. More specifically, the flexible approach of various technologies is driving the development of continuous source level and location measurement systems. Technologies used for optimal results are drones, satellites, aircraft. In addition, during 2021 actions were carried out to reduce methane emissions during the operation of businesses, through the upgrading of activities and the use of new technology methods. (BP, "Net zero from ambition to action", March 2022)

b. Analysis of human resources

Human resources are what achieve the daily goals set under pressure. For this reason the effort is being developed to develop their skills, promote their safety, guide them properly and train them as best as possible. In 2021, more than 750,000 hours of training were spent with over 20,000 course titles available covering safety, compliance, leadership skills development, discipline as well as flexibility and sustainability topics. Also, through an annual survey, which is called "Pulse", the emotions of the employees are monitored. The survey is sent out on a weekly basis and is called 'Pulse Live'. According to the survey employee confidence and the feeling of progress for the Company was better compared to 2019 as there was a 2% increase in 2021, as the evolution and progress of the transformation recorded a 7% increase compared to 2019. (BP, Sustainability Report, 2021)

c. Analysis of production strategies

A total of $2.2 billion has been spent on wind and solar energy research to further zero-footprint goals. Offshore wind generation research has been completed on the US East Coast with up to 4.4 GW of generation capacity through the Empire Wind and Beacon Wind projects. In early 2022, another wind power project called Morven was developed, located approximately 60 km from Aberdeen, Scotland, with a potential capacity of up to 2.9 GW. To harness solar energy, Lightsource bp aims to produce around 25 GW by 2025 while developing a potential 9GW solar pipeline. Lightsource

bp owns a five-project photovoltaic complex, Vendima, which has the capacity to provide 250 MWp of solar energy and in June 2021 began operations in Zaragoza, Spain. Future investments for hydrogen exploration and construction of production units are expected to be completed by 2030. (BP, Sustainability Report, 2021)

d. Analysis of the management environment

More generally, the Company has demonstrated that it complies with policies and rules, such as the Code of Ethics, maintains objectivity and independence, and has implemented the International Standard for Quality Control. So, knowingly, it is easy to say that you maintain an entire, quality control system that consists of policies related to compliance, ethics, standards, laws and requirements. To demonstrate the level of assurance it performed limited assurance on certain key performance indicators (KPIs) following the International Standard for Assurance Engagement (ISAE) 3000, based on which an assurance engagement has the ability to be performed as a limited or reasonable assurance engagement. In limited assurance, the procedures are of a smaller extent, so the level of assurance is significantly lower than in reasonable assurance. To perform limited assurance, ISAE 3000 should mandate a review of the capabilities, systems and processes that take place to collect the areas for which assurance is provided. (BP, Sustainability Report, 2021)

- Sustainable development goals

It has proven to be a significant improvement for climate action. The main reduction was that of Scope 1 emissions, which are direct emissions, which reached 20%, that is, from 41.7 MtCO2e in 2020 it decreased to 33.2 MtCO2e in 2021, of which 1.1 MtCO2e came from methane and 32.0 MtCO2e from CO2. Scope 2 emissions, which are indirect emissions, were reduced by 37% compared to 2020, i.e. by 1.4 MtCO2e. Another permanent reduction was the reuse of the Kwinana refinery and the shutdown of production at the Foinaven FPSO, where the reductions were 0.7 MtCO2e and 0.2 MtCO2e respectively. In addition, Gelsenkirchen saw a reduction in Scope 2 emissions of 520 ktCO2e due to the purchased electricity. Finally, upstream Scope 3 emissions were 304MtCO2 in 2021 from 328MtCO2 in 2020, down 7% from 2020 and 16% from 2016. The average carbon intensity from sales of energy products remained stable at 79gCO2e/MJb from 2019 to now. However, to achieve the reduction and to strengthen

the ambition towards a zero footprint, investments of $2.2 billion have been made in 2021 compared to investments of $750 million in 2020. For sustainability, investments have been made to build a plant hydrogen production in the North East of England, and more specifically in Teesside. The plant aims to produce up to 1 GW of blue hydrogen by 2030, while the HyGreen Teesside project aims to produce 60 MWe of green hydrogen by 2025. Finally, capital expenditure on electric vehicle (EV) charging businesses has increased as there are 13,100 charging points so far with the goal of exceeding 100,000 by 2030. (Goal 9, Goal 12, Goal 13) (BP, Sustainability Report, 2021)

In order to reach the goals reliably and quickly, collaborations with the government have been developed. In particular, the first partnership was about the mass adoption of electric vehicles across the UK. Subsequently, the inclusion of EU regulations, through technical papers, on methane was supported. The Company provided support and active advocacy for the US carbon pricing and cap-and-trade program related to climate commitments in Washington. The CEO publicly welcomed the 'Fit for 55' legislative package, which aims to reduce EU emissions by 55% by 2030. On 12 February 2020 the Company supported the recommendations of the Task Force, which relate to financial climate disclosures (TCFD) and a future collaboration with it and others, for example the Sustainability Accounting Standards Board (SASB), is sought to the promotion and development of good standards and practices. (Goal 16, Goal 17) (BP, Sustainability Report, 2021)

Further cooperation is sought to be developed in order for cities and businesses to be cleaner and more sustainable. A memorandum of understanding (MoU) has been developed and signed with Aberdeen Harbor to take appropriate actions to reduce air pollution and noise pollution during the arrival and departure of ships. In Valencia, in January 2022, another memorandum was signed with the ceramics industry and the government to decarbonize private and public mobility, having a positive impact on the transformation of the refinery in Castellon into a sustainable business that will produce biofuels, green hydrogen and renewable energy sources. BP and CEMEX signed a memorandum to promote the production of net zero concrete by 2050 and the development of decarbonization solutions for the production of CEMEX's products, mainly cement, as well as their transportation. A commitment to long-term cooperation

was developed with the Maersk Mc-Kinney Møller Center for Zero Carbon Shipping to develop new solutions for low-cost and low-emission alternative fuels. To develop more clean energy, an initial target of 20 GW of renewable energy generation has been set to be developed as a final investment decision (FID) with a final target of 50 GW of equivalent renewable energy. At the end of 2021, 4.4 GW were approved as FID while 23 GW are under discussion. In early 2022, in the UK, ScotWind was licensed to partner with EnBW, adding 1.5 GW of clean energy. (Goal 7, Goal 9, Goal 11, Goal 13, Goal 17) (BP, Sustainability Report, 2021)

In view of the protection of human rights, in 2021 the Company became a member of the organization Global Business Initiative (GBI), which has as an institution to shape and build the concept of respect for people but especially for their rights. Various training programs have been developed to enhance human resource skills with an emphasis on disadvantaged communities, which are essential in sectors such as energy. Initially, through the TAHLYA programme, Omani graduates were helped to develop desalination skills through internships and advice on future employment opportunities. Through the bp Education Service (bpES), educators are provided with free digital resources to foster and develop new STEM talent. International scholarships were funded, through the bp Global STEM academy, for approximately 100 students and more, where 60% were addressed to the female gender. Also, for the Royal Academy of Engineers Graduate Engineering Engagement Program, which is located in the United Kingdom, qualified staff are provided for proper guidance. (Goal 4, Goal 10, Goal 16) (BP, Sustainability Report, 2021)

In order to strengthen the concept of decent work, during the year 2021 the Company focused more on systematic approaches related to risk management, labor rights and modern slavery (LRMS). LRMS expectations must also be acceptable to suppliers. Much attention is paid to social issues so that there is a faster response to risks that pose or corresponding opportunities for communities. In collaboration with Shift, a methodology has been developed to support goals and relationship quality. To protect minority populations, whenever feasible on the Company's part, various principles are applied that reinforce and recognize human rights and the sensitivities of livelihoods, urbanization, environment and land. At the same time, the local community and the

Company's workforce had been given the opportunity, through an open line called bp OpenTalk, to share some concerns or report any comments they wish regarding the Company. If these comments are later confirmed by investigation, then the Company is quick to restore or improve the conditions. The total number of complaints decreased by 8% for the year 2021. (Goal 1, Goal 8, Goal 10, Goal 16) (BP, Sustainability Report, 2021)

In Benguela and Huambo, located in Angola, the National Agency for Oil, Gas and Biofuels and the Company funded projects related to agricultural enterprises and demining. A total of 23 out of 40 minefields were cleared by 130 properly trained local people helping 4,000 farmers and 10,000 local people develop skills and create various cooperatives that will be able to sell their products. The Sustainability Development Program has also been renewed, which will be valid until 2025 and through which the indigenous peoples will be included in social programs, the wider collaborations in Bintuni Bay will be supported and its main objective is to improve health, access to education and the development of local entrepreneurship. bp is committed to providing fair wages to its workforce and around the world. She works with the Fair Pay Network to gain a deep understanding of the concept and extensively compares the Fair Pay Database. It is worth emphasizing that bp has at its disposal a foundation that has two main programs. The first is related to matching employee contributions, i.e. those employees who meet the appropriate conditions have the ability to claim certain funds to increase contribution and volunteering while they are then donated to charities of their choice, and the second is related to disaster relief through humanitarian relief efforts. (Goal 3, Goal 8, Goal 9, Goal 10) (BP, Sustainability Report, 2021)

In 2021, the Company set out a framework for action to enhance diversity, equality and inclusion (DE&I) and inclusion in business. Thus, it developed a global scorecard that will enable DE&I scoring for bp's operating frameworks. A new measurement was added to this, where employees will be able to voluntarily share their gender, their pronoun preference and more, and thus there will be a possibility to identify and support different beliefs. Also in the same year, a new program, Leadership Inclusion for Talent (LIFT), began, where support is provided for the development of Black and African-American colleagues in leadership roles and methods for assessing progress, coaching, and self-discovery are provided. In the US and the UK the Race for Equity program has

been made available, involving all those in a leadership position and related to racial equality. It is sought to be extended to all employees and primarily aims at empathy by breaking down stereotypes and prejudices. As part of the action, the diversity of suppliers, for whose support a program has been created, is also strengthened. For the US supplier diversity program, it has been set until 2023 to double spending with certified diverse suppliers, until 2025 spending reaches $1 billion every year. In 2021, $200 million was spent on over 100 women-owned, veteran-owned, minority-owned companies, and increased preferences from 280 to 370 diverse suppliers. (Goal 5, Goal 8, Goal 10) (BP, Sustainability Report, 2021)

Another very basic goal is to preserve biodiversity, restore and enhance it where necessary. The main focus was net positive biodiversity impact (NPI) on new projects and to achieve this a partnership was developed with Fauna & Flora International (FFI) and with Equinor to implement practical NPI methods and approaches in the eastern, offshore , US wind facilities. With the help of yet another collaboration, with the water management association Emschergenossenschaft, the Lanferbach streambed outside the Gelsenkirchen refinery was given life. Further helping to protect biodiversity is the program that has been developed called Natural Climate Solutions (NCS). NCS in Mexico in collaboration with the US Agency for International Development and Pronatura México A.C. made the first of the credits for 15 Improved Forest Management projects, and will continue in 2022. (Goal 14, Goal 15) (BP, Sustainability Report, 2021)

With reference to water withdrawals, for the year 2021, a decrease of 2.2% was observed and water consumption decreased by 4.1% compared to 2020. With reference to analyzes by the World Resources Institute (WRI) Aqueduct Global Water Risk Atlas 4 major sites out of 17 are located in areas of moderate to severe water stress and the number is expected to increase to 12 major sites out of 17 by 2040. Wastewater treatment performance remained stable. The Company also focused on improving water efficiency. A typical example of water value improvement was the onshore installation in Oman, which was completed with a detailed process, while other improvement processes are soon to start, including the Castellon refinery in Spain. The ultimate goal is to replenish water in watersheds that are quite stressed, but also in local communities,

such as in Senegal and Mauritania, where water is easily characterized as a scarce resource and access to clean, fresh water is characterized as a priority. After a prompt in April 2020, a massive project for the N'diago water network began which was related to the renovation of the network and its expansion. Thus the water that will be captured from the Senegal River and with the use of solar energy will be filtered and given to more than 3,000 people for use. (Goal 6, Goal 12, Goal 15) (BP, Sustainability Report, 2021)

6. ExxonMobil

Brief historical review

ExxonMobil Corporation was formed in 1999 from the merger of Exxon and Mobil and its headquarters in Texas. It is a multinational gas and oil enterprise and it is one of the biggest companies in the world by revenue, with more than 50% of its shares held by other institutions. In the early 2000s, ExxonMobil along with other moguls of the oil industry, received criticism for the increase of its oil production in Rumaila and West Qurna oil fields as a result of the war in Iraq. In 2002 they sold their stake in coal mines in Columbia and copper mines in Chile. In 2010 they bought XTO Energy and in 2011 they started negotiations for a cooperation with Russian oil company Rosneft. However, due to sanctions against Russia, they ended their cooperation in 2018. On December 13, 2016, the CEO of ExxonMobil, Rex Tillerson, was nominated as Secretary of State by President-elect Donald Trump which put a stop into investigations by federal climate. In 2017, the company requested to resume drilling in Russia but the Trump administration denied the request, resulting in a lawsuit. In 2019, the U.S imposed further sanctions on Iraq which resulted in a rocket landing near ExxonMobil's headquarters. In 2020, the company considered a merger with Chevron because of the COVID-19 pandemic and the decrease in oil demand, for which they cut 1600 jobs and also committed to net-zero emissions by 2030. (Wikipedia, available at: https://en.wikipedia.org/wiki/ExxonMobil)

The company's upstream operations account for about 70% of its revenue, with around 30billion barrels of oil only in 2021. The downstream operations market products globally with brands like Esso, Mobil and Exxon. The company also has a chemical division that produces polyethylene, elastomers, basic olefins and aromatics, etc.

ExxonMobil operates over 20 refineries globally, with its largest one being in Baytown, Texas. (Wikipedia, available at: https://en.wikipedia.org/wiki/ExxonMobil)

Sustainable strategies

- Applications for agility

ExxonMobil focuses on the systematic approach to achieving its sustainability and flexibility as it rests on a strong foundation by faithfully following 14 of the 17 sustainability goals.

a. Analysis of the application of available technology

The Company has a separate Technology Management System, which includes a variety of technology investment activities and follows a customized, limited access to management system from the initial, rapid flowering of technical innovation to final development. In order to change the way of working to a more efficient and fast one, high-performance computers with increased connectivity and earlier data analyzers have become part of everyday life. To support and improve production as well as detect methane emissions, digital tools and Internet of Things (IoT) projects have been developed, that make refineries more efficient. (Digital innovation, available at: https://corporate.exxonmobil.com/energy-and-innovation/digital-technologies) IoT has the ability to process real data, allowing the user to choose smart, efficient and easily implementable solutions in real time. (What is IoT?, available at: https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-iot/#overview) ExxonMobil's collaboration with Microsoft has helped to monitor volumes of Permian Basin information through the use of IoT technologies to automate workflow and increase efficiency. In addition, advanced digital technologies such as machine learning and artificial intelligence have been applied in the Permian Basin, leading to more efficient operations. Furthermore, the Company has developed a separate IoT project for industry, which has the potential to process more than 6 trillion individual data points helping to find new, more efficient and reliable methods of operating websites, while potentially helping to reduce emissions. (Digital innovation, available at: https://corporate.exxonmobil.com/energy-and-innovation/digital-technologies)

The Company is working with many digital leaders, including Amazon and IBM, to develop a separate payment method at its gas stations, such as the contactless payment method "Alexa, pay for gas". The collaboration with IBM also helped in the development of high-performance computing. This is attributed to the agreement signed in 2019 between the two in the field of quantum computing. Other collaborations that benefit the development of digital platforms are taking place with technology companies. In addition, cooperation with Tuhu, Tencent and a distribution holding company lead to the development of a digital framework for car maintenance. The goal is to create a Mobil 1 car care network in China where it will apply high-quality maintenance to cars through digital technology. Finally, a proprietary deepwater autonomous drilling advisory system was developed using artificial intelligence and it is being implemented in Guyana. The positives of this are that it improves drilling efficiency and safety while allowing personnel to focus on different activities. (Digital innovation, available at: https://corporate.exxonmobil.com/energy-and-innovation/digital-technologies)

b. Analysis of human resources

ExxonMobil's success is due to the talent, hard work and ingenuity of its people. Employees from the first moment of their employment are trained in the Standards of Business Conduct, which include the fundamental policies, and subsequently receive annual training in the Standards of Business Ethics. In addition, they are trained in business practices, which is repeated every four years, but also in selected institution policies, complaint procedures as well as open door communication. The Company itself remains faithful to the creation of a productive working environment, in which every employee has the opportunity to offer the maximum in exchange for personal and professional development. During 2021, employees respected core values, strengthened ExxonMobil's leadership position, and helped restore society. (ExxonMobil, Sustainability Report, 2022)

c. Analysis of production strategies

At the Upstream Company everyone works for the exploration and exploitation of hydrocarbons. ("Business divisions", ExxonMobil) With the help of ExxonMobil's global subsidiaries, which include XTO Energy, the Company's expertise in the technology, exploration, production and marketing of natural gas and oil is used to distribute these

vital resources. XTO Energy is characterized as a leading producer of hydrocarbons in the United States and operates, together with subsidiaries, in the major unconventional producing regions of the United States. ("Natural gas, ExxonMobil) The Company, from 2017 to 2021, for the development of global energy resources has invested 118 billion dollars which is twice the amount of its profit. ("Working to meet energy supply and demand", ExxonMobil) However, it is worth noting that from 2019 to 2022, hydrocarbon production more than doubled, with average daily production above 560,000 barrels, in the Permian Basin of West Texas as well as in Southeastern New Mexico. At the same time, US crude oil refining and processing capacity is growing with a daily production of about 250,000 barrels. ("Working to meet energy supply and demand", ExxonMobil)

d. Analysis of the management environment

ExxonMobil is committed to a number of environmentally responsible and safe operations. Any movement that takes place is supervised by the Board of Directors, through which the correct guidance is provided to the management of the Company and quality control is carried out in its management. The purpose of the Board of Directors is to equally control the strategic long-term plans and development plans, to select the Chief Executive Officer (CEO) or to review his performance. For 2021, the Board of Directors has appointed five new independent directors, who possess additional knowledge and skills in matters related to the energy transition of businesses and capital allocation. It is worth noting that the total meetings of the Board of Directors were 13 and the current directors of the Company attended 97% of the meetings, on average. Also, internal audits in the Company are a common phenomenon since a third of its processes are examined annually, as are self-assessments, which aim to verify the effectiveness of control systems. These audits seek to investigate suspected acts of non-compliance with the Code of Conduct. Another means of ensuring operational integrity is the OIMS (Operational Integrity Management System). The purpose is to address, reduce and eliminate risks that have taken place since the beginning of the Company's operation. This consists of 11 items related to operations, leadership, maintenance, finding and/or documenting incidents and information, emergency response, community relations. Each of these elements contains specific expectations and goals. (ExxonMobil, Sustainability Report, 2022)

- Sustainable development goals

ExxonMobil seeks ways to preserve culture, morals, customs, traditions and cultural heritage in general. It demonstrates respect for sites historically used or inhabited by indigenous people as it works with them to incorporate traditional knowledge into its designs. To put this into practice a heritage identification process is used to identify sites of high cultural significance and if the recovery of an object or its relocation is deemed appropriate then tailored processes are applied. (Goal 1) (ExxonMobil, Sustainability Report, 2022)

In addition to preserving culture, the Company develops cooperation with local communities to understand the needs of these areas and to contribute to their long-term socio-economic development. Through this partnership ExxonMobil hires local staff to strengthen the local workforce. The development program consists of various stages, the most basic of which are education, maintaining health, and developing professional skills. At the same time, the strengthening of the local market is also supported through the procurement of services and goods from local suppliers, who must strictly follow the strong requirements for security and the protection of human rights. Also, in addition to working with businesses belonging to disadvantaged communities, whenever possible, it works with women-owned businesses. A typical example of the application of the above is the recruitment of local labor in Guyana. The logic of this strategy is attributed to the fact that the recruitment of local staff can benefit the activities in the specific location and the development and training of staff who will be able to contribute to the business needs in the future. In total, in the first half of 2022, there were more than 4,400 Guyanese operating at Guyana Esso Exploration and Production Guyana Ltd. (EEPGL), which is 64% of the total employed persons in Guyana. (Goal 1, Goal 8, Goal 10) (ExxonMobil, Sustainability Report, 2022)

Significant research and effort is carried out by the Company in the prevention and treatment of malaria disease, since part of its investments take place in many malaria-endemic countries, with great response as the last two decades have seen a reduction in the impact of the disease on communities. More specifically, since 2000 it has financed more than 170 million dollars in programs against the disease, helping more than 185 million people, distributing more than 15.1 million bed nets, 4 million rapid diagnostic

kits, 5.6 million doses of antimalarial treatments while at the same time approx. 900,000 workers received appropriate training for the health sector. Thanks to this work and according to the World Health Organization (WHO), 1.5 billion cases of malaria have been prevented since 2000. (World Health Organization's World Malaria, Report 2020) Finally, the approval of the malaria vaccine for children took place in October 2021 by the WHO, and ExxonMobil, among many other organizations, was part of its development. Among them, it is worth noting that ExxonMobil Global Medicine and Occupational Health, in order to ensure good health, makes use of Centers of Excellence in infectious diseases, clinics and industrial hygiene. (Goal 3) (ExxonMobil, Sustainability Report, 2022)

ExxonMobil has developed strong safety measures to ensure this in the workplace. These measures comply with regulations, are flexible, based on risk and respond perfectly to the area where the Company operates, while responding to a large part of extraordinary events. Undoubtedly, each facility also consists of corresponding resources and specially trained correspondents. Specifically, in 2021, the Regional Response Team (RRT) demonstrated its capabilities in a simulated oil spill event. 300 RRT personnel from 35 different countries coordinated and responded to a continuous follow-the-sun event, totaling 28 hours. Also, in early 2020, the outbreak of COVID-19 saw a rapid response to the situation that was designated as an emergency. The quick mobilization helped to protect the health and safety of the workers and their fellow human beings. Furthermore, additional programs were developed to support the mental health of human resources and neighbors. Finally, the Company is a leader in personnel safety and this is demonstrated by maintaining the best Lost Time Incident Rate (LTIR) results at 0.02 per 200,000 hours worked. (Goal 3) (ExxonMobil, Sustainability Report, 2022)

The Group, since 2000, has contributed financially to global educational programs. Total spending is $1.57 billion, of which $28 million was given for 2021 alone. The partnership between the ExxonMobil Foundation, Educate A Child and RISE International helped build 26 primary schools for 30,000 children in Angola and specifically in the provinces of Benguela, Luanda and Bié. Completion of the project took place in 2021. In the US, the Company helped launch and support the National Science and Mathematics Initiative (NMSI). This organization provides assistance in science and math, and since 2007 has developed a partnership with 1,300+ educational

systems, providing training to over 6,500 teachers and recently expanded to schools in New Mexico and Texas. (Goal 4) (ExxonMobil, Sustainability Report, 2022)

The Company makes an effort to empower the female gender and the diversity of suppliers. More specifically, investments of more than $127 million have been made to assist partners, located in more than 90 countries, to develop programs that directly affected and benefited women. These programs focus mainly on the development of women entrepreneurs, on financial planning and on the improvement of women's agricultural productivity. In recent years, the Company has made, on an annual basis, investments amounting to 500 million dollars in businesses owned by women. It is worth noting that in the Board of Directors 42% of the directors are women or racially diverse people. (Goal 5) Also, the Group aims to increase the benefits in local communities, where it operates, through the proper management and improvement of socio-economic risks. Socio-economic management includes the protection of human rights, the protection of health, community safety, local economic development, decent work, the restoration of livelihoods and the protection of indigenous people and cultural heritage. (Goal 8) (ExxonMobil, Sustainability Report, 2022)

ExxonMobil considers human development and energy to be inextricably linked. For the development of human progress, energy is a basic good. Thus, the provision of affordable and reliable energy offers society an improvement in quality of life and prosperity. The essential understanding and application of energy principles is the main support for the Company's business planning. The ExxonMobil Outlook for Energy ("Outlook") makes sure that affordable alternative energy solutions, energy supply and demand, and supportive government policies are the starting point for long-term business planning and investment. (Goal 7) (ExxonMobil, Sustainability Report, 2022)

ExxonMobil's support for diversity and inclusion is strong. Essentially, it aims to inclusively source from a variety of suppliers, thereby increasing innovation and competition while seeking to further increase and support women-owned businesses. 2021 marked the 50th anniversary of supporting diversity. The Company has developed cooperation with organizations such as the National Veteran-Owned Business Association, the Women's Business Enterprise National Council, the National Minority

Supplier Development Council and the National Lesbian, Gay, Bisexual and Transgender (L.G.B.T.) Chamber of Commerce. It also partners with WEConnect International, which certifies and trains non-US businesses that are at least 51% controlled, managed, or owned by one or more women. Over $5.5 billion was spent for the year 2021 to support different local or global small suppliers. $2.4 billion of that amount was spent on businesses owned by women, minorities, lesbians, bisexual and transgender people, gay people, veterans, people with disabilities or special needs. Also over 2,100 employees were trained in areas related to human rights, inclusive sourcing and environmental performance. At the same time, in Guyana, a women's entrepreneurship program called "Accelerate-Her" was started, which enables women in the community to create small businesses with proper guidance. (Goal 5, Goal 10, Goal 16) (ExxonMobil, Sustainability Report, 2022)

The Company's human rights statements are aligned with the principles of the 1998 International Labor Organization (ILO) Declaration relating to the Fundamental Principles of Rights at Work, the elimination of forced and child labor, the prevention of discrimination and the development of a healthier workplace. ExxonMobil seeks to develop cooperation with companies and suppliers with similar standards and requirements. Ethics and integrity are two key concepts for the Company, which is why compliance is required from human resources, suppliers, contractors, managers, executives and generally those who belong to or work with ExxonMobil. During 2021 over 17,000 contractors and employees were trained on issues related to anti-corruption, legislation, respect and boycott. More generally, positive influence is sought while at the same time condemning any violation of human rights. Finally, the Company encourages human resources to express any concern, as they can report their concerns anonymously through 24-hour telephone support. (Goal 16) (ExxonMobil, Sustainability Report, 2022)

For responsible consumption and production, the Company has developed various plans based on the collection, processing and sorting of plastics with the help of technology. The ultimate goal is for annual recycling to reach 500,000 metric tons by the end of 2026. Plastics are characterized as vital for the energy transition and the reduction of gas emissions. Also, the goal is to continue with zero pellet losses to the

environment, as implemented from 2018 to 2021 in the resin handling facilities. Yet another strategy is the 'waste mitigation hierarchy', where the Company aims to recover, reduce and reuse where possible. ExxonMobil's oil blending and packaging network has been approved by Underwriters Laboratories (UL) to Silver landfill due to zero waste. However, the company does not stop looking for new ways to reduce or even eliminate waste. In Papua New Guinea, the ExxonMobil PNG Limited warehouse has developed a philosophy to reuse packaging waste to reduce costs and avoid landfill waste. More generally, HR implemented additional strategies for reusing both packaging materials and wooden pallets used to ship items between the warehouse and the carrier as well as strategies related to recycling damaged pallets. (Goal 12) (ExxonMobil, Sustainability Report, 2022)

At the same time, they are looking to conserve water in the Permian Basin, which is the most important exploitation area as it accounts for over 40% of US production. In the year 2021, a plan to manage water and potential risks for the next decade was developed, while at the same time plans were developed to manage uncertainties related to the production, transport, supply and reuse of water. To reduce the impact of water consumption, disposal and withdrawal, the Company implements a series of water sharing and recycling processes helping the commitment and defending the industry. ExxonMobil has managed to recycle approximately 100 million barrels of water, helping to halve the water requirements for fracking operations. (Goal 12) (ExxonMobil, Sustainability Report, 2022)

More generally, water is considered a key resource for the Group and for this reason efforts are made to preserve it. The way water resources are managed for the Company's processes undoubtedly contributes to the protection of both human health and the environment. Human resources strive to reduce any possible impact of the Company's activities on the water world through the regular review of water consumption but also through the implementation of business practices related to water management. (Goal 6) (ExxonMobil, Sustainability Report, 2022)

The most basic actions of the Company are those related to the fight against climate change and its effects. The goal is to provide innovative solutions that will aim at the

first stage to reduce gas emissions and later to eliminate them. For this purpose, by 2027, the total investment of 17 billion dollars in corresponding actions is sought. The initiatives that have been implemented, from 2016 to 2021, in the Company's activities have led to a total reduction of nitrogen oxides and sulfur oxides emissions by 24%. The essential approach of the Company consists of the recognition of the extent and composition of the emissions, of the application of the regulations, the minimization of the atmospheric emissions and its impacts and finally of the continuous monitoring of the standards concerning the air quality. (Goal 13) (ExxonMobil, Sustainability Report, 2022)

ExxonMobil applies a comprehensive process to reduce impacts on ecosystems. It has developed a robust environmental management system to understand, identify, monitor, assess and mitigate potential impacts on the environment and biodiversity. Papua New Guinea (PNG), in addition to being home to massive natural gas resources, is home to a variety of plant and animal species, numbering over 200,000. ExxonMobil PNG Limited, where it operates the PNG LNG project, has developed a strategy to protect biodiversity and includes programs on programmed monitoring activities (PMAs), compensation and monitoring. At the same time, the Group is an active member of the National Fish and Wildlife Foundation's Pecos Watershed Conservation Initiative (PWCI). Essentially, the public and private sectors have worked together to support and protect terrestrial and aquatic ecosystems. PWCI members have contributed over $8 million to support 43 projects spanning from southeastern New Mexico to West Texas in the Permian Basin. In the present project PWCI aims at proper management of native grasslands, protection of aquatic species, native fish, placement of species that have been lost. Finally, programs are supported to improve water resources to protect agriculture and wildlife. (Goal 14, Goal 15) (ExxonMobil, Sustainability Report, 2022)

Finally, what is considered more important are the partnerships that the Company develops with Non-Governmental Organizations (NGOs) and with shareholders for the proper understanding and achievement of sustainable goals. The main mode of interaction is through regular meetings, either online or in person, where they enable discussions of concerns and they develop approaches and plans for managing goals. In particular, the purpose of ExxonMobil during the sessions, is to share information and

ideas related to sustainable issues, the safety of the company, employees and their rights. The collaboration and meetings with the shareholders aim to improve and resolve issues raised between the two. The partnership being developed with governments aims to actively participate in climate policy debates and solutions that recognize the need for reliable and affordable energy. (Goal 17) (ExxonMobil, Sustainability Report, 2022)

7. TotalEnergies

Brief historical review

TotalEnergies SE was founded in 1924 and has its headquarters in the Tour Total, in Paris. It is one of the seven supermajor oil companies but it is operating as an integrated energy and oil company. The company was formed after World War I when the French president denied to form an alliance with Shell as he wanted to create a French oil company. During the 30s, the company expanded its exploration and production to the Middle east and in 1954 a Total brand of gasoline was introduced in Africa and Europe. (available at: https://en.wikipedia.org/wiki/TotalEnergies)

In 1991, the company listed in the New York Stock Exchange and later in the decade, the French government was holding less than 1% of the company's stock. In 1999, the company took over Petrofina in Belgium and became known as Total Fina, and its name changed again to Total in 2003. In 2008, they signed a joint venture with Aramco called SAUDI ARAMCO Total Refining and Petrochemical Company. In 2014, the company because the first firm to acquire exploration rights for shale gas in the UK but in 2015 they cut 180 jobs in the country. In 2018, Total officially withdrew from the Iranian gas field, due to the sanctions by the US. In 2020, Total cut another 500 jobs in France and in 2021, the company name changed to TotalEnergies to show the company's intentions with regards to green energy. In March 2022, Total did not withdraw from Russia and continue to operate there after the invasion. (available at: https://en.wikipedia.org/wiki/TotalEnergies)

The company operates across multiple sectors, including exploration and production, refining, trading, shipping and many more. They are now focusing on their new corporate divisions, People & Social Responsibility and Strategy & Innovation, which

focuses on green energy and global warming. The company was aware of the disastrous effect of global warming since 1971 but they did not "believe" it until the 1990s. (available at: https://en.wikipedia.org/wiki/TotalEnergies)

Sustainable strategies

TotalEnergies, according to the sustainability report, confirms its flexibility and follows 15 of the 17 sustainable goals until it reaches a net zero footprint in 2050 and strengthens society.

- Applications for agility

a. *Analysis of the application of available technology*

The Company through the use of available digital technology will have the flexibility to improve its energy efficiency, significantly reduce methane emissions and combustion. Part of its work is to keep its facilities' methane emissions below 0.1%. Achieving this requires the development of measurement methods, and for this reason TotalEnergies has developed a drone-mounted methane detection technology called AUSEA4. Thus, with the use of technology, with 120 initiatives that took place throughout the Company and with the help of various measurements, in 2021 a reduction of gas emissions from Field 1 and Field 2 was achieved to 37.0 Mt from 41, 5 Mt that was in total in 2020. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

Subsequently, the provision of electricity, through renewable sources, and the use of CCS for residual emissions is sought. Carbon capture, transport and storage (CCS) are critical industrial processes that, if carried out in the right way, will help reduce emissions in facilities. The Company has at its disposal the necessary know-how to manage such large-scale projects. Its contribution to the development of CCS solutions first appears in 1996 in the Norwegian Sea, it was limited to the Sleipner2 and Snøhvit fields where it focused on reducing emissions from them. In Lacq, France, from 2010 to 2013, a full CCS project was developed by the Company, where coal was captured by a steam generator through the combustion of oxygen and subsequently transported and stored in a tank. In 2021, it invested $100 million in CCS projects and research, and it aims to expand its storage capacity by 10 Mt annually by 2030. Finally, in 2020,

the Digital Factory was launched, whose main goal was to develop digital solutions, new services and actions that will improve industrial operations and reduce the environmental footprint, respectively. Using the appropriate technologies and new methods, continuous research is carried out in order to use the waste heat. A typical example is the Leuna refinery in Germany, where the sources of wasted heat have been mapped and quantified. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

b. Analysis of human resources

As a whole the Company has managed to employ 101,000 employees worldwide. Its aim is to demonstrate its flexibility in properly adapting skills and work methods to changes in society. In the year 2019, the Company established a program, "Better together", developing through it its ambition for man. The essential focus was to attract people with skills and to strengthen these talents globally, leveraging the know-how, knowledge and values of the Company, promoting its management and turning it into a reliable place to work. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

The combination of technical skills of experienced and qualified personnel is realized through One Tech. In particular, in September 2021 a meeting was held by a total of 3,400 people, mainly technicians, scientists and engineers. This meeting was related to the strengthening of TotalEnergies' innovation and its ability to create and develop large industrial projects, having primarily leveraged all the operational excellence and skills of the teams. Also, in 2021, a new program was created, "Transforming With Our People", through which existing skills are recorded in order to seek new qualifications in order for the Company to become a pioneer in the energy transition. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

c. Analysis of production strategies

To qualify as a sustainable company, TotalEnergies is committed to deep transfer of production, products and sales as it will not stop meeting the needs of society. Essentially, she developed a range of methods for a related approach from production to distribution. For starters, it plans to develop and continue the production of new molecules, such as biofuels, pure hydrogen and synthetic fuels, i.e. the combination of

hydrogen and carbon. Now, the annual production of biofuels amounts to 500 kt, where it takes place mainly in France at the La Mède refinery, with the aim of 2030 production reaching 5 Mt. The total, global distribution of sustainable biofuels for 2021 was 3 Mt with a target of 8 Mt in 2025. Also, large investments are made in biofuels, the production of which is based on used oils or animal fat. As for biogas, which mainly consists of methane, it is compatible with the storage and transport infrastructures that already exist. The Company's goal is for the annual production of biomethane in 2025 to start from 2 TWh and globally exceed 5 TWh every year by 2030. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

At the same time, it focuses on the production, storage and sale of electricity from renewable sources, aiming to be one of the top five producers of electricity worldwide by 2030, which will be produced from wind or solar energy. In cooperation with Shell and with Equinor, they developed the first, largest coal storage and transport project in Norway, which was approved in 2020 by the government and is in the construction phase. Another transport and storage project is taking place in the UK, the Northern Endurance Partnership, by the Company and its partners to decongest the industrial areas of Humberside and Teesside. Regarding natural gas, it wants to acquire the third largest liquefied natural gas (LNG) company in the world, while regarding oil, its movements are very cautious and it invests mainly in projects with low emissions. Finally, it aims to decarbonize all hydrogen by 2030, which leads to an annual reduction of 3 Mt in CO_2 emissions. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

d. Analysis of the management environment

In the countries where TotalEnergies operates and hydrocarbon exploration and production takes place, contracts have previously been awarded and signed with governments, private landowners and state-owned enterprises. For 2021, the total mining costs in these states amounted to 15 billion. However, the Company collects special taxes from consumers with 2021 tax revenue expected to be $21 billion for petroleum products and $2 billion for electricity and natural gas. TotalEnergies is looking for new, more personalized solutions that will lead to the development of better and more direct relationships with its customers. For example, in the aviation sector it

seeks to direct its customers to solutions such as the use of biofuels, natural gas and renewable energy sources. (TotalEnergies "Sustainable & Climate 2022 Progress Report")

- Sustainable development goals

In order to ensure the health of employees, mainly from the Covid-19 pandemic, remote work was implemented where possible, while in contrary cases monitoring and quarantine programs were developed to protect employees from infection. Rapid mobilization was also observed in the supply of hand sanitizers and masks for the entire workforce. To ensure psychological health, a psychological support telephone line was developed, which is available to all employees. Regular medical examinations are still provided for the workforce, especially for those at risk. The total audit submitted by employees for the year 2021 reaches 97%. During 2021, the Company sought to promote vaccination among its employees, while developing support programs for residents near its facilities. Another example of TotalEnergies involvement in the community for health promotion is that an ambulance station was built for the Ugandan Ministry of Health, and oxygen cylinders were provided for Buliisa and Nwoya areas, which are close to the operations. oxygen. Also, five Libyan municipalities (Ghat, Wadi Otba, Ras Lanouf, Jallo, Al Ajilat) were supplied with oxygen production units, which operated with solar energy. PCR machines, thousands of swab tests and kits were given to the oil clinic in Tripoli, the capital of Libya. Masks and rapid test kits were also donated to Kapuna Rural Hospital, located in Papua New Guinea. (Goal 3) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

To ensure the safety of the workers, comprehensive procedures and studies have been carried out from the planning stage to the dismantling stage of all facilities. First, various obstacles are defined taking into account all the means that can affect the processes, such as climate risk, then the possible effects are given, mainly to the workers and finally the risk reduction measures are given and implemented. An important application to reduce accidents is road safety policy, which consists of a variety of driving rules, vehicle technical specifications, driver training and extensive carrier inspection programs. Various technological innovations have been developed, tested and installed to prevent traffic accidents, while fatigue detection systems were to

be installed in more than 3,200 transport vehicles. (Goal 3) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

The Company invests in its human resources and this can be seen through its internal mobility policy. Thus, it enables employees to change jobs at regular intervals, allowing them to acquire new skills and training them appropriately to cope with the new working conditions. Since the year 2019, more than 400 Talent Developers have been trained, offering personalized support for the professional movements of employees. The education of young people and their integration into the workforce is a priority for the TotalEnergies Foundation. In the year 2021, 1,900 work study contracts were awarded, while over 8,000 students were employed since 2016. The TotalEnergies Foundation is a program that includes various community-based initiatives carried out globally and on a daily basis by the Company. A prime example of the program is the design and funding of L'Industrie, a campus in Seine-Saint-Denis, France, which trains young people for rapidly changing industrial jobs and ultimately helps them secure a place in industry. People in the community choose courses, lasting from 8 to 18 months, in eight different employable professions with 80% of the teaching methods based on practical experience. Around 150 qualified and unqualified students from all socio-political backgrounds and aged 18 to 30 were trained tuition-free in 2021. 400 people will be trained each year. (Goal 4) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

During the year 2021, more than 5,000 recruitments were made, with 50% of them being under 30 years of age, while the crisis in the economy, mainly due to the pandemic, was dealt with with zero layoffs. Subcontractors receive extensive support to encourage the production of new projects and to maintain local jobs. TotalEnergies follows a competitive and fair compensation policy globally, including the guarantee of compensation that is higher than the minimum wage. Also, the opportunities for saving and participation of employees in shares are promoted, giving the feeling that they themselves are part of the Company. By March 2022 the majority of employees, namely 65%, are shareholders of the Company and constitute approximately 7% of the shareholding base. The Company also offers retirement plans and various benefits, such as disability, death and health care. Approximately 90% of TotalEnergies permanent

employees are given the death benefit. (Goal 8) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

Since 2006, TotalEnergies has developed a program to support vulnerable young residents, especially disadvantaged youth, of Delta State, enabling them to acquire skills, choose and train in a profession of their choice and finally open the own business, with the help of prepaid rent for two years. For the year 2021, five young people were trained while a total of 64 people have received training. (Goal 4, Goal 8, Goal 10) In addition, in France it supports various projects that are developed to create jobs in order to develop small and medium-sized enterprises. Loans ranging from €20,000 to €100,000 were granted without interest while at the same time more than 3,600 jobs were created in 2021. (Goal 8) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

In 2006, TWICE was created, Total Women's Initiative for Communication and Exchange, which is an internal network made up of 5000 members worldwide and seeks to promote women in the Company. At the same time, TotalEnergies supported a training program, in collaboration with World Vision, which related to women entrepreneurs in Ambriz, Angola. Another training program was supported in Bolivia involving seamstresses in the community of Iviyeca and women in Lagunillas. (Goal 5) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

TotalEnergies reflects the diversity and diversity of its workforce and rejects any form of discrimination. In total, it has approximately 160 nationalities in over 130 countries. 3000 HR people participated in Diversity and Inclusion Week 2021 in forums on topics related to gender equality, sexual orientation, cross-cultural relations, disability and more. Furthermore, the employment of people with disabilities is supported both directly, through recruitment, and also indirectly. In 2018, TotalEnergies signed the International Labor Organization's Global Business and Disability Charter. Finally, 41 subsidiaries have set corresponding goals for the next two years and in 2021 their managers attended online courses entitled "Unlocking Disability". (Goal 10) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

The defense of human rights and respect are a key pillar for the Company and for this reason the implementation of the Code of Ethics is required, both on the part of the employees and on the part of the suppliers. During the year 2021, four GoodCorporation assessments of subsidiaries were carried out, 80 supplier audits were carried out, while 35,000 employees attended and successfully completed e-courses on human rights in the workplace. When starting new projects in new areas of the world, dialogues are developed regarding local needs, concerns and providing help and support to communities. For the Mozambique LNG project, in 2020 and 2021, training for private and government security forces was organized by the Company on Voluntary Security and Human Rights. The TotalEnergies Ethics Committee oversees over 100 Ethics Officers, enables reporting of behaviors or circumstances that violate the Company's Code of Ethics and subsequently reports directly to the CEO and President. 140 references were noted in the year 2021. (Goal 16) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

Another serious issue is the fight against corruption. TotalEnergies applies the principle of zero tolerance to this issue as it has implemented various measures by developing a "Speak Up" culture, where human resources fearlessly report situations that violate the Code of Conduct. In total the Company, together with the subsidiaries, employs 360 Compliance Officers, has trained over 80,000 employees against corruption through two e-courses, over 20 assessment missions have taken place in the subsidiaries characterized by the Chief Compliance Officer of TotalEnergies as most exposed and almost 360 incidents were reported for breaching the Code, of which over 110 resulted in disciplinary action and dismissal. (Goal 16) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

During 2018, TotalEnergies joined Act4Nature International, where it is a French collective initiative with the main purpose of promoting biodiversity through ten common commitments that members should follow as well as individual SMART (Specific, Measurable, Additional, Realistic , Time-bound) commitments for specific companies. The four main pillars that make up the commitments of Act4Nature International are first the respect of the voluntary exclusion zones, where the Company recognizes and respects the value of the UNESCO World Natural Heritage Sites by

avoiding the channeling of hydrocarbons in the corresponding areas as it excludes the possibility of research and mining in arctic ice regions. (Goal 14, Goal 15, Goal 17) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

The second and third pillars are biodiversity management in new projects and existing decommissioning sites, respectively. For the development of new projects in areas of interest for biodiversity, various action plans are implemented, which have the ultimate goal of protecting biodiversity. During 2021, eight biodiversity action plans (BAPs) were published or under development and TotalEnergies net positive impact plans include the Tilenga and EACOP projects, Mozambique LNG, Papua LNG and the Reunion Island project with La Perrière wind and solar facility. A total of five sites were assessed for 2021, the areas' measures will be in place until 2025, while twelve former areas were considered for conversion to biodiversity zones. The fourth and final pillar is the promotion of biodiversity. To achieve this, the Company shares its data on the Global Biodiversity Information Facility portal. Also, TotalEnergies Foundation supports coastal research and awareness initiatives and TotalEnergies Foundation's Action! Program for the year 2021 recorded a total of 1,815 initiatives in 28 countries. Finally, beginning in 2022 as all pre-existing commitments to promote biodiversity were completed, the Company set similar targets for each new project in a different location. (Goal 14, Goal 15) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

At the same time, respect for Uganda's Murchison Falls National Park is outlined by the fact that the Company will exploit less than 0.05% of the park. There are four main axes that are implemented during the design of the project. First reduce human pressure and protect the natural resource, protect savanna connectivity corridors, maintain and protect wetlands, forests and of course forest connectivity. In 2021, the Company started a collaboration with an NGO, CIMA, based in Peru, with the aim of financing projects to monitor, protect and preserve the forest in the Cordillera Azul National Park, the area of which is 1.35 million hectares . Also, together with Forêt Ressources Management, they have signed an agreement and committed to a project related to agroforestry management, with the Republic of Congo. The agreement includes the conservation of gallery forests, the planting of 38,000 hectares of forest and 2,000 hectares of agroforestry projects. Essentially, an indirect goal is to develop sustainable

energy, with the use of wood, and agricultural production. (Goal 14, Goal 15, Goal 17) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

Responsible consumption and production is a priority of TotalEnergies. The company has set a goal, within the next decade, to reduce the withdrawal of fresh water from areas where the water resource is in deficit by 20%, while also reducing the pollution load from the oil derivatives that are released. In early 2022, specifically in January, the annual maximum release target was reduced to 1 mg/L from 15 mg/L. Also, through research projects, new tools and practices are constantly being created to manage this and the rainwater and wastewater produced by the various activities, such as SWAP and Wat-R-use. The important thing is that the company constantly checks and evaluates its suppliers, so that it cooperates only with those who follow the best water management practices and minimize the consequences of various chemical products, with the aim of protecting the environment and human health. Finally, the Company pioneered the creation of the Alliance to End Plastic Waste, as one of the founding members. Its purpose is the application of the circular economy in the area of plastic waste. More specifically, the creation of new methods of recycling and reusing them, in order to reduce their uncontrolled disposal in the environment. An important project of the AEPW alliance is Coliba for the reuse of plastic waste, with collection points at Total and Shell petrol stations. (Goal 12) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

The TotalEnergies company actively contributes to ensuring the availability and management of water resources. By participating and collaborating with industrial groups and organizations, such as Concawe and IOWater (International Office for Water), the company contributes to the expansion of research on hazardous substances that degrade water quality, on ways to protect it and its recycling. A typical example for the year 2021 was the new equipment installed in 22 car washes, where only one liter of water will be used to clean a car. Also, with the company's interaction directly or indirectly with local communities mainly in developing countries, equal access to safe drinking water is achieved through the development of appropriate water distribution and drainage infrastructures. More generally, Total's immediate goal is to raise awareness around the issue of water and its proper sustainable management, which

will protect this specific resource for future generations. (Goal 6) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

Achieving carbon neutrality would require sales of electricity, natural gas, biogas, and hydrogen to increase, coal to be phased out, and oil sales to remain stable and then decline. This fact TotalEnergies has already achieved. LNG sales increased by 10%, electricity by 20% and oil sales decreased by 10% compared to 2020. Also, the carbon intensity of products sold decreased by 2%. Regarding oil production, it is predicted to peak within this decade and then decrease by 2030 to 1.4 Mb/d. In contrast, natural gas and electricity production are targeted to increase from 1.3 Mboe/day in 2015 to 2 Mboe/day in 2030 and from 1.7 TWh in 2015 to 120 TWh in 2030, respectively. 99% of LNG sales were to countries committed to achieving carbon neutrality. To strengthen this effort he developed several large-scale projects. The first was Energia Costa Azul (ECA) in Mexico, then in Nigeria it was the seventh LNG train, in the United States the fourth train at Cameron LNG and finally in Russia Artic LNG, Papua LNG and Mozambique LNG. It seeks to improve the performance of liquefaction facilities, primarily in Russia, the United States and Qatar, with increased energy efficiency projects. (Goal 7, Goal 9, Goal 13) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

To meet its goals it carried out a massive conversion of the refinery in France, called La Mède, into a biorefinery that produces vegetable oil, biodiesel and renewable liquefied natural gas (bioLPG) to be used for heating and propulsion. The MassHylia green hydrogen project is being developed in collaboration with Engie in La Mède. The aim is to be supplied by wind and solar parks with a power of approximately 300 MW and the electrolyte with a power of 125 MW will cover all the necessary needs of the biorefinery, as the annual production of green hydrogen will exceed 10,000 tons, thus reducing the annual emissions by 140,000 tCO_2. Also, at the Zeeland refinery in the steam methane reforming unit, where hydrogen is produced from natural gas, carbon capture and the development of an electrolyte are sought, where it will be connected to an offshore wind farm and will have a power of 150 MW. In the future, a new TotalEnergies complex, Grandpuits, will produce biofuels and polylactic acid (PLA), which is a recyclable plastic produced from granules with similar performance to fossil-based ones but produced with 1/3 the CO_2 emissions , and will have a recycling unit, in

which pyrolysis of plastics will take place. During the year 2021, the production of recycled plastic and bioplastic reached 60,000 tons with a future annual production target of 1 million tons by 2030, i.e. 30% of its production. In addition, the development of new pilot units, near the Leuna refinery in Germany, aims to make molecules, using captured CO_2 and green hydrogen, that will be converted into sustainable fuels for airplanes. The profit of this energy efficiency is expected to reach 30% throughout the entire production chain of the unit. (Goal 7, Goal 9, Goal 13) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

TotalEnergies has invested over $10 billion over 5 years. Its investments are mainly related to offshore wind energy and photovoltaic electricity. Over $3 billion invested in 2021 for renewable energy and electricity. By 2030, it plans to invest over $60 billion in renewable energy production. In 2015, the Company is developing a portfolio for electricity generation, which uses combined cycle gas turbine (CCGT) units, which in 2021 ended up having a capacity of 4 GW and is used when there is increasing demand or when production is not easy due to bad weather. The Company from 2021 has reoriented Research & Development with a percentage greater than 50%, from 30% in 2016, to focus on new energy sources and reducing the footprint. In 2021, the Company developed a partnership with Daimler Trucks to develop hydrogen infrastructure for long-haul trucks in France, Benelux and Germany. The production of electric trucks for routes shorter than 500 km is also supported. Also, collaborations have taken place with shipping companies to reduce carbon emissions and replace with the right fuels (use of hydrogen or ammonia or biofuels). (Goal 7, Goal 9, Goal 11, Goal 13) (TotalEnergies "Sustainable & Climate 2022 Progress Report")

8. Chevron

Brief historical review

Chevron Corporation is an American corporation with headquarters in San Ramon, California. It began at around 1870 from Star Oil and Standard Oil, forming Socal. In the 1985, Socal and Gulf Oil merged and the name Chevron was formed. In 2015, Chevron cut 11% of its workforce and another 15% was cut in 2020, due to the COVID-19 pandemic. As of 2018, the company employees over 48,000 people, with the

majority in the U.S. The company's upstream sector includes exploration and production of oil and gas across the world, with 2,930million barrels of oil-equivalents being produced per day in 2018. They also operate in Australia, Africa and the Gulf of Mexico. Its downstream activities, include refining as well as trading of refined products. Chevron also provides marine consulting services and risk management as part of their maritime transport operation. The corporation is the biggest producer of geothermal energy globally but in 2014 they significantly reduced their investing in renewable energies. However, in 2021 they increased their use of biomethane and other biofuel. (available at : https://en.wikipedia.org/wiki/Chevron_Corporation)

Sustainable strategies

Chevron Corporation, based on the sustainability report, confirms its agility, as it faithfully follows 15 of the 17 sustainable goals.

- Applications for agility

a. *Analysis of the application of available technology*

To support innovation, research, capacity building and technology, the Chevron Technical Center (CTC) has been developed, which also helps to bridge the needs that arise in the business units and the technology solutions that are developed. At the same time, through research carried out at the Chevron Richmond Technology Center, one of the infrared radiation detectors was used to measure the total volume of oil in the subsoil. According to Jesse Sandlin, who served in early 2021 as Chevron's methane detection project manager, team members are collaborating to develop custom methane detection solutions through experimentation with the Company's various technologies. Methane can even be detected by airborne sensors such as aircraft, satellites and drones. However, the use of drones in offshore areas was particularly risky, as there was a possibility of false records due to water from the oceans, but the Gulf of Mexico unit managed to develop a method to solve the problem. Even rigs can make it difficult to find the source of methane emissions because of the layered equipment they have. The solution to detect emissions from the platforms came from combining the San Joaquin Valley plant's emissions detection equipment and the use of drones in offshore areas, thus developing a new flight process. (Chevron, Sustainability report 2021)

b. Analysis of human resources

Chevron wishes to approach experienced and new talent, offering a variety of opportunities for both the professional and personal development of individuals, as it seeks to include in its human resources multidisciplinary, innovative and creative persons in order to introduce new ideas for the development of its business activities. It has developed a number of different programs, among which is the internship program aimed at gradually building and developing a range of early career talent. Despite the situation due to the COVID-19 pandemic with remote work, the program continued as usual leading to a 91% full-time offer acceptance rate in 2021. Another program that was developed was Chevron's Welcome Back, which involved talented individuals who withdrew for personal reasons and wished to return to the Company after 12 to 16 weeks of training. More generally, the Company trains the workforce, either annually or biennially, on cyber security and business risk assessment. (Chevron, Sustainability report 2021)

c. Analysis of production strategies

The Company, taking full advantage of the expertise, was able to develop a Mustang Comprehensive Drilling Plan (CDP), covering approximately 100 square miles in northern Colorado, which has been approved by the Colorado Oil and Gas Conservation Commission (COGCC). In order to improve the facilities and their design, the committee accepted the extension of the drilling permits for an additional 4 years. This action automatically eliminates the storage tanks, avoiding potential spills and minimizing 152 million miles of truck traffic carrying water and oil. This provided the opportunity to upgrade other facilities used for production or to reduce noise and air emissions. (Chevron, Sustainability report 2021)

d. Analysis of the management environment

Chevron's strategy was adjusted to deliver higher yields with lower carbon emissions, and for this reason, in 2021, Chevron New Energies was created, which aims to develop CCUS, hydrogen, offsets. With the help of Chevron Strategy and Sustainability, the Company was led to integrate the energy transition, climate change and other

sustainable issues. In early 2022, the Company acquired Renewable Energy Group, Inc. (REG) to combine REG's growing renewable fuel production with its own expertise in the renewable fuel sectors and feedstock capabilities. With this investment, the Company expects to increase the production of renewable fuels, with a total daily production equal to 100,000 barrels by 2030. (Chevron, Sustainability report 2021)

Regarding the management of Chevron, it is worth noting that its Board of Directors consists of four permanent Committees, which are composed of independent Directors. In the year 2020 and 2021, a governance review was carried out to properly define the responsibilities and roles of the Board of Directors and the oversight of each Committee. The Statute of the Audit Committee defined the supervision of risks concerning the sustainability of the company, climate change as well as financial risks. Finally, the Management Compensation Committee was reoriented to align compensation, both policy and practice, with shareholder interests. (Chevron, Sustainability report 2021)

- Sustainable development goals

Chevron works actively to eradicate poverty and ensure good health at a global level, giving support to vulnerable people, through a number of actions and partnerships with agencies. More specifically, several actions were carried out in Indonesia with the support of the YCAB Foundation, where a mass vaccination program against COVID-19 took place, as well as training of the staff in the region for the management of materials. Also, in Kern County, California, the local community received funding to build a clinic to more quickly distribute vaccines to remote rural areas. The aforementioned is proven by the interview of Leila Aitmukhanova who works as a Social Investment Advisor in Kazakhstan. According to her statements, Chevron and Tengizchevroil (TCO) pledged to contribute to the fight against the pandemic in the country. They provided medical equipment, including vaccines, which were distributed throughout the territory of Kazakhstan quickly and efficiently. Working closely with government authorities has resulted in TCO's workforce remaining safe and well-resourced. (Goal 1, Goal 3) (Chevron, Sustainability report 2021)

Moreover, Chevron has actively contributed to the fight against malaria in Equatorial Guinea, where since 2004 the collaboration with the local government has led to a major reduction of 63% in the mortality of children under 5 years of age. Further funding from the PRC in San Francisco, which resulted from the merger of the Positive Resource Center, the AIDS Emergency Fund, and Baker Places, supported workforce development and HIV/AIDS awareness programs. The provision of humanitarian assistance to areas where Chevron operates, affected by natural or technological disasters, is an equally key priority. Chevron's assistance to US Gulf Coast communities affected by Hurricane Ida was notable through a $3 million donation. Also due to the Ukrainian-Russian war that started in February 2022, $5 million was donated to the World Food Program for relief. Finally, the company, with respect for the mental health of its employees, provides employees with wellness programs, such as Healthy you, as part of their medical insurance in order to eliminate stress and acquire a healthier lifestyle. Also, providing them with knowledge against communicable diseases is part of the program, while the availability of the meQuilibrium application, which is a stress management tool, aims to combat the stressful situations of everyday life. (Goal 3) (Chevron, Sustainability report 2021)

Chevron has established a number of learning and skills development programs to promote quality education. Through programs of this nature, the company's employees are given the opportunity to develop their skills and to use them properly at all levels of their work, while at the same time developing critical skills such as leadership. But the provision of education is not only about the members of the company but also the people of developing countries with the further benefit of reducing inequalities. More specifically, the Summer Engineering Experience for Kids program introduced middle school girls of color to the world of STEM (science, technology, engineering and math) who explored new fields, such as robotics. STEM education is also being promoted and improved in Southeast Asia through grants, both in the formal and non-formal education sectors. The continuation of these fundings is the seven-year program run by the Chevron Enjoy Science Project. Finally, the Company supported a six-month training program, the center's Asia-Pacific climate resilience accelerator, which provides entrepreneurs with tools and best practices, based on the experience of the Miller Center, to prepare investments. The Miller Center is made up of world-renowned

social entrepreneurs, who provide solutions to social problems and especially businesses that empower women and seek to eradicate poverty. (Goal 4, Goal 5) (Chevron, Sustainability report 2021)

To combat inequality, Chevron, according to Reed-Klages, seeks to have people of different ages, backgrounds and nationalities in the company's management positions. The reason is the different perspectives of situations and the introduction of new ideas and perspectives. The company was recognized by the New York Women's Forum for having more than 40% of the Board of Directors seats held by women. The diversity of people cultivates authenticity and creates meaningful relationships between employees, features essential for the company's development. In collaboration with the American Petroleum Institute's Diversity, Equity and Inclusion working group, the Company hires people with lower educational backgrounds to enhance diversity, while in 2020, it spent $15 million in support of the Black community in the United States. Chevron Canada, through the Local and Indigenous Partnership Strategic Framework established in 2021, aims to increase Indigenous people in the supply chain through additional opportunities for our business partners and suppliers. (Goal 5, Goal 10) (Chevron, Sustainability report 2021)

Undoubtedly, the Group wishes to ensure good working conditions for its employees. This is demonstrated by the fact that the ability of employees to express their opinions on various issues has been developed, and the possibility of positively influencing the development of things up to the resolution of problems. For more than 30 years, the Global Office of Mediators has existed, through which workers express themselves. A significant increase in the use of these services has been observed in the last five years. During 2021, the office developed a three-part remote seminar series titled “Courageous Conversations” developed to prevent employee concerns due to COVID-19. This action also helps to enhance the well-being of the employees. (Goal 8) (Chevron, Sustainability report 2021)

The energy transition of the industry is achieved through Chevron’s innovations. A very important action is to reduce the plastic packaging of oil containers for cars. Chevron Products Company manufactures motor oil containers from recyclable cardboard and

achieves an 89% reduction in plastic in packaging used by engineers and a 70% reduction in those intended for private use. The production of a renewable car oil product from 25% vegetable oils of sustainable origin has also started. Chevron has invested in GR3N with the help of Chevron Technology Ventures, which is a start-up based in Switzerland promoting the circular economy by developing a technology to chemically recycle waste, which comes from single-use food and beverage packaging. Through them, the reduction of carbon intensity is promoted and its contribution to the elimination of the greenhouse effect is proven. Another Chevron innovation is Hottpad, which is a cost-effective, efficient and lower carbon intensive remediation technology compared to traditional thermal methods. (Goal 9) (Chevron, Sustainability report 2021)

As mentioned above, the Company's main goal is to significantly reduce carbon emissions, to eliminate any impact from its activities on the environment in order to achieve a net zero footprint. A primary concern is net zero emissions upstream, from Field 1 and Field 2, by 2050. This will be realized when the hydrocarbon intensity is equal to 24 kg CO_2e/boe, which requires modification of about 100 projects and costs of more than 300 million dollars. For the reporting year, 2021, 5 projects were completed and progress was made on another 36. An immediate target for the implementation of similar projects has been set by 2028 with an expected expenditure of $2 billion. After the completion of the projects, it is estimated that annual emissions will be reduced by 4 million tons. The target by 2028 is to reduce methane intensity to 2.0 kg CO_2e/boe. To achieve this, GHG reduction projects are planned, which include a nitrogen capping system in tanks at Tengizchevroil and reduction of combustion. Facilities are also being designed, with facilities in the Permian Basin as a prime example, that include methane emission controls. Also, research into emerging methane detection technology and its evolution, which so far includes aircraft, satellites and drones, continues. Funding for a refinery air monitoring program in Richmond, which took place in 2013, succeeded in reducing particle emissions across the refinery by 30% as of 2018. (Goal 13) (Chevron, Sustainability report 2021)

The company maintains that the main policy tool for reducing emissions is the price of carbon, because market forces are being utilized, as demonstrated in the year 2020. This policy, according to the Company, as well as the climate change policy, must promote

a level playing field and remove costly regulations that are ineffective. Chevron has also created California's cap-and-trade program, the first US carbon pricing program, which rates carbon and credits extra offsets for off-limit emissions. The company aims to develop blue, green and gray hydrogen as a fuel source. The first two are known to help reduce GHG emissions, but for the latter, the company believes that its early use can minimize the risks of the technology and promote infrastructure development. Agreements have been made with Cummins, Toyota and Caterpillar to explore commercially viable hydrogen opportunities, and in 2021, the company invested in Hydrogenious to develop liquid hydrogen storage and transport technology. Chevron, through partnerships with the US Department of Energy and Svante, is developing technologies to reduce the cost of carbon capture, as well as helping to scale CCUS and other CO_2 removal technologies. Also, in early 2022, it invested in Carbon Clean, to reduce the cost and physical footprint of carbon sequestration. Finally, the Company, along with 10 other industry partners, decided to collaborate on carbon capture and storage at Houston industrial facilities. This collaboration can lead to the capture and storage of up to 50 million metric tons of CO_2 per year by 2030. (Goal 7, Goal 17) (Chevron, Sustainability report 2021)

The Company, in 2021, joined the World Business Council for Sustainable Development (WBCSD), through its program the Global Water Solutions Project. In this way, Chevron contributes to and participates in tools for water management, such as the Wastewater Impact Assessment Tool, which assesses the impacts of wastewater on biodiversity and freshwater. The company's fresh water withdrawals for Fuels & Lubricants and for Technology, Projects and Services (TP&S) are 0.7% of the company's total withdrawal for 2021. According to Prakhar Prakash, who works as a Heavy Oil and Water Treatment Specialist at the Chevron Technical Center in Richmond and specifically at the San Joaquin Valley Business Unit (SJVBU), desalination of produced water is carried out in San Ardo. For the year 2021, produced water nearly 98% of the field's total water needs while over 1,000 acre feet of treated water was returned to the underground aquifer from the field. (Goal 6) (Chevron, Sustainability report 2021)

In the year 2019, CPChem, a joint venture between Chevron and Phillips 66, became a founding member of a non-profit organization, the Alliance to End Plastic Waste, which aimed to reduce plastic waste and wish to actively contribute to the strengthening of the circular economy. In Richmond, in 2020, the Integrated Waste Solution (IWS) was developed, which developed a digital interface between the environmental staff who manage the waste and the staff who produce it. Also, through IWS, waste management and storage time is reduced. The use of recycled water increased to 78%, in the year 2021 at the El Segundo refinery, and through its recycling, such an amount of fresh water was saved as to be able to cover the daily needs of up to 90,000 people. Also, in 2016, Singapore Refining Company (SRC) began efforts to recycle, reduce and reuse water, while at the same time the Effluent Treatment Recovery Plant (ETRP) was completed, which helped SRC recycle additional water by up to 50%. According to Janelle Lewis and based on her position at Chevron Pipeline and Power, which is Lead Environmental Specialist, the Company has developed waste management strategies. She has worked to optimize waste management approaches to recover a greater percentage of waste. Her position was significant in a project developed by the Company for the removal of surface scales from irons by laser, helping their recycling and reducing the production of secondary waste streams. (Goal 12) (Chevron, Sustainability report 2021)

The Company is a member of INSITE (INfluence of Structures In The Ecosystem), contributing to the research of the possible impacts of marine structures on the ecosystem. It even contributes to the creation of a Global Database on Protected Areas, since it participates in the United Nations World Conservation Monitoring Center Proteus Partnership. This Database is a major part of IBAT (Integrated Biodiversity Assessment Tool). For the management of biodiversity, the company has demonstrably invested in scientific research and new technologies. A case in point is Chevron's Mustang drilling plan for about 100 square miles in northern Colorado. That plan began when the area was designated by Colorado Parks and Wildlife as high-priority habitat for Eastern Plains native fish, as well as nesting areas for deer, bald eagles and hawks. Through innovative solutions, such as reducing noise, surface footprint and emissions, the company supports the ecosystem and helps improve water quality. (Goal 13) (Chevron, Sustainability report 2021)

Chevron is working with Curtin University in Australia and Chulalongkorn University in Thailand to monitor the artificial reef built by the Company in Thailand to reduce asset decommissioning costs and provide habitat for marine life. In 2021, together with the Scottish Association of Marine Science, the company adopted the program Structure from Motion 3D Photogrammetry, to quantify the ecological characteristics of the reef, mainly in the field of marine development. In 2021, Chevron, in partnership with Conservation Volunteers Australia, announced that it will restore 10 wetlands in Australia to improve water quality, reduce the effects of flooding and help restore the home of various fish and plants who live there. This collaboration will also contribute to blue carbon research. When the company started the construction of Angola LNG (ALNG), it became clear that Olive Ridley sea turtles were nesting. For this reason, the collaboration with the Society for the Protection of Wildlife began, which established an educational program for the protection of sea turtles but also collected data on the population and nests of the turtles, some of which were transferred to hatcheries. In 2021, ALNG started working with the Kitabanga Project to monitor and fund the marine life conservation program. (Goal 13, Goal 17) (Chevron, Sustainability report 2021)

Chevron has invested in immediately scalable and natural solutions such as reforestation, mangrove restoration and soil carbon storage. Chevron is a founding member of the Markets for Natural Climate Solutions (NCS) Initiative and is working with the Restore the Earth Foundation to reforest 8,800 acres in Louisiana. Chevron has also announced it will rehabilitate 1,471 vertical wells and reservoir batteries, which is expected to reduce its footprint by 95% and allow thousands of acres to be used for agriculture. Finally, since 2018, the Mangrove Ecosystem Restoration Alliance (MERA) program has been supported by the Company and some of its partners, for the Muara Angke Wildlife Sanctuary in Jakarta, Indonesia, while the Jakarta mangrove training is about to start, through the opening of the first training center, to increase public awareness. (Goal 15) (Chevron, Sustainability report 2021)

Through 2021, Chevron has continued to protect human rights through its engagement in the Stakeholder Engagement and Issues Management (SEIM) process. During the same period, 6 business units revised their complaints mechanism and 19 updated their

risk profiles. The Company also provided human rights training to over 5,400 of its employees. With the operation of Chevron's Global Security in the year 2021, it was possible to renew the existing methodology for identifying conflicts and high risks. In Bangladesh, a grievance redressal committee was established during land-based seismic activities. As a result, this team has assessed and dealt with over 50 complaints relating to water discharge and security lighting amongst others. In Equatorial Guinea, Chevron's business unit supports Ven Amiga, which runs a campaign to prevent human trafficking and raise public awareness of human rights. The Company also participates in the Environmental Justice Coordinating Group of the American Petroleum Institute (API), and is committed, through this participation, to promoting sound industry standards for the community as well as the environment. Finally, in 2021, a set of Environmental Justice Principles was developed, which help the Company to contribute substantially to the work of SEIM processes, Environmental Risk Management, etc. The purpose of this work is the successful promotion of human rights, racial equality and the protection of the environment. (Goal 16) (Chevron, Sustainability report 2021)

9. Gazprom

Brief historical review

Gazprom is a multinational energy corporation with headquarters in Saint Petersburg, Russia. It was formed in 1989, when the Soviet Ministry of Gas Industry became the first fully state-run corporation in the Soviet Union. In 1991, with the dissolution of the Soviet Union, the company's assets were transferred to the companies of the newly established countries, like Ukrgazprom. From 1992 to 1994, over 700,000 members of the public have bought Gazprom shares, mostly in exchange for vouchers and 15% was given to employees of the company. In 2001, Vladimir Putin became president of Russia and moved for the government to gain control over Gazprom and other important companies. In 2007, ENI Spa and Gazprom created a joint venture to build a 900km gas pipeline to carry over a trillion cubic feet gas per year from Russia to Europe. (available at: https://en.wikipedia.org/wiki/Gazprom#Development_and_exploration)

In 2012, the European Union launched an anti-trust investigation in Gazprom, claiming they were abusing their market position in upstream gas supply. In 2014, the company

reached a deal with China National Petroleum Corporation worth $400 billion over thirty years. Gazprom produces around 515 billion cubic meters of natural gas per year, which is over 17% of the global production. The majority of its gas fields are located near the Gulf of Ob in Western Siberia. The company has a subsidiary, Gazprom Neft, which produces crude oil. In 2008, Gazprom carried out over 285km of explorative well drilling which resulted to its gas reserves growing by 583billion cubic meters. The company also carries out exploration in other countries such as India, Vietnam etc. The company has the second highest level of CO_2 emissions globally, amounting to over 3% of worldwide emissions. (available at: https://en.wikipedia.org/wiki/Gazprom#Development_and_exploration)

Sustainable strategies

Gazprom, based on the sustainability report, confirms its flexibility, as it faithfully follows all its sustainable goals, but gives special importance to SDG 3, SDG 4, SDG 7, SDG 8, SDG 9 and SDG 13 after the decision of the Company's board of directors.

- Applications for agility

a. *Analysis of the application of available technology*

Several Gazprom projects are aimed at the development and creation of new technologies that will be based on the production of hydrogen from natural gas with the main goal of zero CO_2 emissions. At the same time, carbon dioxide sequestration is being researched using technologies. During the year 2021, a special unit was developed, which is called Gazprom Hydrogen. It is used as a design office and aims to create and use innovative low-carbon technologies in the research, production, use and transportation of methane-hydrogen mixtures. In order to monitor and measure methane emissions, the Company developed an experiment with the help of experts from Gazprom Space Systems, Gazprom VNIIGAZ and Gazprom Transgaz Moscow. The measurements were carried out in the atmosphere using satellite gas analyzers, which were placed on a spacecraft. Finally, in order to reduce emissions, the Company seeks to continuously reduce associated petroleum gas (APG) flaring. Gazprom Transgaz Krasnodar, due to the use of low-pressure flare gases, acquired two additional patents. (Gazprom, Sustainability report 2021)

b. *Analysis of human resources*

The Company seeks in the first year the transmission, and later the increase, of the environmental awareness of its human resources and the local society. Specifically, for the year 2021, 7,429 employees successfully attended environmental training programs. It is also essential to develop various reward systems and incentives for employee loyalty, as well as the organization of professional competitions, which are an important tool for staff development. A significant part of staff development is their training. A total of over 250,000 managers and specialists have received further professional training, over 353,000 blue-collar staff and all of the employees have received online training. Extra training has been provided to people after 2020 because of the Covid-19 impact. Also, the Human Resource Management Policy has been created which aims to retain talent, provide incentives for the realization of the Company's goals and develop a framework for evaluating each employee based on personal contribution. (Gazprom, Sustainability report 2021)

c. Analysis of production strategies

Gazprom has based its environmental policy on the Environmental Management System (EMS). EMS covers activities for both the mother company and the subsidiaries and focuses on multiple activities, including: gas and condensate research, exploitation, production, processing, transportation and storage, as well as power and water supply to the facilities. The group focuses on improving energy efficiency through a variety of activities that meet federal legislative requirements. This is a three-year program related to covering research, production, processing, storage, transportation and distribution. The future priority of the system is the reduced consumption of electricity and natural gas. In order to achieve the goals, measures should have been taken to create new facilities, to develop solutions and technologies that will help regulate gas losses, to develop gas pumping units and finally to implement measures that will save part of the natural gas and they will eliminate leaks. (Gazprom, Sustainability report 2021)

d. Analysis of the management environment

The Company has integrated RMICS (risk management and internal control system) into its corporate governance system, which is equally integrated into its financial reporting systems, planning systems and process and project safety management systems, while in 2021 it was awarded by the Expert organization RA. The company

has also created the Integrated System of Process Safety Management (ISPSM), with main purposes the prevention of accidents and the elimination of risks, proper performance and the continuous improvement of the system as well as ensuring the integrity of the system in case of internal or external changes. (Gazprom, Sustainability report 2021)

- Sustainable development goals

The Group employs more than 490,000 people, with average monthly earnings of RUB 107,200, including its subsidiaries, while pension contracts are given to 139,900 beneficiaries. Social expenditure amounts to RUB 38.5 billion, payroll expenditure to RUB 840.2 billion while RUB 3,310 billion has been paid in taxes to the Russian Federation. (Goal 1) A total of RUB 294.74 million has been spent on the indigenous minorities of the North and the preservation of their way of life, while at the same time 9,500 facilities have been supplied with natural gas. (Goal 2) (Gazprom, Sustainability report 2021)

To promote and ensure good health to the Company's human resources, voluntary medical insurance (VMI) is provided; 569,421 employees are insured in the specific programs, and they are offered high-tech services and specialized health services. Also, the medical services of the programs are provided at the workplace, in medical centers and external collaborating clinics. At the same time, third-party benefits are allowed to access health services, while in the corporate medical care system, treatments in health resorts and rehabilitation centers are still available; a total of RUB 4,888.0 million was spent on rehabilitation treatments. The performance of the system is regularly evaluated and in order to meet its needs, during the year 2021, the Company made the Department of Occupational Health and Sanitary and Epidemiological Control responsible for the evaluation and analysis of the data. In the same year, Gazprom took measures to deal with and prevent COVID-19 with the help of the Special Emergency Team, while in the same period a total of 12.5 RUB billion was spent and 1,623 tons of disinfectants and 52,806 masks were purchased for the safety of personnel. This group held 22 meetings to finance the prevention and response measures of COVID-19, the organization of vaccination of workers, the access control for shift staff and the recovery after COVID-19. Additional measures taken by the team included remote temperature monitoring of workers, provision of personal respiratory protective

equipment and maintenance of disinfection facilities. (Goal 3) (Gazprom, Sustainability report 2021)

The Group wants the quality education of both the human potential and the youth. To achieve its purpose, it has developed a spectrum of 209 programs for the development of employees' skills and their professional retraining, through which more than 600,000 people of the Company have been trained. At the same time, it cooperates with 17 universities, has created Gazprom classes in 27 different schools and has developed 25 specialized departments to ensure high-quality education. 2,102 students are being trained in educational institutions and 9,663 students have done internships at the Group. Also, several investments are taking place to create both laboratories and specialized departments in various institutions with the aim of upgrading skills and developing innovations. Hosting the Student Olympiad is important, through which the company identifies students who wish to specialize in oil and gas. Finally, days are organized at universities to inform students about job opportunities. (Goal 4) (Gazprom, Sustainability report 2021)

The Company intends to eliminate inequality and discrimination. More generally, equal pay is provided to both sexes and a similar amount of fixed and variable remuneration in the same conditions of professional specialization. In 2021, more than 29,000 women were hired, corresponding to 37.1% of the total hires, 2 of the 14 board members are women, while the total percentage of women working in the Group is 28.5%. Regarding discrimination, the Company complies with the employment requirements for people with disabilities as set by the government. All employees with disabilities, as well as those whose children are faced with the corresponding situation, receive extra guarantees and benefits in addition to the required support. (Goal 5) It is worth noting that 2,700 km of natural gas pipelines were built by the Company, with the result that 68 federal entities in Russia are covered by these infrastructures. Approximately 72% have penetrated these infrastructures with zero cases of discrimination, rights violations across all departments and areas. (Goal 10) (Gazprom, Sustainability report 2021)

Also, the Company takes care of the proper treatment of most of the wastewater, specifically 97% of the wastewater, before it is discharged into the waters so that a large

part of it is clean. For this reason, more than RUB 14 billion has been spent to collect and treat the sewage. More than 11,000 million cubic meters of water have been recycled and reused, more than 3,890 million cubic meters of water have been withdrawn for water supply and more than RUB 9 billion have been spent on sustainable and sound management of water resources. (Goal 6) At the same time, the main goal is the promotion of cheap and clean energy, which is proven by the fact that 247.2 bcm of natural gas have been sold to consumers within the Russian Federation and over 250 bcm to countries inside and outside the former Soviet Union. Just over 12.25 bcm of LNG have been sold abroad, while more than 153.5 billion kWh of electricity have been provided and hydrogen production exceeded 350,000 tons for 2021. An important note is that around the world, hydrogen energy is considered a key sector for the implementation of decarbonization programs as well as the achievement of carbon neutrality. For this reason, great importance is given to the development of hydrogen production methods from natural gas without CO_2 emissions, to the use and production of methane-hydrogen fuel, but also to the creation of infrastructure for gas treatment for the supply of hydrogen. (Goal 7) (Gazprom, Sustainability report 2021)

The Group's activities employ 53.9 thousand people in shifts, in remote areas of Siberia, in offshore areas and in areas of the Far North. The shift workers in these areas have comfortable living conditions, wellness services, social and high quality medical services during the shift workers' stay in the camp. Gazprom's Employee Compensation Management Policy advocates compensating employees according to their skills. However, it emphasizes that monthly and annual bonuses should be given based on performance, while in 2021 the wages and tariff rates of employees increased by 2%, with the average monthly salary amounting to RUB 107,200 for subsidiaries. Also, in 2021, 79,800 new hires were made and 42,000 contracts with small and medium enterprises worth RUB 248.5 billion were signed. Within the Company's Employees Union there are 641 trade unions and all the human resources that signed the General Collective Labor Agreement are covered by collective agreements. (Goal 8) (Gazprom, Sustainability report 2021)

At the same time, efforts are being made to improve infrastructure and the sustainable transition of cities. First, Gazprom for Children has been established, through which 5

Russian regions are covered and 84 sports facilities have been created. More than RUB 13.8 billion has been allocated to improve urban infrastructure while RUB 11.4 billion has been given to the development of digital and software transformation. Finally, having invested in import substitution technologies, it had an economic effect of 21.9 billion RUB. (Goal 9) The main sustainable development project of the Group is the expansion of the NGV fuel market. According to the calculations of Gazprom Gazomotornoye Toplivo, which is the sole operator representing Gazprom in the NGV fuel market in Russia, transport in St. Petersburg contributes 6% of the city's total pollution, emitting 28,000 tons of pollutants annually in average. If diesel is replaced with natural gas, emissions will decrease 1.7 times and 2 times if it is replaced with gasoline. The use of NGV will see an annual emission reduction of 18,900 tons, but the St. Petersburg government will shoulder RUB 5.8 billion per year to implement the measures. In total there are 368 active gas stations and more than 17,000 vehicles converted to natural gas burning vehicles, effectively an average increase of 95.4% in 2021. (Goal 11) (Gazprom, Sustainability report 2021)

Gazprom also monitors surface and underground water, sewage and waste through an environmental control and monitoring system (OECM) and, based on the data, measures are developed for how to manage its activities, as each of its facilities has a water management system. In total, there are 179 waste recycling and processing facilities with the capacity to process 286,000 tons each year, and 703.82 million RUB have been invested for this purpose. For the year 2021, waste management expenditure amounted to RUB 7.08 billion and 3,046,590 tons of waste was produced, a relative decrease of 6% from the previous year. The Company categorized the hazard of the waste and the result is that 47% of the total waste was classified in Class IV (low risk) and 50% corresponded to Class V (almost non-hazardous). However, Class I and Class II wastes were equal to 0.038% and were delivered for recycling or neutralization. (Goal 12) (Gazprom, Sustainability report 2021)

In order to protect the environment, flora and fauna, measures are implemented with the aim of reducing negative impacts, preserving and restoring biodiversity. A total of RUB 36.5 billion has been spent on minimizing GHG emissions, climate change prevention and air protection, with RUB 5.7 billion corresponding to the reference year.

The Company's methane emissions decreased by 6% and the carbon intensity of the products is equal to 301.21 kg of CO_2 per boe, which is one of the lowest values among global companies. The actions also include the training of 7,429 people in environmental programs. However, biodiversity programs have been designed and implemented, on which a total of over RUB 97.54 billion has been spent. More specifically, more than 3,290 were voluntary initiatives to clean the banks of lakes and rivers, over 6.6 million RUB were given to preserve and restore land, and 13.634 billion RUB were invested to realize sustainable land use. More than RUB 3,083 million has been spent on environmental monitoring, as a total of 6,585 facilities have been created for this purpose, while RUB 269.9 million has been allocated to biodiversity conservation and protection of designated natural areas. Over 459,200 trees were planted, 7,039 hectares of land were cleared and 17,199 hectares were restored while 31.5 million fish were released into the waters. Finally, 22 crossings were created for the reindeer herds. (Goal 13, Goal 14, Goal 15) (Gazprom, Sustainability report 2021)

Undoubtedly, the Company obliges its human resources as well as its partners to comply with the Code of Ethics, which is related to conflict management and emphasizes zero tolerance for fraud and corruption. The Group, for anti-corruption training, has created in-person and distance training, in the form of courses, for its employees, with the total number of attendance and completion reaching 2,970 employees. An extraordinary course was created for Corporate Ethics, which 229,891 employees attended and were tested. In the year 2021, there were zero cases of corruption, while more than 6,570 reports related to fraud, corruption and theft were examined. Furthermore, 24 subsidiaries joined the tax monitoring system in order to improve the Company's tax transparency. To implement the goals, 17 Joint Working Groups and Coordination Committees were created in cooperation with foreign partners, while there are 81 cooperation agreements, so far, with regions of the Russian Federation. Finally, nearly 80,000 employees participated in volunteer activities in 2021. (Goal 16, Goal 17) (Gazprom, Sustainability report 2021)

10. Marathon

Brief historical review

Marathon Oil Corporation is an American hydrocarbon exploration company, based in Houston, Texas. The company's reserves consist of 52% of petroleum, 30% natural gas and 18% natural gas liquids. The company began as Ohio Oil in 1887 and in 1907 its first pipeline was built. In 1930, the company purchased Transcontinental Oil, including its wells, three refineries and the Marathon name. The company introduced the metal credit plate in the 50s to build loyalty and subsequently purchased the Aurora Gasoline company. In 1962, the company changed its name to Marathon Oil and purchased Plymouth Oil and the Texas City refinery. In 1981, Mobil tried to buy the company through a hostile takeover, but Marathon Oil resisted and instead sold to U.S. Steel. In the 90s, Marathon oil and Ashland Global formed a joint venture and combined their refining operations. In 2018, the corporation purchased Andeavor, which included 10 refineries in the US, helping in extending its operations nationwide. In 2021, Marathon Petroleum Corp sold Speedway and in 2022 it made aviation history by helping the creation of sustainable aviation fuel. The company has invested in Malaria control, resulting in a 63% reduction of the mortality rate and 97% reduction in severe anemia in children. The company's deals in Equatorial Guinea were investigated, as it was alleged payments were made to the country's president. However no enforcement action was recommended. The company has contributed the 0.19% of global greenhouse gas emission between 1988 and 2015. (available at: https://en.wikipedia.org/wiki/Marathon_Oil)

Sustainable strategies

Marathon Oil demonstrates its commitment to its transition to sustainability, following 14 of the 17 goals, and its desire to become a flexible Company.

- Applications for agility

a. *Analysis of the application of available technology*

The Company, in early 2021, has invested approximately $100 million for technology-based projects. (Marathon oil, "Living our values", Sustainability Report, 2021) One of the main projects was the infrared cameras, which were used to detect gas leaks from the equipment, and detect temperature differences. During the year, an airlift was used in the Permian and Bakken to locate and repair additional reservoir leaks in the Eagle Ford. In addition to

infrared cameras, Kuva™ gas imaging cameras were used, which provide more data to contain leaks. A practice called "Reduced Emissions Completions (RECs)" has also been developed, which has the ability to capture the produced gas in conjunction with equipment, which tends to separate the gas from liquids and solids, and reduces methane emissions. (Marathon Oil, Emissions Reduction Strategies, August 2022)

b. Analysis of human resources

To achieve human resource flexibility the Company developed a strategy for purposeful human capital management (HCM). The Vice President of Human Resources reviews quarterly talent data, reports to the CEO, and then the Executive Committee reviews the results. Also, through the Enterprise Risk Management process, which takes place annually, skills gaps, which are considered critical to long-term success, are examined and addressed. The organized strategy for the development of talents and skills consists of digital training, organizational learning, the right guidance and assessment. The annual digital training of employees amounts to 43,000 hours for 2021, while at the beginning of 2022 modifications were made, increasing the number of topics, to the LinkedIn Learning platforms. At the same time, Leadership Programs are provided, which aim to improve team effectiveness and leadership skills, train new managers, and develop business simulations at the executive level. (Marathon oil, "Living our values", Sustainability Report, 2021)

c. Analysis of production strategies

Production in Equatorial Guinea (EG) consists of the liquefied natural gas (LPG) plant, operated by Alba Plant LLC, the offshore Alba Field, owned by Marathon EG Production Limited (MEGPL), a liquefied natural gas (LNG) production facility) and methanol, which are respectively operated by EG LNG and Atlantic Methanol Production Company (AMPCO). Marathon Oil also ensures that most of its produced water is transported through pipelines, reducing pollution, eliminating nearly 390,000 trucks and improving road safety. Finally, untreated produced water and hydrocarbons are stored in storage tanks at the production facilities, while water storage also takes place in open-top tanks. (Marathon oil, "Living our values", Sustainability Report, 2021)

d. Analysis of the management environment

To eliminate risks and improve the Company's performance, the Responsible Operations Management System (ROMS) has been developed, as it ensures transparency and compliance with regulations. Also, the Company's expenses are allocated mainly to increasing productivity with the maximum possible efficiency. It is reported that most of the wells that are being mined have immediate amortization, enhancing the possibility of the proper allocation of capital and reducing market risks. Risk mitigation also includes properly managing and maintaining the quality of the multi-basin portfolio, maintaining capital allocation with the help of a disciplined system, and maintaining a very strong balance sheet. (Marathon oil, "Living our values", Sustainability Report, 2021)

- Sustainable development goals

Marathon Oil sought to address poverty from the start and partnered with food banks to address the demand and need for food in areas where facilities existed, such as Oklahoma, New Mexico, Texas, North Dakota. It primarily focused on eliminating child hunger, donating meals to children and their families. (Goal 2, Goal 17) A continuation of this is the promotion of good health in both the workforce and society. Starting with incident records, the Company for 2021 was measured at 0.29 TRIR (Total Incident Record Rate), which is the second lowest TRIR recorded within the Company, reflecting that safety is a priority for Marathon Oil. It is worth noting that EG LNG (Equatorial Guinea LNG Operations, S.A.) and MEGPL (Marathon EG Production Limited's) subsidiaries did not have any Occupational Safety and Health Administration (OSHA) or Lost Time Incident (LTI) incidents recorded. However, the Company for the same year recorded zero Tier 2 (moderate consequence) and two Tier 1 (high consequence) Process Safety Events at the facilities. To promote the health of contractors, electronic training programs were developed, which 18,500 contractors attended and passed the safety tests imposed by the Group. In the reporting year, a campaign to check the mental health of employees was developed, which was called "Are You OK?", and is considered particularly important because the pandemic has drastically changed the way people both work and live. Also, detailed business continuity plans are maintained in the event of an emergency, such as in the event of a

security incident or natural disaster. (Goal 3) (Marathon oil, "Living our values", Sustainability Report, 2021)

The Group has, since 2003, supported the Bioko Island Malaria Elimination Program (BIMEP), as malaria is a huge public threat in Equatorial Guinea. Through the program, at least a 97% reduction in the transmission rate of the microbe has been noted, a 54% reduction in transmission in children up to 14 years of age, and the elimination of An. funestus, one of the three main vector species. The Company started investing from 2018 in the fight against the disease. Investments made by MEGPL for a nurse training program to improve the quality of health services in Equatorial Guinea exceeded US$1.5 million, with a total of 111 nurses trained. In 2021, in collaboration with ONCIGE, Nueva Vision Optica and Doctor Cruz clinics, a program was developed to detect vision problems in children and young people and provide appropriate medical care. More than 15,000 children have been examined and diagnosed with vision problems and 1,290 young people have been prescribed glasses. (Goal 3) (Marathon oil, "Living our values", Sustainability Report, 2021)

The Company together with its subsidiaries have also invested a lot in education. Initially, EG LNG invested more than US$25 million to provide water wells and build and renovate schools in EG, and US$1 million has been raised for nine schools in Malabo, attended by over 6,000 students. Also, through the My Home Library program and in partnership with the Barbara Bush Houston Literacy Foundation (BBHLF), nearly 20,000 books have been donated to student libraries in the Houston area to fight illiteracy and develop reading skills. During the same period, events were hosted that reached over 2,000 students in South Texas, and created excitement for reading. A teaching style program called the Unconventional Thinking in Teaching Program awards grants to teachers with innovative ideas to help retain teachers in the area. Grants are up to $2,500 per winner, and in the reporting year there were 14 winners. Additionally, in partnership with Communities In Schools (CIS) Houston and Comp-U-Dopt, it has donated 100 laptops and 750 computer monitors to Spring Shadows Elementary School and Comp-U-Dopt, respectively. Finally, it invests steadily in the training and guidance of employees, as in 2021 over 37,000 hours of training were

recorded and the educational requirements were met by 95%. (Goal 4, Goal 17) (Marathon oil, “Living our values”, Sustainability Report, 2021)

Undoubtedly, the Company seeks to promote equality, diversity and include socially vulnerable people in its activities. In the year 2021, it managed to increase the racial representation of the US to 29% and the ethnic representation to 27%. At the same time, the first year of the Black Employees and Allies of Marathon (BEAM) network was celebrated as the women's network continues to grow. Specifically, on May 25, 2022, three women were appointed as directors, out of the seven directors, one of whom is a lead director. It is worth noting that Marathon Oil has developed cooperation with groups such as the National Society of Black Engineers, the LGBTQ Engineers, the Society of Women Engineers and the Society of Hispanic Professional Engineers to search for new talent and integrate them into its workforce. Based on statistics, 33% of the Company's employees are women. Finally, Marathon's Code of Conduct has sections that discuss equality and diversity issues. (Goal 5, Goal 10, Goal 17) (Marathon oil, “Living our values”, Sustainability Report, 2021)

Special care is provided to its employees by offering competitive benefits, health promotion and assistance plans that include dental health and vision, paid leave and work-life balance. Especially for the latter, it has created the Workplace Flexibility Program, which includes working from home and flexibility. During 2021, the Company conducted a survey, which was called "Pulse" and aimed to gather ideas and feedback from employees on how to operate. Also, local recruitment and the stay of workers in the USA for about 8 years are sought, but in 2021 the turnover increased resulting in a reduction of the rotation of workers in Equatorial Guinea (EG). In the same year, the company was employing 1,500 full time employees, with 71% located in the USA and 29% in EG. The main objective is to promote and employ Equatoguineans, with the aim of developing its national citizens. By the end of 2021, the nationalization of the human resources, external programs and supply chain departments was achieved. (Goal 8) (Marathon oil, “Living our values”, Sustainability Report, 2021)

Investments have taken place in the local workforce through training programs, namely around 80 students have gained access and work experience through internships but

also through partnerships with local universities. The Company wishes to strengthen the local supply chain. This is evident as MEGPL has spent US$1.09 billion since 2013 and the Company has, for 2021, dedicated 92% of its expenditure and 18% of material purchases to local contractors. Various improvements have been made to the bidding process so that local suppliers and contractors can have more opportunities to collaborate and promote goods. However, cooperation with the EG National Alliance of Hydrocarbons Services Company continues for assistance, development of local suppliers and solutions to existing challenges. Essentially, the Company considers the concepts of remuneration and performance to be interconnected and for this reason the Remuneration Committee, which is part of the Board of Directors, constantly examines all issues that arise regarding the remuneration process. (Goal 8, Goal 17) (Marathon oil, "Living our values", Sustainability Report, 2021)

In order to achieve the aforementioned, a peaceful atmosphere is required in the Company, while integrity is also necessary. Thus, the Code of Business Conduct was developed, which is faithfully followed by the entire workforce and includes sections related to harassment, security, anti-corruption, compliance policy, and the defense of rights which include violence, harassment, the prohibition of child labor and trafficking. At the same time, a framework has been developed to monitor requirements, prevent and detect any violations, consisting of the Anti-Corruption Compliance Policy (ACCP), which sets out prohibitions and ways of dealing with corruption, and the Anti-Corruption Standard (ACS). Another key concern of the Company is the fight against human trafficking. Thus, in the reporting year, more than 125 people of the Company, namely Oklahoma and Permian employees, received the title "TAT Trained", from "Truckers Against Trafficking (TAT)", as they were trained in matters related to the trafficking of people. (Goal 16) (Marathon oil, "Living our values", Sustainability Report, 2021)

An additional commitment of the Company, which has been implemented and renewed at the beginning of 2022, is the reduction of gas emissions combined with the production of responsible, economical and reliable energy to meet the energy demand. Marathon has developed two main tools for the internal assessment process, which are called ROMS (Responsible Operations Management System) and ERM (Enterprise Risk Management). The ERM process is the one that identifies and manages important

issues of the Company, where by presenting the results from the internal risk assessors to the respective committees, the prediction of the risks is achieved. Potential risks identified through ERM are primarily forces that change product prices, disruptions to the value chain, developments based on regulations and laws. Through the ROMS process it is possible to track emissions and climate change. (Goal 7, Goal 13) (Marathon oil, "Living our values", Sustainability Report, 2021)

According to research by scientists, it has been proven that the increased volume of emissions has led to climate change. Thus, the Company developed a new method of measuring emission intensity, which positively affected its commitments by recording a reduction in the level of emissions of the year 2021 by approximately 30% compared to 2019. The Company also improved the total commitment of gas by 98.8%, while at the same time setting new targets for reducing GHG and methane intensity. In particular, the absolute emissions of Scope 1 and Scope 2 for the reference year were in total reduced by 47.7%, compared to 2019, while methane emissions were increased. More generally, the Company has primarily focused on two of the four scenarios published by the International Energy Agency (IEA). These are the 'Net Zero Emissions by 2050 Scenario (NZE)', which as its title states aims for net zero CO_2 emissions by 2050, and the 'Sustainable Development Scenario (SDS)', which relates to The Paris Agreement and the "well below 2°C" warming pathway. For reference, the other two scenarios are the "Announced Pledge Scenario (APS)", which relates to governments' overall climate commitments, and the "IEA Stated Policies Scenario (STEPS)", which explores what the maximum possibility of achieving the energy system without implementing additional political applications. (Goal 13) (Marathon oil, "Living our values", Sustainability Report, 2021)

In 2021, the Democratic Republic of Congo came second in tropical primary forest loss, adding 2.5 billion tons of CO_2 emissions to the atmosphere and affecting global temperature. For this reason, the Company is investing in the project Wildlife Works Reducing Emissions from Deforestation and Degradation (REDD+), in order to protect the 740,000 hectares of forest in the Congo basin and also to contribute to limiting the global temperature to 1.5°C. Important is the research of endangered species and wetlands, where the Company applies in the areas of interest. Corresponding

investigations are carried out to detect any change in the ecosystem or biodiversity, with the aim of restoring them and restoring the land. Finally, that same year, a collaborative investment with the National Fish and Wildlife Foundation (NFWF), the Pecos Watershed Conservation Initiative (PWCI), was successfully completed. The goal of this investment was to improve the landscape of West Texas and eastern New Mexico; 25,000 acres of rangeland were managed and 4,000 acres were restored, while 90 miles of pronghorn passage were fenced and an additional 20 acres of riparian habitat was improved. (Goal 13, Goal 14, Goal 15, Goal 17) (Marathon oil, "Living our values", Sustainability Report, 2021)

An important part of the Company's activities is water. A strategy has been developed for the way water is managed in order to reduce the impacts during the use of water and to reduce the risks during the interruption of activities and during its supply. About 95% of its use is related to filling during hydraulic fracturing. ROMS and the "Environmental Management Standard" monitor the quality, quantity, way of water extraction and water protection. It is worth noting that in the USA the produced water is mainly recycled, to be used in the oil wells, but it is also discarded with the help of saltwater disposal wells. However, recycling depends on demand and various regulations or restrictions. Also, in the U.S. the disposal of water to the surface is avoided, for this reason the wastewater discharge is equal to zero. In Equatorial Guinea the total discharge amounts to 0.165 million barrels. (Goal 6) (Marathon oil, "Living our values", Sustainability Report, 2021)

At the same time, a program has been created to control the waste water that is discharged and to monitor these areas. Through the program, three-yearly inspections of the facilities are carried out. The procedures and handling of controlled and hazardous waste are identical to all regulations. From the stage of drilling to the stage of completion of the processes, the waste that is collected, is then disposed of in respective areas based on the regulations. Finally, to reduce the risk of leaks, the Group stores untreated produced water in open-roof tanks and hydrocarbons in storage tanks. In the event of a spill, integrated response capabilities are activated to protect the environment. Local and corporate response teams are often trained to respond to spills and other disasters, and drills are conducted to maintain readiness. Because of all the

above, the total volume of leaks, for the year 2021, marked a significant reduction compared to 2020, with a reduction rate equal to 39%. (Goal 12) (Marathon oil, "Living our values", Sustainability Report, 2021)

CHAPTER D

Benchmarking

Benchmarking is a method that is mainly used in strategic management and is applied to evaluate various data. It may be a one-off event, but there is a possibility to compare the data with other companies. (available at: https://en.wikipedia.org/wiki/Benchmarking#) There are four different types of benchmarking: performance, practice, internal, and external. Performance benchmarking consists of the comparison of various quantitative data, mainly key performance indicators, and is the initial step that companies undertake to identify performance gaps. Practice benchmarking consists of the comparison of information that is related to the process of applying activities and technologies. Internal benchmarking is carried out in groups or multinational companies and aims to collect and compare information and data between the various units within the organization. External benchmarking involves comparing the practices, processes, metrics, and techniques of one group with those of another group or with several different groups. (The APQC Blog, «What are the Four Types of Benchmarking?», Nov 13, 2019, available at: https://www.apqc.org/blog/what-are-four-types-benchmarking)

Benchmarking of Companies

The benchmarking of the 10 companies, which have been analyzed in Chapter C, has been applied based on their flexibility as well as the actions they took for sustainability following the 17 sustainable goals. The score corresponds to the numbers 0 and 1, where 0 reflects that no action has been taken and 1 reflects that a considerable effort has been made for actions towards flexibility and contribution to sustainability. Below are the tables with the rating of each company separately. Table 1 corresponds to the benchmarking of agility, and Table 2 corresponds to the benchmarking of the 17 sustainable goals.

Company / Agility	Sino-pec	Phil-lips 66	Saudi Aram-co	Shell	BP	Exxon Mobil	Total	Chev-ron	Gazp-rom	Marat-hon
a.	1	1	1	1	1	1	1	1	1	1
b.	1	1	1	1	1	1	1	1	1	1
c.	1	1	1	1	1	1	1	1	1	1
d.	1	1	1	1	1	1	1	1	1	1
Total	4	4	4	4	4	4	4	4	4	4
Avg	1	1	1	1	1	1	1	1	1	1

Table 1. Application of Benchmarking to the agility of each Company.

Company / Goal	Sino-pec	Phil-lips 66	Saudi Aram-co	Shell	BP	Exxon Mobil	Total	Chev-ron	Gazp-rom	Marat-hon
1	1	0	0	0	1	1	0	1	1	0
2	1	1	0	0	0	0	0	0	1	1
3	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1
6	1	0	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1	1	1
9	1	1	0	1	1	0	1	1	1	0
10	1	1	1	1	1	1	1	1	1	1
11	1	0	0	0	1	0	1	0	1	0
12	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1
14	1	1	1	1	1	1	1	1	1	1
15	1	1	1	1	1	1	1	1	1	1
16	1	0	0	1	1	1	1	1	1	1
17	1	1	1	1	1	1	1	1	1	1
Total	17	13	12	14	16	14	15	15	17	14
Avg	1	0.765	0.706	0.824	0.941	0.824	0.882	0.882	1	0.824

Table 2. Application of Benchmarking to the 17 Sustainable Goals of each Company.

In Table 1, the companies where the research has been carried out are observed in the first row, and in the first column is each sub-category of flexibility. a. corresponds to the analysis of the application of available technology; b. corresponds to the analysis of human resources; c. corresponds to the analysis of production strategies; and d. corresponds to the analysis of the management environment. In Table 2, it is also

observed that in the first row, the companies of the research are mentioned, and in the first column, there are 17 sustainable targets. At the end of both tables, there is a total, which is the sum of the scores, and an avg, which corresponds to the average. In order to make the score more clearly visible, the corresponding graphs named Table 3 and Table 4 are listed, while the scores will then be commented on.

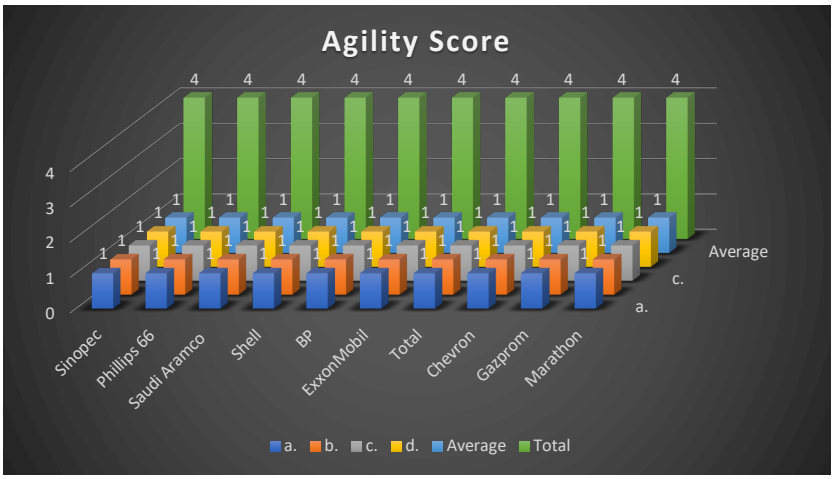

Table 3. Agility Score.

The graph in Table 3 has been made with all columns and rows. In more detail, as can be seen below the graph, the blue color corresponds to a, the orange to b, the gray to c, the yellow to d, the blue to average, and the green to total. It is observed that all the companies follow all the steps for their proper adaptation to flexibility.

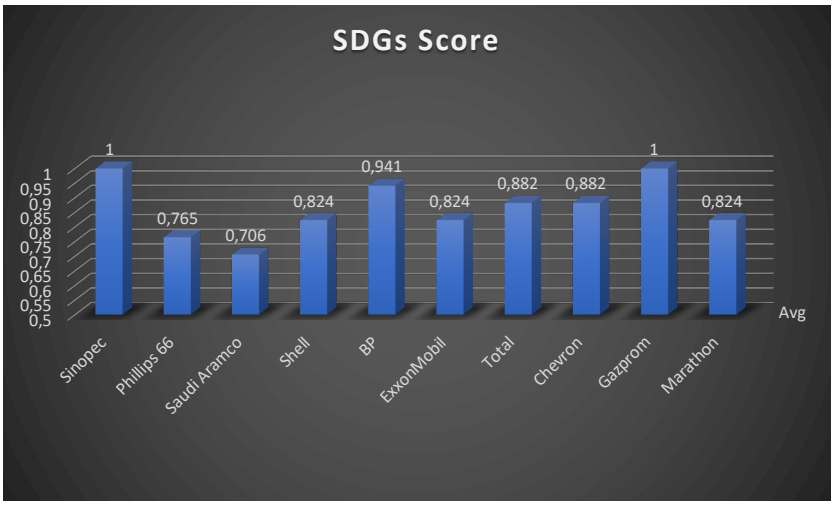

Table 4. SDGs Score.

The graph in Table 4 has been made with only the average line to make it more visible. The average is obtained by dividing the total of each company by 17, which is the sum of all targets. According to the calculations, it appears that the companies that faithfully follow all the sustainable goals as they have carried out several actions for the year of the survey, which is the year 2021, are Sinopec and Gazprom, with an average of 1. Then, the third ranked number is BP, with an average of 0.941, which implements 16 of the 17 sustainable goals. The goal that the Company seems to have missed is Goal 2. Next comes Total and Chevron, in fourth and fifth place, with an average of 0.882 following 15 of the 17 goals. Total, according to the research, has not developed actions for Goal 1 and Goal 2, in the reporting year, while Chevron for Goal 2 and Goal 11. Next are Shell, ExxonMobil and Marathon , ranked sixth, seventh and eighth with a .824 average. All 3 of these Companies have followed 14 of the 17 targets. More specifically, Shell has not implemented any action for Goal 1, Goal 2 and Goal 11, ExxonMobil for Goal 2, Goal 9 and Goal 11 and Marathon for Goal 1, Goal 9 and Goal 11. Ninth in the ranking is Phillips 66, with an average of 0.765 achieving 13 of the 17 goals, giving less weight to Goal 1, Goal 6, Goal 11 and Goal 16. In tenth and last place is Saudi Aramco, with .706 average making 12 of 17 goals. The goals that the Company has not given a basis for are Goal 1, Goal 2, Goal 9, Goal 11 and Goal 16. What is easily observed is that more than half of the goals are faithfully followed by all the Companies in the survey.

Another piece of information that is easy to glean from Table 2, if one focuses on each row this time which is each Goal, is that most of the goals are being implemented to a large extent. The goals that have been achieved by all the Companies are Goal 3, Goal 4, Goal 5, Goal 7, Goal 8, Goal 10, Goal 12, Goal 13, Goal 14, Goal 15 and Goal 17. 9 out of 10 Companies have taken action on Goal 6, 8 out of 10 Companies additionally focused on Goal 16, 7 out of 10 Companies on Goal 9, 5 out of 10 on Goal 1 while 4 out of 10 on Goal 2 and in Goal 11.

Conclusions

The above-mentioned results provide an important input to the evaluation of companies' action regarding sustainable goals. As a first conclusion, initially, Saudi Aramco and Phillips 66 face a significant challenge in the area of sustainability, as their averages for sustainable goals are low, with values of 0.706 and 0.765, respectively. It is important to point out that sustainable goals are critical to the future of environmental protection, health and social development. Therefore, it would be prudent for these companies to focus more on improving their performance in these areas in the coming years in order to meet society's expectations.

At the same time, other companies such as Shell, ExxonMobil and Marathon seem to be taking a more proactive approach, taking serious initiatives towards sustainability, respectfully implementing 14 of the 17 sustainable goals for 2021. It is important that these companies continue their approaches to achieving all three remaining sustainable development goals. Specifically, Shell should focus on the implementation of goals 1. Zero poverty and 2. Zero hunger, ExxonMobil on goals 2. Zero hunger and 9. Industry, innovation and infrastructure, Marathon on goal 1. Zero poverty and on goal 9. Industry, innovation and infrastructure, as well as the three companies in goal 11. Sustainable cities and communities.

Next, BP and Chevron along with Total follow in the ranking, with 16 and 15 achievable targets respectively. This demonstrates their commitment to the development and implementation of sustainable practices, which will have a positive impact on the environment, health and the communities they affect. This commitment

is critical to maintaining the balance between energy and sustainability in the petroleum industry. However, they should ensure that they continue to improve their sustainable development and environmental protection practices in order to achieve all sustainable goals.

The achievement of all 17 sustainable targets by Sinopec and Gazprom represents impressive progress in sustainability. This shows the serious commitment of these two major energy companies to promoting sustainable development and reducing their negative footprint on the environment. The 17 sustainable goals cover many areas, such as the reduction of CO_2 emissions, the promotion of the use of renewable energy sources, the management of water resources and the social responsibility of their businesses. This commitment to sustainability highlights their significant contribution to sustainable development and environmental protection, as well as their contribution to society and the economy.

It is worth noting that these results reveal the significant progress that major oil companies have made in integrating sustainability into their business practices. Their efforts to comply with sustainable goals are backed by data and are a positive step towards protecting the environment, promoting health and strengthening the communities they serve. However, there is still room for improvement and increased commitment to achieving the sustainable goals in order to ensure the long-term well-being of the planet and people.

As a second conclusion, there is an urgent need to raise awareness among social groups about Goal 1 and Goal 2 of the Sustainable Development Goals, which seek to eradicate poverty and hunger. These goals are vital to improving living conditions worldwide and require concerted action by companies. For this reason, even society must join forces in order to address these critical issues and create social structures that will ensure economic and nutritional security for all.

Equally important is Goal 11, which deals with urban sustainability. Improving urban environments and developing resilient communities in cities is critical to creating safer

and more resilient living environments, including social cohesion and justice. Urban development must focus on the sustainable use of resources and improving the quality of life for all city dwellers.

Of course, the continued effort for Goal 6, which concerns water purification and management, Goal 9, which refers to sustainable infrastructure and innovation, and Goal 16, which concerns the promotion of peace, of justice and strong institutional governance. These goals remain vital to achieving a more just, sustainable and peaceful society worldwide.

Overall, the implementation of all sustainable goals is the key to achieving the desired results. In general, companies must pursue the desired results, with stability and determination, both in the field of tackling climate change and in ensuring human well-being. Achieving the desired results requires adherence to all objectives linked to sustainable development, environmental sustainability and social responsibility. This process is not an ephemeral effort, but must be part of the daily operation of companies. With sustained commitment and continuous effort, businesses can effectively contribute to addressing challenges related to both the environment and society, thus ensuring a sustainable future for all.

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