"How to embed the Sustainable Development Goals in the strategy of a company? Review of circular business models and assessment of their sustainability and how SDGs and CBMs enable to create business value and competitive advantage? The case of the Agricultural Sector. "

Noterdaeme, Leah

ABSTRACT

Our present society cannot continue to function as it does today, knowing that the world's population continues to grow. New systems must be put in place to ensure access to healthy and sustainable food for all. That is why this study focuses on the agricultural sector and the different ways in which the current agricultural system can be transformed towards a more sustainable one. This research master's thesis studies three main topics: how companies operating in the agricultural sector embed the UN Sustainable Development Goals (SDGs) in their strategy, review of circular business models (CBMs) these companies implement and the value and competitive advantage generated for the business following the implementation of the SDGs and CBMs. In order to analyze these subjects, a literature review on the SDGs, the agricultural sector, corporate strategy, circular business models and value and competitive advantage was confronted with a multiple case study conducted within five companies. This provided answers to these three research questions but also interesting avenues for future research.

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How to embed the Sustainable Development Goals in the strategy of a company? Review of circular business models and assessment of their sustainability and how SDGs and CBMs enable to create business value and competitive advantage?

The case of the Agricultural Sector

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I.

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Table of Contents

List of figures

List of tables

Introduction

Context and problem definition

For several years, the notion of sustainable development has been emerging among NGOs, the public sector, and the private sector (Aubertin & Vivien, 2006). Sustainable development "meets the needs of the present without compromising the ability of future generations to meet their needs" (World Commission on Environment and Development, 1987, p. 43). The following figures contribute greatly to explain the rise of this notion: in 2011, the population exceeded the number of 7 billion human beings. This unique moment in history is both an achievement and a challenge. Indeed, according to forecasts, the population is expected to reach 9.7 billion people in 2050 (United Nations, 2019). One of the biggest challenges is food. It is estimated that more than 2 billion people do not have regular access to healthy food, and obesity and overweight are constantly increasing in all regions of the world. In addition to the health problem, the economic cost of malnutrition is immense. Furthermore, climate change, extreme weather conditions, degradation of soils, water bodies, and biodiversity affect agricultural productivity, rural livelihood production, and cause a decline in the number of farmers. In addition, differences in terms of income equality and conflicts in the different regions of the world highlight the challenges to be met. All these phenomena are leading to profound changes in food production, distribution, and consumption patterns worldwide, as well as new challenges in the areas of health, nutrition, and food security (Food and Agriculture Organization of the United Nations, 2019).

It is therefore interesting to consider the initiatives undertaken and the actors involved to meet these challenges. From a political perspective, on a global scale, countries around the world signed the United Nations Agenda 2030 and its 17 Sustainable Development Goals (SDGs) in September 2015. It is a commitment to improve life on earth by eradicating poverty, protecting the planet, and ensuring that everyone lives in peace and prosperity (United Nations, 2019). On 24 and 25 September 2019, Heads of State and Governments met at the UN Headquarters in New York to monitor and review progress made regarding the implementation of the SDGs. The result of this first UN Summit on the SDGs is the adoption of the Political Declaration, “Gearing up for a decade of action and delivery for sustainable development” and world leaders called for a decade of real improvement and action to achieve the SDGs by 2030 and shared their actions undertaken to advance the agenda (United Nations, 2019). In Europe, Ursula von

der Leyen, the president of the European Commission, has put the sustainable development and the SDGs in the Commission agenda and sent in September 2019 a Mission Letter to each Commissaire mentioning the need of achieving these SDGs: “Each Commissioner will ensure the delivery of the United Nations Sustainable Development Goals within their policy area. The College as a whole will be responsible for the overall implementation of the Goals.” (von der Leyen, 2019). Furthermore, she specified in the Mission Letter addressed to the Commissioner-designate for Agriculture, Janusz Wojciechowski, the need for providing “affordable food for citizens and a fair standard of living for farmers” (von der Leyen, 2019). Still in continuity with the initiative of achieving the SDGs, Europe is committed to ensuring (i) food quality, (ii) food security, and (iii) food safety for Europeans from “farm to fork”. This is the name given to the strategy for sustainable food, aiming at improving, in the agri-food sector, the sustainability of food production and this, across the food production chain (European Commission, 2019). This strategy will be managed by the Vice-President of the European Commission Frans Timmermans, as part of the European Green Deal (Fortuna, 2019). What is this deal about? The European Green Deal has for primary goal to make Europe being the first climate-neutral continent in 2050. In the agricultural scope, Timmermans mentions “we must preserve the vital work our farmers do to provide Europeans with nutritious, affordable, and safe food. This is only possible if they can make a decent living for their families. We will support our farmers with a new “Farm to Fork Strategy” on sustainable food along the whole value chain.” (von der Leyen, 2019)

In addition to the actions launched by politicians to resolve the above-mentioned food issues, there are also initiatives undertaken by the private sector. Globally, there exists the World Business Council for Sustainable Development, a CEO-led organization composed of more than 200 leading businesses, working to speed up the transition to a more sustainable society (World Business Council for Sustainable Development, 2019). The Council has developed, with 19 companies, an agriculture-centric coalition named “One Planet Business for Biodiversity”. The objective is to protect biodiversity and stimulate systemic change in agriculture (European Commission, 2019). Besides this coalition exists the Common Agricultural Policy (CAP), a policy built on already existing legislations and strategies dedicated to the economic development of rural areas, biodiversity, water, climate, and health (European Commission, 2018). On a European scale, European Federations have emerged like FoodDrinkEurope (FoodDrinkEurope, 2019) or Fruit&Juice (AIJN, 2019).

In addition to the mobilization and the involvement of the political and business world, an effort is required from investors and research and development (R&D) to support approaches dedicated to the progress of sustainable development in the food and agriculture sector (Levarlet, Alessandrini & Celotti, 2019). The support of the civil society is as well needed and it has been strongly mobilized recently, partly launched by Greta Thunberg and having gathered more than 5 million walkers in the streets for the climate (Euronews, 2019).

In the end, what unifies all the stakeholders are the UN Sustainable Development Goals (also called the Global Goals) and their universal language. They are "accepted by all, and applicable to all." (Long, n.d.). Moreover, the Global Goals provide a universal framework gathering all stakeholders to make them address proactively the current global challenges (EY, 2017). Finally, SDGs are there to achieve a goal, and whether the organizations are schools, universities, NGOs, individuals, companies, or governments, SDGs are, on a global scale, a vehicle for conversation and desire for progress (Ashakayla, 2018).

Research questions

Since the context has been established, it is time to look at the scope of this thesis. Indeed, this thesis does not intend to address the role of all stakeholders mentioned above in contributing to sustainable development but intends to address that of the private sector in the agriculture industry. It is highly interesting to think about the positive impacts businesses may have on the world - in comparison to the many known negative impacts they can cause - and how they can achieve the Sustainable Agenda 2030. In the end, this thesis aims at contributing to the collection of theoretical and practical knowledge on the topic, with different focus points:

1) The first objective is to understand how can businesses integrate the UN Sustainable Development Goals into their **strategy**;
2) The second focus point aims at reviewing the emerging circular business models implemented within companies and assessing their sustainability;
3) Finally, the last research point consists in analyzing the potential **value and competitive advantage** resulting from the implementation of the SDGs and circular business models.

In view of the food and nutrition challenges discussed in the previous section, these focus points will be therefore analyzed and discussed around the agricultural sector. Indeed, a profound

change in the agricultural and food system is essential if we want to feed the millions of people who are suffering and will continue to suffer from hunger. Investment in these systems and the development of sustainable food production methods are therefore needed to reduce this global issue (United Nations, 2019).

All that being said, this leads us to formulate the research question as follows:

How to embed the Sustainable Development Goals in the strategy of a company? Review of circular business models and assessment of their sustainability and how SDGs and CBMs enable to create business value and competitive advantage? The case of the Agricultural Sector.

Motivations

The choice of this thesis subject was made for different reasons. First, having a strong interest in Sustainable Development and in Corporate Social Responsibility, I wanted to deepen my knowledge in these topics. Second, I learned about the UN Sustainable Development Goals at a university course and that caught my attention and curiosity and I wanted to know more about it. Last but not least, in our society we hear every day that we are leading our planet to its ruin, that poverty is everywhere and that human rights are too little respected. We are aware of all the negative things we generate for society, but I have a desire to learn more about what we can do to limit that and improve the situation. Many experts say that there is still time to react to slow down climate change and improving human living conditions is in our hands. It is time to seize this opportunity.

Research methodology

The context of the study and the research questions defined, it is essential to specify how the research has be conducted in order to best answer the aforementioned research questions. The research study has been first performed on a literature review based on various sources such as academic or scientific journals, public and private organizations publications, the United Nations and European Commission websites or sector reports to contextualize and theoretically answer the research focus points. Then, a practical study was carried out based on interviews conducted in five companies operating in the agricultural sector to gather information around the research questions and answer them based on real business experiences.

Disposition

This thesis is structured around two main parts, a literature review and a practical analysis, to answer the three research questions above-mentioned.

Regarding the literature review, it first introduces the agricultural sector, its main challenges and the question of sustainability within the industry. In a second time, the Sustainable Development Goals are introduced and contextualized, the progress-to-date is reviewed and the role of companies in the achievement of the Global Goals is underlined. The third chapter covers the first research question, namely the embedding of the SDGs in the strategy of a company and covers the notion of corporate strategy, points out the lack of framework to this integration, and reviews two theoretical tools to answer the question. Fourth, the notions of business models and circular business models are introduced and lastly, the concepts of business value and competitive advantage are presented and the link between the SDGs and the circular business models and the two concepts is theoretically demonstrated.

Regarding the practical analysis, this part goes through an analysis of the information gathered from the interviews conducted, through the identification of managerial implications arising from the analysis of the interviews and through a reflection about suggestions for further research on the SDGs and circular models subjects.

Part I. Literature Review

Chapter 1: The Agricultural Sector

1.1 Context

Food is essential in people's daily lives because it feeds them, connects them together and with nature and plays an important role in most cultures around the world. But how can we feed ourselves without raw materials? This is where agriculture comes in, the oldest profession in history which is essential to the development of human beings and nature. The main challenge in agriculture is not only to provide food in the future in sufficient quantities but also to produce food of sufficient quality, meaning nutritious, safe, and healthy food (Triodos Bank, 2019). And the choice of agricultural models has direct and long-term consequences (De Schutter & Vanloqueren, 2011).

As this thesis intends to focus on the agricultural sector, it is important to introduce the topic. Figure 1 gives an overview of the place of agriculture in the food supply chain. As shown on figure 1, the number of actors in the food supply chain varies significantly from a group of actors to another. The proportion of farms is very high in the chain, compared to the actors of the processing industry and food service and retail. Indeed, in the European Union, around 11 million farms produce agricultural goods that are processed by around 300,000 companies in the food and drink industry. These goods are then sold by 2.8 million companies in food distribution or food services to 500 million consumers (European Commission, 2017).

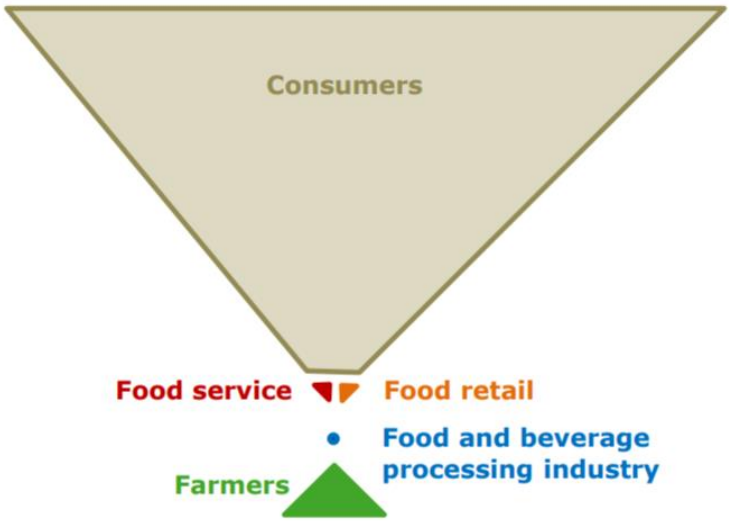

Figure 1: Actors in the food supply chain (European Commission, 2017)

In terms of employment, the agricultural sector alone includes more than 22 million people (full-time or part-time) in the EU. From an economic perspective, the total output of the agricultural industry in the European Union in 2016 is estimated at 405 billion euros (see appendix A) (Eurostat, 2017). An important element to understand is what the agricultural sector covers. When speaking about the agricultural industry, this includes three elements: (i) agriculture (crop and animal production, hunting and related service activities), (ii) forestry and lodging, and (iii) fishing and aquaculture. As a whole, agriculture is the main element of the primary sector among the 28 Member States of the European Union. In the agriculture part, a significant segment is livestock, i.e. domesticated animals raised to produce many types of goods (Eurostat, 2017).

1.2 Challenges

In the previous sections, figures have been given (at a European scale) to illustrate the importance of the agricultural sector. As mentioned above, the agricultural sector faces significant challenges, not only in specific areas like in the EU, but on a global scale. This section covers the main global challenges:

a) Soil degradation: the current farming systems are degrading a lot. Indeed, more than 50% of global arable land is damaged due to farming (Triodos Bank, 2019). The 2019 GSDR report states that billions of hectares of land have already been damaged and that, an additional 12 million hectares of soil will potentially become unusable every year in the future. What is the cause of this land degradation? It is increasingly observed that pesticides and fertilizers have secondary effects on crops and animals lands. Indeed, a proportion of these chemicals products end in water sources, the use of artificial fertilizers depletes the soil, making them unable to keep water and increasing erosion. This directly impacts agricultural lands and create risks for businesses from the food industry (FAIRR, n.d.).

b) Biodiversity loss: it is a negative consequence of farming and of all human activities, as it destroys habitats, contributes to climate change and pollution. An indicator is the 75% decline in flying insects over the last 30 years due to agriculture (Triodos Bank, 2019).

c) Water depletion: another consequence of agriculture, which is responsible for 70% of global water withdrawals, agriculture being the largest user of freshwater sources in the world (Triodos Bank, 2019).

d) Greenhouse gas emissions: it has been estimated that 20 to 30% of global GHG emissions are related to farming in general, a practice contributing greatly to atmospheric pollution (Triodos Bank, 2019). If agriculture increases to meet the demand of the future global population in 2050, the GHG emissions could rise by 87% (GSDR, 2019).

e) Farmers' situation: there are three main issues regarding their situation:

(i) Triodos Bank (2019) reports that, in emerging economies, 500 million smallholder families depend on agriculture for their subsistence and are cultivating food with less than two hectares

while supplying 70% of the food in the world. Farmers are the poorest and hungriest population worldwide. A lot of farmers are stuck in poverty as they cannot benefit from development in urban areas and innovations. (ii) The farmers' situation is also linked to the soil degradation problem. As lands responds less to inputs of labor, they produce fewer yields (Triodos Bank, 2019) and linked to the fluctuating food prices, while they are spending a high part of their low incomes in food (GSDR, 2019). (iii) Finally, small farmers are unable to compete with large farming companies. However, large-scale farmers are not more productive than small farmers, as the only measure of economic efficiency is the productivity per unit of labor (De Schutter, Vanloqueren, 2011).

f) Population growth and hunger: as mentioned in the introduction part of this paper, the global population is expected to grow from 7 billion in 2011 to 9.7 billion in 2050, increasing the demand for food production (United Nations, 2019). Regarding this challenge, there are different priorities depending on the world region. Indeed, there are some places where there is food overproduction and overconsumption while in other places, hunger is very present (Triodos Bank, 2019). Hunger is on top of the international agenda, and according to De Schutter and Vanloqueren (2011), the question about this topic is "not only how much is done, but also how it is done and what kinds of food systems are now being rebuilt." Moreover, it is important to note that the main reason for hunger is not the lack of food but the lack of income to buy it (Food and Agriculture Organization of the United Nations, 2014).

g) Agricultural waste: another challenge is agro-waste, that can be animal waste (carcasses), food processing waste (e.g. there is only 20% of corn canned and the other 80% is waste), crop waste (drops and culls from fruits or vegetables, sugarcane bagasse, …) and toxic waste (due to the use of fertilizers, pesticides, herbicides, …). According to estimations, 998 million tonnes of waste coming from agriculture is generated every year (Obi, Ugwuishiwu & Nwakaire, 2016) and this is about one third of global food production that is wasted somewhere in the value chain (Triodos Bank, 2019).

Given the many challenges the agricultural sector faces introduced, it can be easily concluded that the current farming and food production methods are deeply unsustainable. This leads to the next section of this chapter, which deals with ways to solve these problems and improve the current situation.

1.3 Sustainability and the Agricultural Sector

Before talking about sustainable development in agriculture, it is necessary to define what sustainable development is. In the context of businesses, corporate sustainability is based on three pillars: economic, environmental, and social pillars. These three elements can be seen as people, planet, and profit (Beattie, 2019).

Regarding the relationship between sustainable development and agriculture, Olivier De Schutter's sustainable food theory is a good starting point for addressing food production, agriculture, and sustainable development. Indeed, according to De Schutter, reported by C. Closson from Alter Echos (2012): sustainable food has four equally important dimensions. (i) Calorie and micronutrient intake is the first dimension, followed by (ii) a social dimension, for both food producers and consumers. The producer must be able to make a decent living from his work and the consumer must be able to eat properly. However, the predominant idea is to produce more and then lower prices, but this has major consequences for the start of the production chain, namely farmers. The third dimension is (iii) environmental, advocating the preservation of biodiversity, soil, and water. Finally, (iv) health is also an essential dimension of sustainable food. Until now, the priority has been to produce enough and in large quantities to ensure food safety, but too little attention has been paid to consumer health. It can be said that De Schutter's sustainable food theory is linked to sustainability as it encompasses the three pillars mentioned above.

In view of these elements, it is essential to review the food chain so that it becomes sustainable and viable for small producers and ensures quality food. The next section discusses the sustainable agriculture concept, which objective is to tackle the challenges the industry faces.

1.3.1 Evolution of the concept

In agriculture history, principles of sustainable agriculture evolved in the early 1900s with the following characteristics:

- The interrelatedness of all parts of a farming system (i.e. the farmer and his family);
- The importance of the biological balances in the ecosystem;
- The need to maximize biological relationships in the system and to minimize the use of materials and practices that prevent the achievement of these relationships.

But the first reference point took place in the early 80s with the birth of regenerative agriculture and sustainable agriculture concepts. But at this time they were only referring to an ecological definition of sustainability. The second reference point is the increasing use of the term “sustainability”, in 1987, linked to something remaining stable and to a stable agriculture in this context. Since these reference points, there has been a growing awareness about the necessity to implement more sustainable and integrated agricultural systems, depending less on chemical and energy-based inputs. Basically these inputs can maintain yields, lower the cost of inputs or increase farm profits but some developing countries have used higher inputs methods and have experienced pest, diseases and weed issues such as soil erosion and environmental dangers. These developing countries have a growing need for food production but there is an essential need to put sustainable farming systems in place, able to increase yields production and profit, without degrading the environment and the natural resources. This need for a sustainable farming production mode has been observed worldwide (Edwards, 1990).

1.3.2 Definition of Sustainable Agriculture

First of all, sustainable agriculture must meet the needs of the present while ensuring that the needs of the future are met too (Food and Agriculture Organization of the United Nations, 2015). Second, to be sustainable, agriculture must ensure, on the one hand, the preservation of natural resources such as water, soil, biodiversity or air and on the other hand, the promotion of social values (ethics, socially-aware practices, …) (Earth Observing System, 2019). We can observe here that there is a social dimension of the definition that has been added compared to the period of emergence of the concept referring mainly to an ecological definition of sustainable farming.

Establishing a sustainable food and agriculture model is the main goal of the Food and Agriculture Organization of the United Nations (FAO). Its three main objectives are first to eradicate hunger, food insecurity and malnutrition, secondly to manage natural resources (land, water, air, ...) for the benefit of present and future generations in a sustainable manner and thirdly to eradicate poverty and promote social progress for all (United Nations, 2019). FAO’s vision for sustainable food and agriculture can be described as a society where food is both nutritious and accessible for anybody and where natural resources are used to ensure the meet of current and future human needs. According to FAO, farmers, foresters and fishers must get the opportunity to participate in economic development and benefit from it while having decent living and working conditions. The organization sees sustainable agriculture contributing to

the four food security pillars that are availability, access, utilization and stability in an environmental, economic and social responsible way over time. Indeed, farming needs and depends on ecosystems and must therefore minimize negative impacts on the environment and optimize production by conserving natural resources. Finally, the agricultural sector must find a balance between protecting those ecosystems while meeting the population's growing demand by ensuring decent lives for rural populations (Food and Agriculture Organization of the United Nations, 2014).

1.3.3 Key principles for sustainability in food and agriculture

The Food and Agriculture Organization of the United Nations has defined five key principles for ensuring sustainable food and agriculture:

Principle 1: Improving efficiency in the use of resources is crucial to sustainable agriculture
It is important in sustainable agriculture to find the right balance between the use of natural resources and the costs of environmental impacts.

Principle 2: Sustainability requires direct action to conserve, protect and enhance natural resources
Not only does reducing the amount of natural resources have a positive effect on the environment but it also reduces costs and thus increases profitability. But an increase in profitability can lead to an increase in production, which will then have a negative effect on the ecosystem. And a degradation of the ecosystem has a direct impact on the food supply and income of the poor population, leading to a vicious cycle of poverty and environment degradation. This is the reason of the need of a direct action to conserve and protect natural resources.

Principle 3: Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable
Agriculture is sustainable only if it benefits to people depending on it.

Principle 4: Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture
Resilience appears to be an essential factor in sustainability. In the context of sustainable food and agriculture, resilience is the ability of farmer communities, agro-ecosystems and individuals to keep system productivity while adapting to change, recovering from shocks and mitigating risks.

Principle 5: Sustainable food and agriculture require responsible and effective governance mechanisms

To guarantee a good transition to sustainable agriculture following the principles described here, it requires policy, legal and institutional environments enablement to ensure accountability, equity, transparency and the rule of law (Food and Agriculture Organization of the United Nations, 2014).

The concept of sustainable agriculture introduced, the following chapter will present the United Nations 2030 Agenda and its 17 Sustainable Development Goals.

Chapter 2: The Sustainable Development Goals

To ensure a good transition towards food and agriculture systems protecting the environment, the people and bringing prosperity, many different actors are called to put efforts on it (Triodos Bank, 2019). As mentioned in the first part of this thesis, there are already many initiatives underway to lead our world towards a more sustainable one but it is necessary to emphasize the need for input from different stakeholders to achieve this. As a reminder, what unites all stakeholders towards this more responsible and sustainable society are the UN Sustainable Development Goals and their universal language.

This chapter is organized as follows: first, the creation of the 2030 Agenda SDGs will be contextualized, followed by an explanation of what the SDGs are and a magnifying glass on the SDGs related to the agricultural sector. Afterwards, the evolution of the SDGs since their launch and the progress achieved to date will be introduced. An important point will be dedicated to the agricultural market opportunities resulting from the achievement of the Global Goals and finally the private sector and its role in the achievement of the SDGs will be presented.

2.1 How are they born?

After Rio 20, the UN System, Member States, civil society organizations and other stakeholders collaborated on the development of the 2030 Agenda (Feminist Alliance for Rights, 2019). The SDGs are part of this 2030 Agenda (also called the post-2015 Development Agenda) and have been signed by countries around the globe in September 2015, at the United Nations General Assembly. These Sustainable Development Goals (17 objectives and 169 sub-

targets) came into force officially on January 1, 2016 (Zielinski, Surosz & Sagan, 2018). The establishment of this agenda aims to guide the international community and national governments for the next 15 years. The final objective is “to transform our world and to improve people's live and prosperity on a healthy planet” (United Nations, 2019). The Sustainable Development Goals have predecessors, called the United Nations Millennium Development Goals (MDGs), who came to an end on December 31, 2015. The MDGs were a set of goals aiming to address universal concerns such as poverty, education, hunger, or gender inequality - and have been launched in 2000 (Feminist Alliance for Rights, 2019). The MDGs have been driven by governments and NGOs and have already taken a leap forward but there is still a lot to do anyway. The SDGs are expected to achieve these goals with far more support from the business sector. We can see them as a continuation of the MDGs, even if there are different (PwC, 2015). What distinguishes the SDGs to their predecessors - which were focusing on developing economies - is that they are universal and addressed to all countries in the world, regardless of their economic level (European Political Strategy Centre, 2019). Furthermore, businesses didn’t focus on the UN Millennium Development Goals because they were intended to develop nations but the SDGs, however, are relevant for every kind of company and focus on broader universal issues in terms of sustainable development (PwC, 2015).

Along with the 2030 Agenda, countries have built the High-level Political Forum (HLPF) on Sustainable Development, a platform created to boost efforts to reach the objectives of the United Nations SDGs. This forum meets every year in July and brings together representatives of governments, civil society, and the private sector to share advice, see progress and propose new actions to achieve the objectives. At the leader level, i.e. the level of Heads of States and governments, will take place every fourth year the SDG Summit to follow-up and analyze the progress made in the implementation of the 2030 Agenda and its 17 Sustainable Development Goals (United Nations, 2019). As already mentioned, the first SDG Summit took place on 24 and 25 September 2019, at the United Nations Headquarters in New York, and resulted in a Political Declaration adoption and a call from global leaders to make real progress to achieve the 2030 objectives (United Nations, 2019).

2.2 The SDGs, what are they?

“The seventeen Sustainable Development Goals are our shared vision of humanity and a social contract between the world's leaders and the people.” (Ban Ki-Moon, Former UN Secretary General, 2015)

“The Sustainable Development Goals (SDGs) provide not only a vision for the world but they also comprise a positive and feasible agenda for us to protect our people and our planet and secure a brighter future for this and the next generations.” (Frans Timmermans, First Vice-President of the European Commission, 2017)

Figure 2: The seventeen Sustainable Development Goals (The Shift, 2017)

The United Nations Sustainable Development Goals (see figure 2) collectively achieved meet the desired objectives about economic growth, social inclusion and environmental care (United Nations, 2019). These goals include the three categories of the sustainable development, i.e. People, Planet, Profit but the Profit category has become Prosperity and there are two new categories, Peace & Justice and Partnerships (The Shift, 2017). Although they belong to categories, these objectives must be considered as interconnected and inseparable (European Commission, 2019).

Furthermore, the SDGs are a universal agenda (European Political Strategy Centre, 2019). These goals are not legally binding but governments take responsibility for ensuring the implementation of these SDGs and expect all stakeholders, whether civil society, business or academia, to play a role in achieving these sustainable development objectives (Chicksen, Cole,

Broadhurst et al., 2018). More specific to the private sector, SDGs are a way for companies to reduce their negative impacts and at the same time increase their positive impacts on the environment and society (SDG Compass, 2015). Moreover, the SDGs cover the sustainable development scope of action of companies - such as poverty, environment challenges, education, health - and make the link between actions of businesses and global concerns. In addition, businesses can use the Global Goals of the 2030 Agenda as an "overarching framework to shape, steer, communicate and report their strategies, goals and activities." (SDG Compass, 2015, p. 4)

According to Francesco Starace, Group Chief Executive Officer of Enel, "from a business perspective, the SDGs are also a roadmap to shareholder value. The agendas are completely aligned. SDGs engagement is therefore part of all our future business models in one way or another." (2017) In other words, the SDGs are a compass and a map, proposing a long-term perspective going further than quick-win considerations (European Commission, 2019).

Finally, the SDGs are a universal language that will allow businesses to communicate and report effectively with their stakeholders about their impact and sustainable performance (SDG Compass, 2015).

SDGs linked to the agricultural sector

Linking people to the planet, food and agriculture are an essential element in achieving the Global Goals. And as FAO explains, well-fed children learn easier, lead a healthy life and this can at the end, lead to prosperous societies. Sustainable agriculture is therefore essential for present and future generations. In addition, agriculture being the world's largest employer and the largest economic sector for many countries, it is therefore clear that sustainable agriculture has great potential to ensure significant changes throughout the United Nations agenda (Food and Agriculture Organization of the United Nations, 2018). Food and agriculture are therefore key elements of the 2030 agenda (United Nations, 2019) and trying to achieve the objectives of sustainable development without strong sustainable agriculture is impossible (Farming First, 2015).

What are the SDGs linked to the agricultural sector? As concluded at the Stockholm EAT Food Forum, the Global Goals are all directly or indirectly related to food (Stockholm Resilience Center, 2016) and more than any other sector, the food sector is the "common thread" that

brings together the 17 objectives (Farming First, 2015). The main SDGs concerned with agriculture are as follows:

- **SDG 1 - Poverty Alleviation:** rural populations are the largest part of the population living in extreme poverty, accounting for 70% of the total. Growth in the agricultural sector is at least twice as significant in poverty reduction as any other sector.
- **SDG 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture:** it is the most directly related SDG to the sector studied. Its objectives are to eradicate hunger, ensure food security for all, improve nutrition and promote sustainable agriculture (United Nations, 2019). The SDG target 2.4.1 is entirely dedicated to sustainable agriculture. The indicator is as follows: "percentage of agricultural area under productive and sustainable agriculture". In addition to the environmental dimension, a farm cannot be sustainable if it is not economically viable, if it is not resilient to external shocks or if the well-being of farm workers is not considered and ensured (Food and Agriculture Organization of the United Nations, 2019).
- **SDG 4 - Education:** education has an important place in agriculture and it is essential to enable farmers to have access to certain skills, tools and knowledge for their development.
- **SDG 5 - Gender equality:** it is estimated that women farmers produce between 20 and 30% less than men, mainly due to differences in their access to resources. Given that women produce half of the world's food, if this gender inequality were to be addressed, it would contribute to reducing hunger in the world by 17%.
- **SDG 6 - Water use:** water demand will increase by more than 50% in 15 years and agriculture is already using more water than it would be enough to supply the world's population.
- **SDG 7 - Energy use:** energy demand is expected to increase by more than 50% in 2030 and most plantations require a large amount of energy.
- **SDG 8 - Economic growth and employment:** as mentioned above, the agricultural sector is the world's largest employer.
- **SDG 12 - Sustainable consumption and production:** an increase in per capita consumption is expected and at the same time, one third of the food produced is lost.

- **SDG 13 - Climate change:** by 2030, carbon emissions from agriculture will represent 7.5% of total emissions (Farming First, 2015).

2.3 Progress to date

As explained by FAO, measuring SDG indicators is a very complex and effort-intensive task. FAO has therefore decided to assist countries in measuring indicators and has set up a programme including regional training workshops, technical assistance missions and online courses. As a result, the number of countries measuring SDGs indicators under FAO's control increased from 29% to 42% between 2017 and 2019 (Food and Agriculture Organization of the United Nations, 2019). Indeed, as explained by the well-known ESG expert Robert Eccles, the biggest challenge for companies is the lack of indicators that enable to measure the real impact of corporate performance on the Global Goals (Kohn, 2019). But despite this, it appears that a large amount of data is limited for many indicators. Indeed, comparable data between countries for key indicators such as sustainable agriculture, women's access to land and food losses are missing. Data collections on indicators related to food and agriculture do not collect enough necessary information (Food and Agriculture Organization of the United Nations, 2019).

To give an overview of the progress made on the SDGs, the SDG Dashboard has been developed by the United Nations. This tool has for objective to highlight both strengths and weaknesses of each country about the 17 Global Goals. A dashboard exists for every area (Oceania, Sub-Saharan Africa, …) in the world. Due to the lack of data, dashboards are not all equally filled in, in terms of quantity and accuracy of the information. In appendix B, the dashboard for the OECD countries can be found, as an example.

What emerges from the tracking of progress made on the SDGs and from the 2019 SDG Dashboards, despite the lack of data availability, is that global progress is not sufficiently advanced if we hope to achieve the 17 objectives and the 2030 agenda. In 2019, it is reported that there has been progress on some Global Goals made globally over the last four years but not enough. For some goals, progress has been observed but is too slow and for the other goals, progress is even negative. Indeed, poor people and countries suffering before the efforts made are still suffering (Food and Agriculture Organization of the United Nations, 2019). Regarding sustainable agriculture and diets, challenges remain and persist, staying a significant factor of GHG emissions and biodiversity loss. A real evolution is needed in the efficiency of

agricultural systems and in new approaches to tackle the diets, obesity and sustainable food production challenges (United Nations, 2019). On the topic of hunger, the number of victims is still increasing and undernutrition is still a current issue for millions of children. In addition, a decline in public investment dedicated to agriculture has been observed while precisely, small-scale farmers require more support (United Nations, 2019).

This section can be concluded as follows: despite the current existing initiatives and efforts put in the achievement of the 17 Sustainable Development Goals of the UN 2030 Agenda, an immense progress still need to be done and as mentioned earlier, these goals can only be achieved with the support of every stakeholder.

2.4 The role of agriculture-related businesses in achieving the SDGs: businesses need SDGs and SDGs need businesses

The objective of this section is to introduce the role of companies in the achievement of the Sustainable Development Goals of the 2030 Agenda, in the agricultural sector. Indeed, given the immensity of the task ahead, the role of companies is more essential than ever. First of all, in the context of the realization of the SDGs in the agricultural industry, it is important to mention that the term "company" refers to small, medium and large-scale businesses, from input supply to production, post-harvest handling, processing, transport, marketing, distribution and retail (OECD/FAO, 2016).

The relationship between the achievement of the SDGs can be described as mutual: in fact, SDGs need businesses and businesses need SDGs (see figure 3).

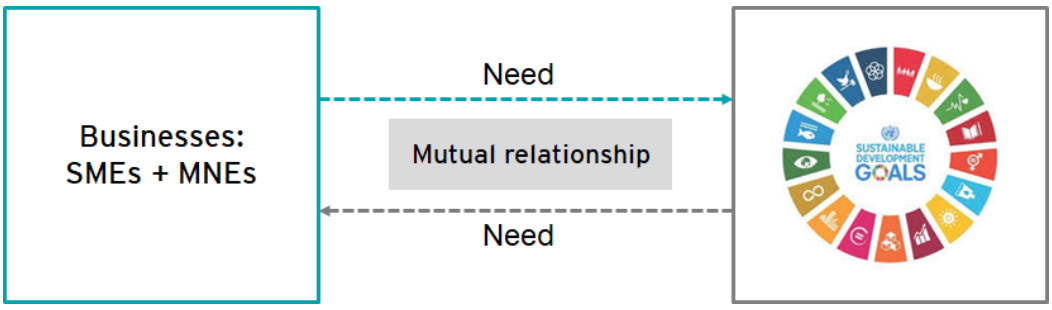

Figure 3: Mutual need between businesses and SDGS – Own compilation

At first, the implementation of the Global Goals is fundamentally in the hands of governments, but they could not be realized without the involvement of the private sector. As explained by

Ban Ki-Moon, the Former UN Secretary General in 2015, “business is a vital partner in achieving the Sustainable Development Goals. Companies can contribute through their core activities, and we ask companies everywhere to assess their impact, set ambitious goals and communicate transparently about the results.”

Companies involved in the agricultural sector are essential in the achievement of the SDGs (OECD/FAO, 2016). The first part of the relationship, namely “the SDGs need businesses”, is explained by different reasons. Indeed, businesses are playing a key role in their realization because:

(i) As the private sector represents an essential source of finance, businesses could unlock the required need of investment and greatly contribute to the SDGs in generating quality investments (OECD/FAO, 2016);
(ii) As businesses operate with resources and labor, they have therefore huge social and environmental impacts and efforts need to be put on this to mitigate the current negative impacts emerging from companies activities (The Shift, 2017). For the companies involved in the agricultural industry, they can contribute to the SDGs by generating employment and gathering expertise, with a stress that needs to be put on decent employment (OECD/FAO, 2016);
(iii) Finally, another way for businesses along the agricultural sector to contribute to the Global Goals is through innovation and technologies (OECD/FAO, 2016). To meet various social and environmental challenges such as resource scarcity, demographic change, climate change and others, this requires social and ecological innovation and companies play an essential role with their creativity in contributing to these innovations. Globally, it can be observed in a rising number of businesses an increasing involvement of innovation management already addressing social and environmental challenges (Altenburger, 2018).

Regarding the second part of the relationship, “businesses need SDGs”, it is explained by diverse reasons too. More and more business leaders are placing importance on Corporate Social Responsibility, recognizing it as a key element for the survival and success of a company in the 21st century (Maon, Lindgreen & Swaen, 2008). Indeed, companies cannot thrive in a society that fails. Companies’ growth is easier while the workforce is more educated, companies cannot function well in a sick society and thrive under unstable economic, ecological and social conditions (UN Global Compact, 2015). It is therefore in their own

interest to develop sustainable solutions to address the diverse challenges current societies face (Sachs, Schmidt-Traub, Kroll, Lafortune & Fuller, 2019).

Besides this, there exists a strong business case for sustainability. Indeed, it brings new business opportunities, contribute to gain in efficiency, drives innovation and improve reputation:

- In the employee side, a business known as sustainable attracts and retains more employees. This worths especially for millennials, which account for almost three quarters of the global labor;
- In a financial perspective, it has been demonstrated that there exist a link between financial performance and sustainability performance. A study from Oxford University and Arabesque Partners shows that high ESG (environmental, social and governance) standards leads to a decrease in companies' cost of capital and a positive correlation between the implementation of sustainable activities and stock price performance;
- Finally, a company active in sustainability is more trusted by B2C and B2B clients, leading to an increased willingness to buy its products. To illustrate this, Unilever has noticed that brands engaged in sustainability are growing twice more rapidly than other brands in their portfolio (Business and Sustainable Development Commission, 2017).

2.5 Market opportunities for the agricultural sector

The interest of SDGs for the private sector has been explained in the previous section, but what are the market opportunities?

At a global scale, the SDGs have the potential to generate $12 billion in market opportunities in the following four economic systems: food and agriculture, cities, energy and materials, and health and well-being. In addition, their realization could create 380 million new jobs (Business and Sustainable Development Commission, 2017).

In the agricultural and food sector, market opportunities amount to $2.3 trillion annually by 2030, through the generation of 14 major business opportunities. For each opportunity, a value range has been estimated, meaning that for example for reducing food waste in value chains, it could unlock $405 billion for the private sector (Business and Sustainable Development Commission, 2019). The opportunities identified for the agriculture and food sector are gathered in table 1 (Business and Sustainable Development Commission, 2017):

Reducing food waste in value chain	Forest ecosystem services
Low-income food markets	Reducing consumer food waste
Product reformulation	Technology in large-scale farms
Dietary switch	Sustainable aquaculture
Technology in smallholder farms	Micro-irrigation
Restoring degraded land	Reducing packaging waste
Cattle intensification	Urban agriculture

Table 1: Market opportunities identified in the food and agricultural sector (Business and Sustainable Development Commission, 2017)

To take an example, regarding market opportunities for food waste reduction, it is estimated that between 20 and 30% of food waste is lost. Much of this concerns post-harvest losses, which are easily avoided using technologies such as small metal silos. In India and Rwanda, farmers have seen their food losses reduced by 60% and their incomes increased by more than 30%. This is a real situation of contributing to the Sustainable Development Goals while seizing market opportunities and to take a considerable advantage for the business at the same time. But in order to make these market opportunities a reality, private sector companies must invest and make efforts as much as they do to achieve the objective in terms of market share and share value (Business and Sustainable Development Commission, 2017).

Chapter 3: Integration of the SDGs into Corporate Strategy

Now that the sections on the Agricultural Sector and on the SDGs have been introduced, it is time to look at the next objectives of this thesis. As a reminder, this work intends to discover:

(i) how businesses can integrate the UN Sustainable Development Goals into their strategy;
(ii) the emerging circular business models implemented within companies and their contribution to sustainability;
(iii) the potential **competitive advantage and value** the implementation of SDGs and of circular business models can bring to companies.

This chapter covers theoretically the first point of focus. Before going into the heart of this chapter, the corporate strategy concept will be defined. Afterwards, the lack of framework regarding the embedding of the SDGs in the strategy of companies will be highlighted. Finally, to evaluate how companies can embed the SDGs in their core strategy, two tools will be

analyzed, and then be confronted, in the practical part of this work, with reality, i.e. what is actually being done within companies.

3.1 Definition of Corporate Strategy

There is no single definition of corporate strategy. In 1984, Alain Charles Martinet proposed the following definition in one of his books:

> "Strategy refers to the set of decision criteria chosen by the core..." (management) "... to guide the activities and configuration of the company in a decisive and long-term manner... Strategy is "external" since it seeks to put the company in a position to integrate profitably into its environment... Strategy, a product of the strategic core, therefore maps out the paths for the simultaneous management of the institution and the social body, i.e. the governance of the company, based on the various dimensions of the organizational reality."

The author describes strategy as "the art of using the information that arises in action, of integrating it, of suddenly formulating action plans and of being able to gather the maximum of certainties to face uncertainty" (Siegel, 2008).

In brief, the business strategy is the most important element in management (Hax, 2019). It aims to guide the company towards its long-term actions (Viardot, 2011) and can be defined as a long-term business planning (Business Case Studies, 2019). In other words, a business strategy helps the company to reach the desired, future state it envisions (Reddy, 2018). A strategy must contain the following topics: the company's goals and objectives, the type of products or services it will offer, the customer target and its current and future needs (edX, 2015) and on which market it wants to sell to be profitable (Reddy, 2018). To build a good strategy, the company must align it with its objectives, the type of business it is and the environment in which it desires to grow (Reddy, 2018). Furthermore, a business strategy will help to make crucial decisions such as investment decisions, outsourcing, partnerships, mergers and acquisitions, … (Viardot, 2011), to prioritize projects and other activities and to allocate capabilities (resources and skills) to be profitable in the long run (Reddy, 2018).

3.2 Lack of framework

Achieving the SDGs is complex and it must be done in a short time period (Grainger-Brown & Malekpour, 2019). This is why organizations require clear guidance to meet the ambitions of these Sustainable Development Goals. However, a study conducted by Grainger-Brown & Malekpour in 2019 shows that very few tools are available for companies to take action on

SDGs. In fact, there are, but these are mainly related to the last step of the strategic management process - Ideation, Development, Implementation - and therefore to the implementation phase which consists in mapping and reporting the company's results. In addition, some tools are dedicated to the first step, Ideation, but there is a real lack of frameworks for the intermediate phase of Development of the strategic management process. In companies, having only tools for the last step of the process results in a late integration of SDGs, and that it is not present in the reflection about the company's values, culture and vision. This results in a lack of significant actions to contribute to a real social and environmental impact, i.e. the objective of the SDGs. The mapping and reporting steps are obviously important for a company but there is a real need of a set of tools and frameworks to help businesses to embed the Sustainable Development Goals in their strategy. This is crucial because this is the phase where most important decisions are made (Grainger-Brown & Malekpour, 2019).

A Frost & Sullivan and Globescan survey highlights the barriers or obstacles businesses can face addressing the SDGs. The biggest challenge according to business managers is the low level of social awareness with regards to the Sustainable Development Goals. Among the other barriers mentioned, there are the lack of clarity on directives to implement these goals, the lack of government commitment or policies, the lack of financial/capacity/technology resources or the lack of engagement from the company's leaders (Frost & Sullivan, Globescan, 2017).

These insights also show the top management's need of support to help them to achieve the SDGs. The support needed should come from governments and businesses could improve their SDGs integration through partnerships and through the sharing of good practices to use them as a roadmap to address the SDGs (Frost & Sullivan, Globescan, 2017).

The conclusion of these problems identified is that to ensure that organizations achieve the best the SDGs and contribute to a real transformation, it is essential for them to have frameworks at their disposal (Grainger-Brown & Malekpour, 2019), to eliminate this gap between the SDGs awareness between the top and the middle management, to have a better support from governments and a sharing of information between companies regarding their best practices to take action on the SDGs (Frost & Sullivan, Globescan, 2017).

3.3 Strategy and sustainability - Embedding SDGs in corporate strategy: theoretical tools

Before analyzing the different tools helping companies to integrate the Global Goals into their corporate strategy, it is first important to understand that each company can decide at which level it will integrate sustainability into its strategy. There are indeed different approaches to the implementation of sustainability, linked to the level of understanding and prioritizing the question of sustainable development in company's operations (Rudnicka, 2016). Aragón-Correa and Rubio-López (2007), Henriques and Sadorsky (1999), and Roome (1992) have identified three levels of embedding the sustainability in an organization. First, a company can adopt a defensive strategic behavior (limited integration). In this case, sustainability is narrowly defined, in a reactive way. The motivations of a defensive perspective are the compliance with legislation - also called "compliance strategy" - but not the objective to gain a competitive advantage. A second level of integration is the accommodative level, aiming to implement cautious modifications of internal processes. This level does not question the revenue logic of the company or its core business but the company embeds environmental and social goals in a large part of the business processes. The last level of integration is full integration through proactive strategies, incorporating environmental and social goals in the revenue and core business logic, with the objective to concretely contribute to sustainable development. Here, sustainability is present in all business processes and the full product range. In a proactive strategy, the firm strives to accomplish both business and sustainability performance (Schaltegger, Lüdeke-Freund & Hansen, 2012).

Knowing that, the next part of this section will present two tools/frameworks aiming to help companies in their sustainability journey.

a) SDG Compass

Selection criteria: this framework was selected because it has been established by the UN Global Compact, the Global Reporting Initiative and the World Business Council for Sustainable Development, i.e. institutions fighting for sustainable development, and the aim of this tool is to help companies embed the SDGs in their strategy to achieve the 2030 Agenda.

The first framework presented here was created by the United Nations Global Compact, the GRI and the WBCSD in 2015. This compass helps companies in many ways. First, it facilitates the understanding of the Sustainable Development Goals and shows their business relevance.

Second, it gives support to companies to assess their positive or negative impacts and to set their new business goals related to the SDGs and finally, it shows how to best communicate to stakeholders about their current and future impacts in an adequate way (Kauffman, 2015). In other words, the SDG Compass is a tool aiming to help companies to put sustainability at the core of their strategy. It is important to know that the primary recipients of this guide are large multinational businesses but SMEs and other organizations can use it and adapt it to their organization characteristics when necessary. Businesses can use it at entity level or more specifically at product, divisional or regional level (GRI, UN Compact, WBCSD, 2015).

The methodology proposed to integrate the Sustainable Development Goals into the business strategy is in five steps (see table 2):

Understand the SDGs	Define priorities	Set goals	Integrate	Report & Communicate
Becoming familiar with them + Grasp the business case	Identify positive and negative impacts to see which SDGs are the most company related Set strategic priorities -> understand business opportunities and decrease risks	Goals aligned with the defined strategic priorities Define KPIs Announce to employees & business partners the company's commitment	In the company's functions, governance and core business -> CEO, Board, top managers, culture	Based on the defined KPIs SDG Compass Reporting methodology Track progress made

Table 2: Five main steps to embed SDGS in the organization's strategy - Own compilation (GRI, UN Compact, WBCSD, 2015)

Step 1: Understand the SDGs

The first step helps companies to become familiar with the SDGs and to grasp the business case that relates to them (GRI, UN Compact, WBCSD, 2015).

Step 2: Define priorities

Step two consists in defining priorities and to do that, businesses need to assess their positive and negative current and potential impacts through their value chain to see which SDGs are relevant and then to set strategic priorities. To know the impacts of the entire value chain, it requests to map the value chain and then identify impact areas (see an example in appendix C). As mapping the value chain is not an easy task, there exist tools – some not related to SDGs such as the Life Cycle Assessment and some that can be applied to specific SDGs such as the WBCSD Global Water Tool. When priorities are defined, it helps companies to know where to focus their efforts. The objective for companies is to understand their most important business opportunities and reduce risks related to the SDGs (GRI, UN Compact, WBCSD,

2015). The WBCSD and DNV GL survey shows that when assessing their impact on the SDGs, 69% of the companies in the study focus mainly on the positive impacts they can have on them and much less (37%) on the negative impacts (WBCSD, DNV GL, 2018).

Step 3: Set goals

The third step of the SDG Compass is a critical step to ensure companies success. When the top management decides to align the business goals with the SDGs, it shows its commitment to sustainability. To ensure consistency, it is important that the goals are aligned to the strategic priorities set in step two. This will also ensure that the goals take into account not only the companies' own operations but also the entire value chain. In this step, it is essential to define key performance indicators (KPIs) because it will help the companies to drive, monitor and communicate the progress they make and for each goal, companies must define a baseline e.g. a particular point in time or period in time - and a level of ambition, ambitious goals driving better performance. A last recommendation of the SDG Compass for the third step is to announce the company's commitment by announcing the goals set. The announcement can engage employees or business partners inspired by the approach and can also be a good element to engage in a constructive dialogue with stakeholders external to the business (GRI, UN Compact, WBCSD, 2015). Still in the 2018 survey, companies that already have defined priorities have been asked to tell how much goals of the SDGs they identified. 29% of them answered less than 5 goals, 58% between 5 and 10 goals and 13% more than 10 goals. This shows that most companies are focusing their efforts on a specific subset of SDGs (WBCSD, DNV GL, 2018).

Step 4: Integrate

The fourth step is about "Integrating". The embedding of the goals defined and sustainability in all the company's functions, the core business and governance is essential to achieve them. In other words, an active leadership is needed from the CEO and top managers, to contribute to the organizational change, and the Board has also a role to play to ensure the integration of the SDG strategy. To give an example, the Board could integrate sustainability criteria in the recruitment processes of executives. Beside those people, it is also really important having dedicated teams (R&D, Supply Chain, Business Development, Human Resources) to integrate sustainable objectives in business operations, strategy and culture. To go further and address systemic changes, companies must engage in partnerships within its value chain or sector, or

with governments and civil society organizations. This idea of collaboration is directly linked to the SDG 17, Partnerships (GRI, UN Compact, WBCSD, 2015).

Step 5: Report and communicate

In recent years, there has been a growing demand of information from the stakeholders. Communicating and reporting about the company's progress made in achieving the SDGs is therefore very important, to understand and meet the need of its stakeholders. The SDGs are a universal language for businesses to report about their sustainable development performance and the SDG Compass encourages them in this way. The KPIs set in step three are important starting points to select the indicators for the reporting. To go more into details, the SDG Compass specifies a way to report on each SDG: first explain why and how the Sustainable Development Goal has been selected, then list the significant positive or negative impacts linked to the SDG. Afterwards, explain what are the defined goals related to the SDG and what is the level of progress made in these goals and finally, the strategies and practices established in the business to manage the impacts linked to the SDGs (GRI, UN Compact, WBCSD, 2015).

In addition to this methodology, the SDG Compass website provides two useful inventories. An inventory of Business Tools, mapping already existing tools to help companies assess their impacts on the SDGs, and an inventory of Business Indicators, mapping existing indicators that can be relevant when measuring and reporting about the progress made in the SDGs (GRI, UN Compact, WBCSD, 2015).

b) The McKinsey SDG Guide for Business Leaders

Selection criteria: this framework was selected because it has been created by McKinsey, one of the most famous strategic consulting firms in the world, which has worked with many companies and real-life cases to establish this tool.

The McKinsey SDG Guide is defined by the author as "A practical Guide for Business Leaders to working with the SDGs as a competitive factor". The purpose of this guide is, at the end, to show (i) how business value can be created through the Global Goals (see Chapter 5 of this paper) and (ii) how companies can execute a sustainability strategy based on these goals. The paper covers other topics such as the introduction of the 17 SDGs but this section will focus on what is of interest in this thesis, i.e. on the two points cited just before.

The Guide is organized around four main steps (see table 3) to undertake for developing and executing a successful SDG strategy.

SDGs assessment	Direction of the sustainability strategy	The organisation should be set up	Impact measurement
Which goals are relevant for the company ?	In two steps	1. CEO, Board, Owners 2. Key employees, customers, stakeholders 3. Top team performance 4. Company culture and vision	Implementation matrix & 6-step approach

Table 3: Four main steps to execute for a winning strategy - Own compilation (McKinsey & Co, 2019)

Step 1: SDGs assessment

First, the company should identify which SDGs are relevant to create value and to set a strategic decision. It is important to insist on the fact that not all Global Goals are relevant to the organization - it depends greatly from the industry.

Step 2: Direction of the sustainability strategy

To set the direction of the SDG strategy, the McKinsey SDG Guide offers the McKinsey Sustainability Compass, helping the company to identify from which type of strategic decision it can create business value. The guide sets 4 main strategic decisions (more details in Chapter 5), which are:

(i) Organizational performance: Ensure a dynamic and diverse organization;
(ii) Growth: Use sustainability to make the business grow;
(iii) Risk management: Ensure stabile and continuous performance;
(iv) Return on capital: Increase margins through cost cutting

Once defined, the company should establish which goals influence it and identify a strategic approach. This can be done based on the template created by McKinsey illustrated on figure 4:

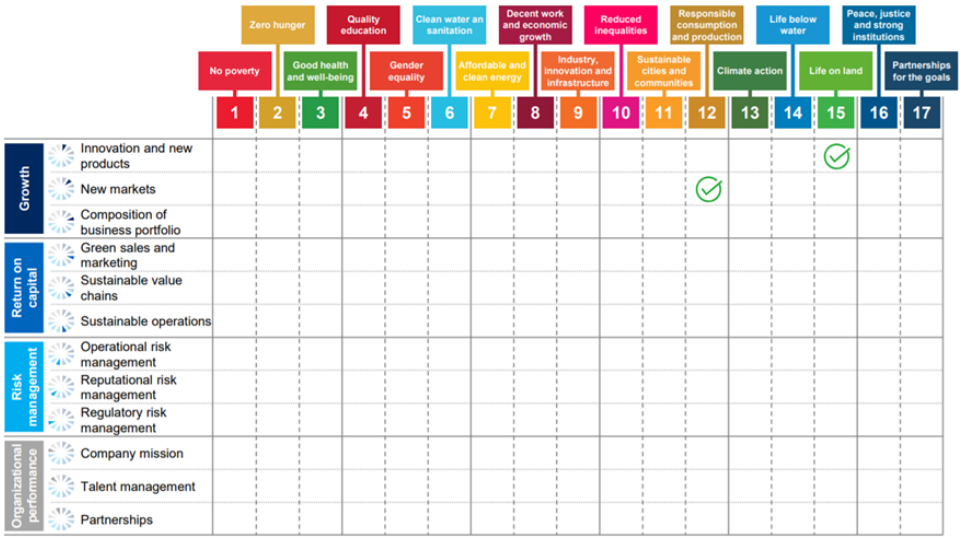

Figure 4: Template to identify SDGs influencing the organization and to develop a strategic approach (McKinsey, 2019)

Step 3: The organization should be set up to implement its SDG strategy

Organizations are advised to perform four actions in order to best implement their sustainability strategy:

(1) It is important that CEO, board and owners support the strategy to concretize it. It is therefore essential to put this strategy in their agenda;
(2) A strategy could not be achieved without the engagement of key employees, customers and stakeholders, considered as change agents. Not only the top management should be part of the strategy, but every key stakeholder;
(3) To unleash the energy and deliver on the SDG strategy, top team management should be concerned by this strategy;
(4) The last element is to share and make sure that the defined sustainability strategy is part of the company's culture and vision.

Step 4: Impact measurement

The company should measure the results of its actions undertaken to maximize the impact of working with the Global Goals and track the related effects. To simplify this part, McKinsey proposes to:

- First define the desired impact for each selected SDG and then to use the Implementation matrix (presented below). The matrix (presented in figure 5) is designed around two criteria: impact and ease of implementation. To measure the

impact, companies can assess the four previously mentioned elements: growth, risk, return on capital and organizational performance. Regarding the ease of implementation, elements such as required investment, complexity, time and organizational capabilities must be considered;

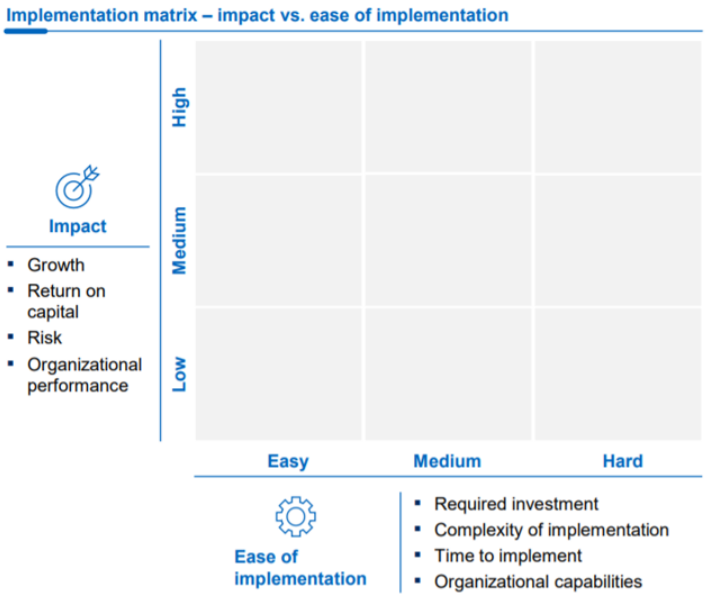

Figure 5: SDG Implementation matrix (McKinsey, 2019)

- Second, the organization should develop a timeline and designate a person in charge of each SDG-related initiative, to ensure its effective achievement;
- Third, based on the 6-step approach following, identify the impact of the achieved initiatives, track and then communicate on the created value.

McKinsey 6-step approach:

(1) Understand how the organization affects its surroundings and how the surroundings affect the organization;
(2) Define what is important for the firm based on the SDG initiatives;
(3) Understand and identify which Key Performance Indicators to use to measure the sustainable initiatives;
(4) Define a methodology for gain overview establishing baseline and tracking of development;
(5) Start tracking the impact created by the SDG actions;
(6) Shared value: identify how are the SDG initiatives creating value for your stakeholders and your shareholders.

c) Synthesis of the two frameworks

The frameworks proposed above are provided by different authors, which makes the synthesis of them even richer. Indeed, the first is a very general framework, intended first of all for multinationals but also valid for small and medium enterprises, proposed by the GRI, UN Compact and World Business Council for Sustainable Development in 2015, at the very beginning of the launch of the 2030 Agenda while the second has been developed in 2019 by McKinsey, and is based on real experience within companies. Thanks to these frameworks, similarities between the two models can be identified (see table 4) and bring a theoretical answer to the first focus point defined earlier, namely "How to embed the SDGs in the strategy of a company?"

Topic	**Synthesis**
SDGs related to the organisation	For both models, need to understand which goals are linked to the organisation and how it can improve impacts it has on them.
Set priorities	For both models, it is important that the company sets priorities and understands the opportunities linked to the implementation of the Global Goals.
Define SDG-related objectives (KPIs)	Both models advice to set goals aligned with the strategic priorities defined and KPIs to ensure they can be measured afterwards.
Spread the word	Both models suggest to spread the sustainable strategy to: 1. CEO, Board 2. Employees, stakeholders And integrate it into the organisation's culture.
Measure the impact and communicate	Both models recommend to identify the progress made and communicate about it

Table 4: Synthesis of the SDG Compass and the McKinsey SDG guide - Own compilation

The implementation of the SDGs in the organization strategy should therefore, based on the two studied models, follow the next methodology:

1. Identify the Global Goals that are relevant to the organization (all the SDGs are not always related to the business);
2. Define priorities and understand the opportunities to embed the SDGs in the strategy of the organization;
3. Define specific objectives (KPIs) that can be measured later;
4. Share with the CEO, the Board of Directors, the organization employees and key stakeholders the sustainability strategy. It should become an integral part of the company's culture;
5. Measure the progress achieved on the actions undertaken and then communicate about it.

Thanks to these two models and the synthesis of them, this chapter therefore answers theoretically to the first focus point of the thesis, following the 5 defined steps above. In the second part of this thesis, this methodology will be confronted to how companies really integrate them into their strategy.

Chapter 4: Circular Business models in the Agricultural Sector

This chapter covers the second focus point of this work: review of the emerging circular business models and assessment of their sustainability. This part will be organized as follows: first, business model and business model innovation concepts will be defined. Afterwards, the link between business model and sustainability will be addressed and finally, the most important part of this chapter will explore the notion of circular business models in the agricultural sector.

4.1 Business model and business model innovation concepts

The notion of business model first emerged with Peter Drucker, who argued that a good business model should answer questions such as who the key customers are, what is valuable to them and what is not, and has then gained popularity among academics and practitioners. Research demonstrates that the concept of BM is an essential part of companies' competitiveness, renewal, and growth and the concept can be defined as "the way companies do business". Business models are tools that managers use to design, implement and control their business and are the conceptualization of the way businesses can "create, deliver and capture value" (Tell, Hoveskog, Ulvenblad & al., 2016). The design of a business model is part of the company's strategy and is the step where the company decides on its business logic at strategic level and after that, the business model is implemented at the operational level across its business operations (Wikipedia contributors, 2019). The most well-known meta-model of BM is the Business Model Canvas, a representation of the BM composed of nine main elements: Value proposition, Customer segments, Distribution channels, Relationships, Key activities, Key resources, Key partners, Cost structure and Revenue model (Osterwalder & Pigneur, 2010).

With the integration of the SDGs into the strategy of a company, business model innovation (BMI) emerges from this in order to contribute to sustainability. Business model innovation consists in finding new ways of organizing business and follows two main objectives: first,

providing stability to business' activities and second, allow enough flexibility for change. The scope of a BMI can be changing an existing business model or creating an entirely new one (Tell, Hoveskog, Ulvenblad & al., 2016). Speaking about innovation, according to John Woodhead (the Guardian, 2011), companies having the desire to perform as a business but also while contributing to environmental and social benefits have to go through innovation, as it is crucial for the new world of sustainability. Indeed, Corporate Social Responsibility has an impact on innovation in processes, products/services and/or in business model of companies (Altenburger, 2018). Usually, innovation is associated with new products or technologies but there exist business model innovations, that can be much more profitable. Evolutions in customer behavior, globalization and technological breakthroughs open a lot of opportunities for new business models (Emprechtinger, 2018). According to the Harvard Business Review:

> "Drawing on the idea that any business model is essentially a set of key decisions that collectively determine how a business earns its revenue, incurs its costs, and manages its risks, we view innovations to the model as changes to those decisions: what your offerings will be, when decisions are made, who makes them, and why. Successful changes along these dimensions improve the company's combination of revenue, costs, and risks." (Girotra,& Netessine, 2014, para. 3)

Companies that manage well to rapidly and successfully move from a business model to a new one are able to build a sustainable competitive advantage and improve its sustainability performance (Geissdoerfer, Vladimirova & Evans, 2018). Indeed, business model innovation allows businesses to stand out from competitors and ensure the existence of the company (Emprechtinger, 2018).

In conclusion, it appears that both business model and business model innovation concepts are strongly related to the notions of business strategy and of business value (concept that will be defined later in this paper) (Tell, Hoveskog, Ulvenblad & al., 2016).

4.2 Business models for sustainability

With the growing pressure from their stakeholders for sustainability, companies need to reinvent the way they are doing business and need to innovate (Altenburger, 2018). The changes to be made to contribute to sustainability at the strategic level and in business processes require to reshape the business model frameworks (Rudnicka, 2016), as the business model is a key element of corporate social responsibility (Schaltegger, Hansen & Lüdeke-Freund, 2016). The UN Sustainable Development Goals need to be embedded in the strategy of the company

and as a firm's business model is part of the firm's overall strategy (Hamel, n.d), it will be impacted and must be subject to changes to best achieve the sustainable objectives that the company has set for itself. In other words, if a company aims to meet these goals, it cannot continue to do business as usual (Aikman, 2018).

Companies wishing to integrate the SDGs into their strategy and achieve these goals will need to adapt their business model. In the literature, we can learn about the link between business model innovation and sustainability. According to Schaltegger, Hansen and Lüdeke-Freund, a company's business model for sustainability "helps describing, analyzing, managing, and communicating (i) a company's sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organisational boundaries." (2016, p. 6)

This is where appears the concept of Sustainable Business Model (SBM). It emerges from the literature that a sustainable business model is a change of the usual business model with certain objectives added to it. The SBM integrates concepts and goals to achieve sustainability and embed sustainability in their value proposition and activities (Geissdoerfer, Vladimirova & Evans, 2018). Companies creating a SBM must incorporate a triple bottom line approach - approach that recommends that businesses accept to focus on social and environmental challenges, as they would do on profit (Kenton, 2019) - and take into account a wide range of stakeholders to help integrating sustainability into their business processes and activities (Bocken, Short, Rana et al., 2014). In addition, a sustainable business model is a key driver for competitive advantage (Geissdoerfer, Vladimirova & Evans, 2018). The final objective of designing a sustainable business model for organizations is to both improve the societal and environmental situation and bring economic profits for them (Rudnicka, 2016).

According to Yang, Vladimirova & Evans (2017), it turns out that sustainability and business model innovation are not always well integrated, because sustainability is considered as an "add-on" rather than an essential source of value for the business. However, integrating sustainability as a central element in business model innovation can bring new ways to create and capture value (this topic will be addressed in the next chapter). Organizations should consider sustainability as an opportunity for growth and not as "a challenge to overcome".

4.3 Circular business models in the Agricultural sector

a) Circular business model characteristics

In Europe, about 1.3 billion tons of waste per year are generated. Among these, 700 million tons come from the agricultural waste. As a reminder, according to the predictions, people is expected to grow by 2 billion by 2050. If the agricultural system and food production models do not change, impacts on climate change, higher temperatures, reductions in crop yields and pests and diseases will be emphasized. These challenges give birth to the opportunity for the development of circular economy, using innovative and disruptive technologies and profitable business practices (Toop, Ward, Oldfield et al., 2017). Efficient production is therefore essential, with the increasing demand for food and agricultural products (Wageningen University & Research, 2018). Given the various challenges facing the agricultural sector, actions are required to address them and ensure the sustainability of food systems, farmers and the environment and its natural resources. Many actions can be undertaken, such as reducing energy consumption, transitioning to zero-carbon sources, reforestation, waste management or ensuring sustainable agriculture. Some companies have therefore set up innovative and disruptive business models to try to counter these problems. In the society we are living in, the economic model is initially based on a "take-make-waste" paradigm, leading to environmental issues and a sustainability "dead-end", with the depletion of Earth's resources. A new economic model can replace this obsolete model: circular economy (Antikainen & Valkokari, 2016). Moving from the current linear economic model to the circular one could bring savings of hundreds of billions dollars in the European Union, but could also significantly decrease the externalities on the environment. This explains why this new economic model attracts the attention as one of the biggest switch towards sustainability. The move to circular economy depends on two elements: first, on the decisions of policy makers and second, on the introduction of circularity into organizations' business models (Lewandowski, 2016).

The circular economy concept has been first defined in the Ellen MacArthur Foundations report, and it is conceptualized as:

> "An industrial system that is restorative or regenerative by intention and design. This means pursuing and creating the opportunities for a shift from an "end-of-life" concept to Cradle-to-Cradle, from using non-renewable energy towards using renewable, from using toxic chemicals to their elimination, from much waste to eliminating waste through the superior design of materials, products, systems, and also business models." (Lewandowski, 2016)

This new economic model gives rise to Circular Business Models (CBM), a subcategory of business models, defined as “the rationale of how an organization creates, delivers, and captures value with and within closed material loops” (Antikainen & Valkokari, 2016). At the core of CBMs is how value retention is organized between and by organizations around the manufacturing of the product or the delivery of the service. To obtain the best value retention, i.e preserve and maintain resources as long as possible, collaboration is highly required to come to a collective business proposition (Jonker, Kothman et al., 2018).

Implementing circular business models implies to rethink products and services from the very beginning of their lifecycle to the end, to ensure making them more renewable, durable, reusable/repairable, upgradable or recyclable (Early, 2019). Integrated planning of the product or service lifecycle and value creation structure for each cycle of the production are needed to achieve economic viability and decreased environmental impacts (Nußholz, 2018).

The ReSOLVE model, developed by Arup and Ellen MacArthur Foundation, depicts the six business actions required to implement the principles of circular business models and the following table introduces the various circular business model types, based on the ReSOLVE model:

Business actions	Definition	Circular business model types	Explanation
Regenerate	Represents actions of moving to renewable energy and materials. Implies returning recovered natural resources to the environment and aims to reclaim, retain, and regenerate the health of ecosystems	Energy recovery	The conversion of non-recyclable waste materials into useable heat, electricity, or fuel
		Circular Supplies	Using renewable energy
		Efficient buildings	Locating business activities in efficient buildings
		Sustainable product locations	Locating business in eco-industrial parks
		Chemical leasing	The producer mainly sells the functions performed by the chemical, so that the environmental impacts and use of hazardous chemical are reduced
Share	The utilization of products is maximized by sharing them among users, through peer-to-peer sharing of private products or public sharing of a pool of products. Share actions can also represent the reuse of products as long as they are usable (second-hand), and prolonging their life through maintenance, repair, and design-enhancing durability	Maintenance and Repair	Product life cycle is extended through maintenance and repair
		Collaborative Consumption, Sharing Platforms, PSS: Product renting, sharing or pooling	Enable sharing use, access, or ownership of product between members of the public or between businesses.
		PSS: Product lease	Exclusive use of a product without being the owner
		PSS: Availability based	The product or service is available for the customer for a specific period of time
		PSS: Performance based	The revenue is generated according to delivered solution, effect or demand-fulfilment
		Incentivized return and reuse or Next Life Sales	Customers return used products for an agreed value. Collected products are resold or refurbished and sold
		Upgrading	Replacing modules or components with better quality ones
		Product Attachment and Trust	Creating products that will be loved, liked or trusted longer
		Bring your own device	Users bring their own devices to get the access to services
		Hybrid model	A durable product contains short-lived consumables
		Gap-exploiter model	Exploits "lifetime value gaps" or leftover value in product systems. (e.g., shoes lasting longer than their soles).
Optimise	Consists in increasing the performance of a product and removing waste in the production process and in the supply chain. Optimise actions may also be linked to leveraging big data, automation, remote sensing, and steering. The key element is that optimization does not require changing the product or the technology	Asset management	Internal collection, reuse, refurbishing and resale of used products
		Produce on demand	Producing when demand is present and products were ordered
		Waste reduction, Good housekeeping, Lean thinking, Fit thinking	Waste reduction in the production process and before
		PSS: Activity management/outsourcing	More efficient use of capital goods, materials, human resources through outsourcing
Loop	The loop business actions aim at keeping components and materials in closed loops, with priority given to inner loops	Remanufacture, Product Transformation	Restoring a product or its components to "as new" quality
		Recycling, Recycling 2.0, Resource Recovery	Recovering resources out of disposed products or by-products
		Upcycling	Materials are reused and their value is upgraded
		Circular Supplies	Using supplies from material loops, bio based- or fully recyclable
Virtualize	Utility is delivered virtually instead of materially	Dematerialized services	Shifting physical products, services or processes to virtual
Exchange	The exchange actions consist in replacing old materials with advanced non-renewable materials and/or with applying new technologies (3D-printing). It may also be linked to choosing new products and services	New technology	New technology of production

Table 5: The ReSOLVE model and overview of circular model types - Own compilation (Lewandowski, 2016)

Earlier, the Business Model Canvas, i.e. the representation of the BM composed of nine main elements has been introduced. It is now interesting to observe how these elements can be linked to circularity (see figure 6 for the summary):

(i) Value propositions and (ii) Customer Segment: the value proposition is a core element of the CBM. The company offer must provide the customer what he needs while reducing inconveniences he can face and providing additional benefits for him.

(iii) Channels: the biggest move to a circular model in terms of channels is through virtualization, meaning that value proposition is provided virtually (e.g. digital products like mp3 music) and the selling of the value proposition is done through virtual channels like online shops.

(iv) Customer Relationships: it is essential in circular economy to have relationships with the customer, to eliminate waste in a more effective way. It can be done through producing on order or engaging customers to vote for the products to be made. In addition, recycling can be promoted through social-marketing strategies.

(v) Revenue Streams: there are different revenue streams when speaking about circularity. For instance, for product-service systems, it can be pay per product or pay per service, subscription-based rental, … At the end, revenue streams directly depend on the value proposition. It can also be generated through the components/materials collected back that can be resold or restored and it can also come from energy captured from wastes.

(vi) Key Resources: in circular business models, resources can be both inputs or regenerated or restored natural capital. Another type of resources is virtualized materials, through digitalization.

(vii) Key Activities: activities are focused on increasing performance, product design, technology exchange or on remanufacturing, recycling, or lobbying.

(viii) Key Partnerships: in circular economy, there is an increased need for collaboration, allowing companies to receive advantages in supply, or receive support in research, product design, marketing or management. The aim is to obtain key resources to allow performing key activities for the value proposition.

(iv) Cost Structure: it is complex to identify how cost structure can enhance the integration of circular principles. However, when a company decides to change the cost structure, it may require additional organizational changes, e.g. in materials, energy consumption, staff behavior, etc., which in turn may lead to more circular changes in the business model. This process can start with the review of the cost structure. The cost structure is usually mentioned when describing the implications and potential benefits of circular economy. It may relate to cost savings related to product-service systems or inversion flow, production costs in agriculture, product development costs or investments.

The literature identifies two other areas linked to circular economy principles that should be part of the Business Model Canvas, in order to support the design of business models that are more circular:

(v) Take-Back System: as the core element of circular economy is the principle of closed loops, it involves the reuse, remanufacturing, recycling or redistribution of components or materials, which requires collecting back from consumers and reverse logistics. To promote a take-back system, the organization needs to incentivize return and use and the collection of already used products.

(vi) Adoption factors: the shift to circular business models is not always easy. The business can face some challenges, internal and external factors: internal factors are linked to the organization's capabilities to adapt to circular economy. The required capabilities are intangible like company culture, team motivation or knowledge. External factors are technological, economic or sociocultural issues (Lewandowski, 2016).

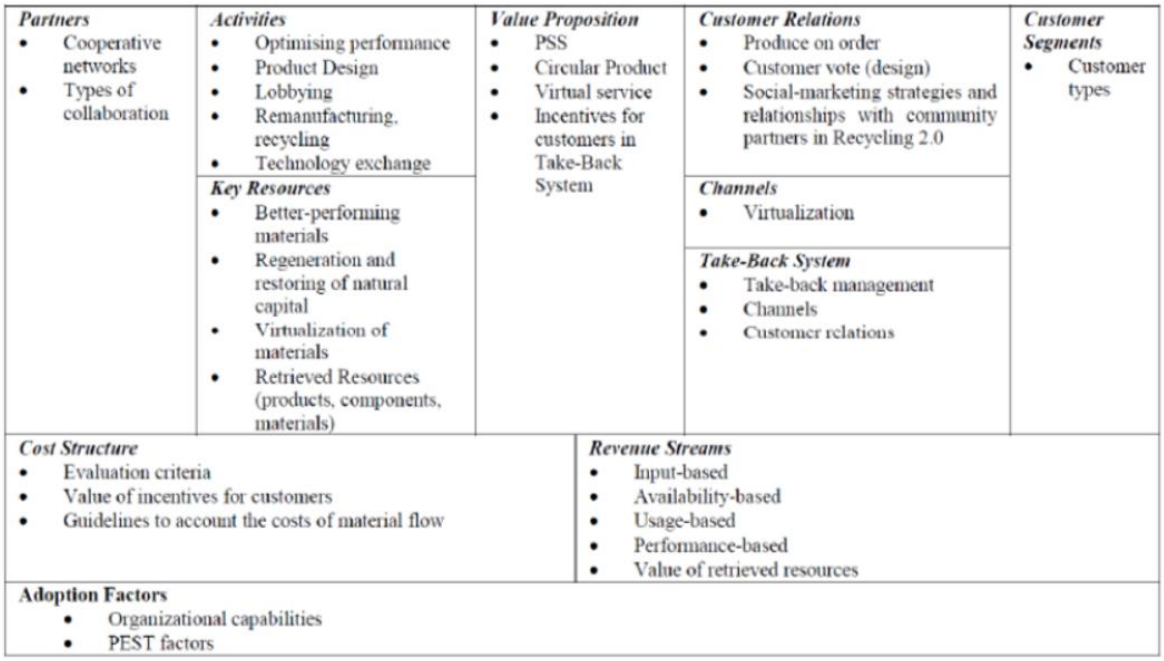

Figure 6: Framework of the circular business model canvas (Lewandowski, 2016)

b) Circular Business Models in the Agricultural Sector

Knowing what a circular business model is, more attention should be paid to CBM in the agricultural sector. Agriculture and livestock production are linear structure up to now, methods making use of a huge amount of inputs for which a considerable part is not even converted into products but ends as wasted outputs. To give numbers, the FAO reports in 2011 that waste due to inefficiencies cost around $1-2 trillion annually.

In an environmental perspective, the agricultural sector relies on natural resources (water, soils, nutrients and biodiversity) as primary inputs and sees its demand grow within a linear economy. The need of efficient and sustainable agriculture is therefore emphasized, and companies should therefore integrate circular economy principles. This will ensure for businesses to be more economic and sustainable in the long term (European Innovation Partnership, 2015). Circular economy in the agricultural sector focuses on producing while using the minimum quantity of external inputs, closing nutrient loops and limiting the negative effects damaging the environment (wastes or emissions). When looking at each step of the agri-food system, experts identify opportunities, from the primary production to the utilization or recycling of agricultural wastes. In other words, circular economy principles applied to the agricultural sector is source of many opportunities (Ward, Holden, White, et al., 2016).

Implementing circular economy aspects in agriculture means (i) preserve and enhance natural resources by balancing renewable capital flows, (ii) optimize (not meaning maximize) the yields of natural resources by closing the loop of products, components and materials, (iii) ensure effectiveness by designing out waste practices and (iv) know and understand the resources, interact with people and avoid wastes. In other words, applying such practices consists in using more wastes and residuals as resources and create circularity (joining the end of the cycle to the beginning). Circular principles must be implemented through the connectivity between farmers, businesses or sectors.

It is important to point out that a distinction must be made between circular economy and bio-economy, speaking about resource efficiency and agriculture. Indeed, bio-economy "focuses on the production and use of renewable biological resources and their conversion into value added products, such as food, feed, bio-based materials and bioenergy" and agriculture is at the core of this economy. The similarities lies in the fact that both bio-economy and circular economy needs innovation and new business models to exist, but bio-economy cannot be defined as sustainable by default and it can be linear or circular (The European Innovation Partnership 2015).

The principal element to consider when speaking about agriculture and sustainability is waste. In a linear model, waste is considered as something lost. In a circular model, agriculture waste appears to be ideal raw materials to create new or existing products by the mean of new processes. In other words, agricultural waste can be seen as valuable resources in the agricultural system. The word "waste" comes therefore non-relevant, when it is considered as

a resource, i.e. a waste with potential value. But what type of agricultural waste exists? Agricultural waste are generally unavoidable materials, coming from food production, typically like by-products, co-products or residues (see table 6):

Waste category	**Description**
By-product	Secondary product derived from a production process, manufacturing process or chemical reaction; it is not the primary product or service being produced.
Co-product	Co-products are derived as part of another process that brings value to the overall process.
Residue	e.g. manures, crop residues, leaves, peels

Table 6: Categories of agricultural wastes - Own compilation (Federal Highway Administration, 2017; Wikipedia contributors, 2019; Ward, Holden, White, et al., 2016)

By-products, co-products and residues are an important source of energy but also resources able to restore the level of organic matter in the soil (Picuno & Statuto, 2018). Indeed, livestock manure is revealed to be a good fertilizer for lands, thanks to its nutrients. Soil quality can also be improved with crop residues. Many examples, as illustrated on the figure below, demonstrate the potential for the sector to make use of agricultural wastes, in a circular economy (Ward, Holden, White, et al., 2016).

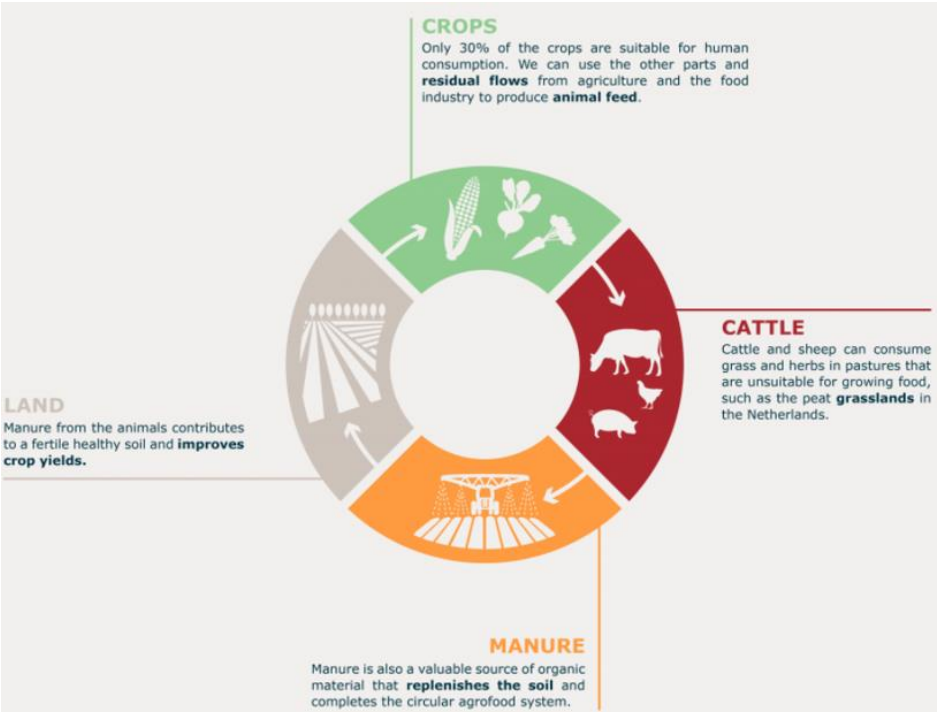

Figure 7: Circular agrofood system (Wageningen University & Research, 2018)

Implementing circular business models in agriculture is a great challenge. To ensure the good functioning of the system, not only farmers alone need to be involved in the process, but a such transition requires efforts from all parties, to overcome economic, legal, technical and social obstacles. Closed loops is about to become the new model on which agriculture is based, a model with freedom for a large range of business styles and earning models, and adapted to the relevant availability of resources and market (Wageningen University & Research, 2018). The question that may arise is about the way businesses can shift from resources flows and models that exist for decades to circular business models. According to experts, they need to start by analyzing the biggest impacts and opportunities across the products/services lifecycle. Based on this, organizations can apply circular principles and generate positive outcomes and tackle some of the current challenges the sector faces (Early, 2019).

Chapter 5: Business value and Competitive advantage

Knowing theoretically how SDGs and Circular Business Models can be implemented within organizations, it is time to consider how this can ultimately add value to the business. Indeed, highlighting the benefits is a good way to support the initiatives (Early, 2019). Initially, this chapter will cover the notions of competitive advantage and value in the business sense of the word. Following that, a section is dedicated to understand how value and competitive advantage can be generated through the implementation of SDGs and Circular Business Models.

1. Definitions

a) Business value

First of all, it is important to understand that the notion of business value is subjective and greatly depends on what the organization needs. To give an example, value for shareholders will be financial while value for an entrepreneur may be non-financial according to its personal goals. But at the end, all organizations pursue business-related activities, even if they are non-profit organizations (Invensis Learning, 2018).

The general definition of value is the following: "Value is the capacity of a good, service or activity to satisfy a need or provide a benefit to a person or legal entity" (Haksever, Chaganti & Cook, 2014). In the context of business, some authors identify business value when it is

created for investors, while others state that value can be generated not only for shareholders but for all stakeholders, meaning that value is not only financial, but it can also be non-financial (Haksever, Chaganti & Cook, 2014). Business value can be illustrated by tangible elements, such as monetary assets, stockholder equity, fixtures or utility and by intangible elements such as brand, recognition, good will, public benefit or trademarks (Invensis Learning, 2018).

b) Competitive advantage

Regarding competitive advantage, a such advantage exists when the company delivers the same benefits as competition but while having a cost leadership and/or having a differentiation advantage. In other words, an organization develops a competitive advantage when it has the resources allowing it to outperform its competitors. In this scope, resources can be human, access to scarce resources, access to specific power, … To go further, differentiation advantage is generated around different characteristics such as technology, innovation, product quality, brand reputation, durability or customer service, as long as it makes difficult for competitors to imitate the organization (Wen-Cheng, Chien-Hung & Ying-Chien, 2011).

2. How value/competitive advantage can be generated through the implementation of SDGs and CBM?

The aim of this section is to demonstrate that SDGs and CBM are sources of creation of business value and competitive advantage for organizations implementing them.

a) Value creation

In the McKinsey SDG Guide (2019), four business areas have been identified in which business value can be created with the implementation of the Global Goals in the organizational strategy:

Business area	Why?	Primary areas in which value can be created from SDGs
Organisational performance	Integrating the SDGs into the corporate strategy ensures leading to a diverse and dynamic organisation. In addition, it is now well-known that younger generations but also a growing part of employees are willing to work for organisations that have set a clear mission with sustainability as an essential part.	Develop value-creating partnerships with other organizations and stakeholders to achieve the full value potential of the SDGs
		Attract, maintain, and develop the best talent through inclusive and sustainable employee and education regulations
		Build a clear mission through the SDGs – something that the employees increasingly care about
Growth	The Global Goals are shaping existing markets and driving new markets, full of growth opportunities.	Develop sustainability-related products, technologies, and new business models
		Understand and develop strategies to create sustainability-related opportunities in new market segments or geographies
		Let sustainability Guide acquisitions and divesture decisions on a portfolio level
Risk Management	With the embedding of sustainable objectives in the organisation, stabile and continuous performance is ensured. Indeed, with more than 190 countries having agreed to engage in the SDGs, legislative measures can be used or reputational issues can be encountered.	Mitigate regulatory risks and create opportunities by being at the forefront of new legislation
		Reduce reputational risks and receive positive appraisal for sustainable actions
		Handle operational risks (from resource scarcity, climate changes, or societal risks)
Return on Capital	Companies' margins can be increased thanks to cuts in companies' costs : pursueing sustainable goals can contribute to an optimised consumption of water, energy, raw materials and therefore lead to costs reduction.	Demand higher prices warranted by marketing sustainable characteristics
		Reduce costs by optimizing resource management and environmental impact in the value chain
		Reduce operational costs through improved internal resource management (e.g., water, waste, and energy)

Table 7: Business areas and primary areas where business value is created through the implementation of the SDGs - Own compilation (McKinsey, 2019)

Regarding CBMs, the benefits of implementing a circular agricultural production system, i.e. with a "cradle-to-cradle" approach, are multiple: first, circular agriculture is a way to reduce greenhouse gas emissions, delivering significant results for the climate, more than only focusing on making more climate-friendly agricultural processes (Wageningen University & Research, 2018). Moreover, in terms of economic benefit, circularity decreases costs through the use of waste resources and more sustainable resources and opens new income streams and jobs, through the use of new resources and entering on new markets. In addition, benefits can be generated by the diversification of the practices and the link creation with new sectors and enterprises. Finally, implementing a circular agricultural model helps, through the implementation of more resource-efficient business models, to mitigate the risk from commodity prices and changes in policy (The European Innovation Partnership 2015). As a conclusion, circular economy principles in agriculture offers benefits in an economic, social and environmental point of view (Ward, Holden, White, et al., 2016).

A company developing a circular business model has the opportunity to create commercial and non-commercial value and reduce costs thanks to an improved efficiency and use of resources (Nußholz, 2017). According to Ünal et al. (2019), circular business models can generate value based on the following business practices (see figure 8):

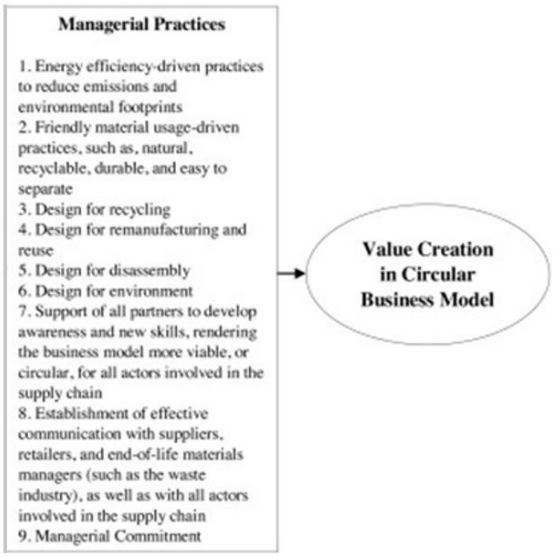

Figure 8: Value creation from CBM managerial practices (Ünal, Urbinati, Chiaroni et al., 2019)

An organization needs to generate gains to be sustainable, and should therefore create and capture value to drive benefits. Four types of value are identified (in table 8), through the implementation of CBMs, covering tangible but also intangible gains for multiple stakeholders (e.g. manufacturers, customers, society, environment). The table below develops the four types of value creation, while specifying if financial gains are direct or indirect.

Type of value	Description	Financial gains
Sourcing value	- It refers to all types of **direct cost reductions** and savings that can arise from closed loop business practices. - **Additional revenue** can be generated by gaining new market share with refurbished products or recycled materials. - **Risk of supply disruptions** can be **reduced** by adopting closed loop supply chains. For instance, the recovery of used materials provides a sourcing opportunity, enabling the manufacturer to hedge against fluctuating commodity prices.	Direct
Environmental value	- Companies can improve their ecological footprint by closing the loop of materials. - Environmental value refers to two types of benefits that result from these improved footprints: **ease of compliance with regulations** (as means to maintain business legitimacy) and **improved green corporate image**. - **Without communication** to the customers and to the stakeholders, this business value is **not created**.	Indirect
Customer value	- It refers to **increased customer loyalty**, **better customer satisfaction** and **superior brand protection**. - Customer value can be inducted via three mechanisms: serving the customer better, offering improved product characteristics and generating a good corporate image (e.g. corporate responsibility). - For instance, when setting up a reverse supply chain, the company can offer certain services to its customers: facilitate the return of products, turn their products into new products and offer new range of products or environmentally friendly products.	Indirect
Informational value	- It refers to the **valuable data on production and supply problems, failure rates, useful lifetime of the product, consumer complaints and usage patterns**. - This data can be acquired more easily in a closed loop system. It can be used to improve different processes (product design, production, etc.).	Indirect

Table 8: Types of created value through the implementation of CBMs (Wautelet, 2016)

b) Building a competitive edge

The link between Corporate Social Responsibility (CSR) and therefore the SDGs - they are directly related to CSR as they provide a powerful guide for companies to engage in it (Impakter, 2018) - and competitive advantage exists if the company coordinates the response to social, environmental and own needs and brings a mutual value for both the society and the company (Porter & Kramer, 2011). According to Porter & Cramer (2006), CSR can be a source of innovation and new business opportunities, leading to a competitive advantage. Moreover, CSR pushes the company to learn and increase its knowledge, helping it to improve its processes and its structure, also leading to a competitive positioning (Porter & Cramer, 2006).

Important factors contributing to the creation of a competitive advantage are key relationships, innovation, reputation and strategic asset (C. Ljubojevic, G. Ljubojevic & Maksimovic, 2012). For companies developing a strategy embedding sustainability, they are able to build best relationships with their stakeholders (C. Ljubojevic, G. Ljubojevic & Maksimovic, 2012), reduce the fluctuations of personnel and contribute to a better image of the company (Cegliński & Wiśniewska, 2017).

Implementing sustainability in its strategy can contribute both to a form of differentiation for the company (Hillman & Keim, 2001) and to a reduction in costs (Verles & Vellacot, 2018). The differentiation may emerge for example from socially responsible actions implemented by the company, establishing the business' presence in people's minds (Luenendonk, 2016). The cost reduction may appear from many sources. For instance, from energy savings and reduced CO_2 emissions or by reducing the after sales costs thanks to an improved relationship with its suppliers and quality of goods, or even a reduction of Research and Development costs through improved interactions with the stakeholders or reduced labor costs by an increased loyalty of the workforce (Wolfgang & Holst, 2017). The possibilities to strengthen its competitive positioning against competitors are real and build strong incentives for companies to engage in the Corporate Social Responsibility and thus in the Sustainable Development Goals (Du, Bhattacharya & Sen, 2010).

On CBMs side, this kind of model will generate a greater competitive advantage in the coming years because they "create more value from each unit of resource than the traditional linear 'take-make-dispose' model." Transitioning to circular businesses "promises to deliver substantial macroeconomic benefits as well as open up new opportunities for corporate growth.

The materials saving potential alone is estimated, according to the World Economic Forum in 2014 at over a trillion dollars a year (globally)" (Jonker, Kothman et al., 2018). As explained by the World Economic Forum, CBMs are not only able to generate business value but building a competitive edge, driven by a higher customer value and higher contribution to sustainable development (Fraccascia, Giannoccaro, Agarwal et al., 2019).

In the future, there will probably be new sources of value and competitive advantage for companies, such as the contribution to societal development for the common good. Indeed, showing their social involvement and citizenship is likely to become an important determinant of competitive advantage. Furthermore, another potential source of competitive positioning is the ability of businesses to collaborate with others to increase the impact they aim to have on the society and on the environment (Chicksen, Cole, Broadhurst et al., 2018).

To conclude this section, the aim was to theoretically demonstrate that embedding the UN Sustainable Development Goals in the strategy of an organization and developing circular business models could generate business value and competitive advantage, which has been done by different authors. The conclusion, saying that SDGs and CBMs are leading to that, can therefore been drawn (see illustration on figure 9). The interest of the practical part will be to demonstrate how these can effectively generate benefits in the agricultural sector context.

Figure 9: SDGs and CBMs source of creation of business value and competitive advantage - Own compilation

Part II. Practical Analysis

Chapter 6: Research Methodology

6.1 Purpose of the qualitative analysis

As a reminder, the main objective of this research is to answer three main questions:

(i) how can businesses integrate the UN Sustainable Development Goals into their strategy;
(ii) the emerging circular business models implemented within companies and their contribution to sustainability;
(iii) the potential competitive advantage and value the implementation of SDGs and of circular business models can bring to companies.

In order to analyze the research questions in a concrete and comprehensive way, it is therefore needed to collect data from companies involved in the agricultural sector that have embedded the Sustainable Development Goals in their strategy and developed circular business models.

6.2 Data collection

After having performed a literature review, it appears that little has been done on the subject and it is therefore interesting to fill the gap. In the context of this exploratory research, primary data collection is needed as it helps to gather opinions and information about the subject covered. Therefore, a qualitative analysis through interviews is selected. The research method that will be used to explain the problem is a case study method, a qualitative method known to contribute to the knowledge of individual, group, organizational, political, social and related phenomena (Yin, 2014). The goal is not to study the functioning of an entire organization but to study a particular issue or situation. One advantage of case studies is that it allows generalization when the researcher decides to investigate through multiple cases as it can lead to a certain form of replication (Noor, 2008). The cases of this study are chosen according to a replication logic, in order to see if similar results are reflected in both cases. The case study research method is relevant when three criteria are met: first, the research question starts with “how” or “why”. Second, the investigator does not have control over the events and third, it focuses on contemporary events (Yin, 2014). The research questions of the thesis “*How to embed the Sustainable Development Goals in the strategy of a company? Review of circular*

business models and assessment of their sustainability and how SDGs and CBMs enable to create business value and competitive advantage?" meets the three criteria. Conducting a case study research method is therefore meaningful in the framework of this thesis.

In order to gather opinions and information in an open environment, the choice of conducting qualitative analysis through individual interviews is made, as it enables each interviewee to express his/her opinions or ideas. The interviews are conducted based on semi-directive interviews, to let the participants express themselves but while ensuring providing a certain structure to the interview. In addition, since all the participants are not all located in Belgium, the interviews have been conducted via Skype or calls and have been, with the interviewees' approval, recorded. Afterwards, transcriptions have been made and can be found in Appendix D, allowing an easier analysis of the data collected.

Regarding the interview guide, it has been organized around the three main topics covered in the literature review, namely the three research questions topics: the SDGs integration in the strategy of the company, the circular business models implemented within the company and finally, the value and competitive advantage potentially generated by the SDGs and CBMs.

6.3 Limits of the data collection

The number of interviews conducted in the context of this research is limited due to various reasons. First, only companies meeting the following three criteria were relevant to conduct interviews with:

- The company must be a player within the agricultural sector;
- The company must have embedded the UN Sustainable Development Goals in its strategy;
- The company must have implemented circularity within the business.

Second, to collect qualitative and accurate information about the company, this requires having interviewees with a certain level of responsibilities within the entity, meaning that it is sometimes difficult to get answers from them, as they often do not all have availabilities. Finally, the target companies are operating in a highly competitive sector and may have internal rules preventing people to share information about their strategy. One of the interviewees asked to remain anonymous and to not mention the company name.

Chapter 7: Description of the interviewees

Five interviews have been conducted among five companies. As seen in the literature review, in the context of the realization of the SDGs in the agricultural sector, involved companies are businesses from input production, post-harvest handling, processing, transport, marketing, distribution and retail. Therefore, companies operating in the agricultural sector alongside the food value chain but of different core business have been selected, to enrich the collection of data related to SDGs and circularity. The total duration of the interviews amounts to 243 minutes.

The interviewees are introduced in table 9:

Name	Role	Company
Margarinos-Ruchat, Bérengère	Chief Sustainability Officer	Firmenich
X	Environment and Sustainability Communications Manager for Europe, Middle East and North Africa	Anonymous
Weiler, Philippe	Head of the Sustainability Programme	Lidl
Tasmowski, François	Director for Sustainable Development for the group	McCain
Lederer, Thomas	Sustainability Reporting and Governance Manager	Mars

Table 9: Presentation of the interviewees and their role within the company – Own compilation

The companies are introduced in table 10:

Topic	Firmenich	Anonymous	Lidl	McCain	Mars
Context of the company	Firmenich, family firm with 8,000 employees, is a B2B company, present in the value chain of many brands. Products: flagrance and flavors.	One of the world's leading players in the agri-food industry.	Lidl Group, a multinational company, is the largest supermarket in Europe and the fourth worldwide. Active in 30 countries and 300 stores in Belgium.	McCain is a family multinational company operating in the food industry, working with 20,000 employees and 44 plants around the world. Directly working with 4,000 farmers.	Mars is a family multinational company operating in the food industry, present in more than 100 countries.
Clients	L'Oréal, P&G, Unilever, Nestlé, … They are all implementing the SDGs.	Retailers	The consumers	Retailers + fastfoods	Retailers
Sustainability context	Since the launch of the SDGs, Firmenich is familiar with the Global Goals (worked with the Swiss government for they deployment).	- Sustainability strategy around the CSV (Creating Shared Value): create value for all the stakeholders. Defined three pillars around which the sustainability strategy is defined and SDGs integrated into the different pillars. Within the pillars, different initiatives. - One of the main commitments: zero CO2 emissions by 2050.	- The sustainability strategy is different from one country to another. Lidl Belgium has a highly developed strategy in terms of sustainability and circularity. - 2020 CSR strategy (defined in 2016) based on 5 pillars and 50 sub-themes. This is an « on top » strategy, part of the business strategy. - Lidl Belgium signed the SDGs charter at the level of the Belgian government: official commitment.	- CSR strategy based on four pillars	- Sustainability strategy based on 5 SDGs

Table 10: Presentation of the companies – Own compilation

Chapter 8: Discussion

Now the interviewees and companies introduced, it is time to answer the three research questions. For each research question, a summary of the content of the practical research, based on the interviews conducted, will be presented in a table, allowing an easy comparison between the different companies' information and a comparison between the literature review and the practical research will be made. Afterwards, some enriching points mentioned in the interviews will be highlighted.

Research question 1: How can business integrate the UN Sustainable Development Goals into their strategy? (See table 11)

Topic	Firmenich	Anonymous	Lidl	McCain	Mars
Critical steps to the SDGs integration	Step 1: **Mapping the SDGs on a materiality matrix** to ensure the sustainability strategy is aligned with the business strategy and meets the business requirements. Step 2: By using the SDG Action Manager tool (UN Global Compact), **selection of the SDGs** relevant to the company and on which to report (12).	Step 1: **Mapping the SDGs with the three pillars** defined in the sustainability strategy (tool: matrix). The goal is to map which activities and commitments are interlinked with and are impacting the SDGs. No selection between the SDGs, they align on the 17, but work on them at a different level.	Step 1: To define the strategy around the SDGs, **two approaches** have been considered: (i) analysis of the activities of Lidl and try to make links with the SDGs. (ii) Analysis of the 17 SDGs and identification of areas in which Lidl is not contributing yet but will consider to contribute. Based on this, they defined new objectives. Materiality matrix developed in 2020 (not in 2016) with the 50 sub-themes (axes: Lidl impact and pertinence for stakeholders). Step 2: **selection of the most important SDGs** based on a **dialogue with stakeholders**.	Step 1: **Mapping** of the greatest social and environmental impacts and link with the SDGs. Step 2: **Prioritization** of the most relevant SDGs for McCain, in line with the strategic pillars and with the different commitments of the sustainable strategy.	Step 1: Through a **materiality study**, analysis of the 17 SDGs on which Mars has an impact (positive or negative) and **choice** of 5 SDGs relevant to the company. Step 2: Stress put on **understanding the 5 SDGs**. Mars has very outsourced supply chains and has a poor knowledge of the field. Step 3: Assessment of the 5 SDGs to see where the **problems** are and where it is critical. Step 4: Developing **plans of action** to solve problems. **Prioritization** of the most critical issues to develop plans around them.
To implement the SDGs among operations	All the employees are **trained** on the subject of SDGs, they all know what it is about. According to the interviewee, if there is no training, SDGs cannot be implemented in the operations. In addition, **sustainability champions and a team of young people have** been appointed to push the SDG strategy in the company culture.	Sustainability strategy and SDGs are spread among the company **from the top management to the down** (very last employees). This is how the company usually do.	**Rem**: not spreading the SDGs but spreading the sustainability strategy and its objectives. 1. General director: sponsor of the entire sustainability strategy 2. Within each department, each manager takes a pillar for itself 3. For each of the 50 objectives, one person responsible **Ambassadors, sponsors, responsible people**	The integration into the operations, the processes and the culture is done through the specific commitments, not at the SDG level. The SDGs have been used to identify and map the commitments of the sustainable strategy but they are not used as a language in the operations. No training on the SDGs except for the C-level.	A lot of things are being done: - New strategic slogan - Integration of sustainability in the corporate strategy (redefined every 5 years) - Lot of communication by the management and by the shareholders (the family) - Ambassador programs **Rem**: disconnection between the operations and sustainability plans.
Track progress	They defined a 2030 strategy around the SDGs and developed KPIs aligned with the SDGs to translate objectives and facilitate progress measurement. Reporting every year on the progress made.	Clear KPIs/targets defined: the objectives they want to achieve and a way to measure progress on each. Reporting every year and progress is reported down from a global perspective, a regional perspective and a market perspective. Different reporting frameworks depending on the commitment.	In the report, for each objective (not SDG but company objective): wording of the objective, actions done, result, progress, timeframe and status (ongoing, given up). They do not measure progress made on SDGs but on the company objectives.	KPIs and metrics with trackers in place for each commitment. Each region has its own sustainability roadmap with commitments specific to the region. Reporting on the progress every three months regionally and at the group level. KPIs are part of the executive bonuses.	Indicators defined for each of the 5 SDGs. Measurement of the progress made every year. **Rem**: easy to define indicators for environmental aspects but very complex on social aspects such as poverty and human rights. The choice of indicator is a political choice within the company.

Table 11: Analysis of the answers given for Research Question 1 – Own compilation

Through the various interviews conducted, several similarities and discrepancies emerge in the way SDGs are integrated into the company's strategy:

1) First, the five interviewees mentioned in step 1 of the integration of the Global Goals into the strategy the use of a mapping or materiality study or matrix, in order to identify the corporate activities and commitments linked to the SDGs.

At this stage, Lidl brings a very interesting information, not covered in the literature review: there are two approaches to connect the SDGs with the corporate strategy: the first one is the easiest and the most implemented one among companies and consists in first analyzing the activities of the company and then link them with the SDGs, i.e. the approach mentioned by all the interviewees. But there is another way consisting in first analyzing the SDGs and then identify those for which the company is not contributing yet but consider to contribute, leading to the definition of new activities/commitments that were not established before the analysis of the Global Goals. The second approach is clearly a more proactive one, as it brings changes to the initial strategy of the company. On the Lidl side, they decided to implement both approaches, in order to have a robust and proactive analysis of the activities and SDGs to be implemented.

2) In a second time, four out of the five companies have made a selection of the most relevant SDGs they will focus on. The only company which decided to work on the 17 Goals is Anonymous, but it has specified that they are working on all the Goals but at a different level.

Here again, Philippe Weiler (Lidl) mentions an interesting approach: to define which of the 17 SDGs are the most important, they did this through a dialogue with Lidl’s stakeholders. To illustrate this, he gave an example of food wastage: at the Lidl scale, food wastage “only” represents 10% of the total food wastage along the whole value chain. So for Lidl, this is not a priority at first view but they decided to work on this objective as it is a very important element to consider for the stakeholders. So Lidl did not only consider its business but also the stakeholders priorities.

The two first steps identified here are linked to the first step mentioned in the literature review (in the synthesis of the SDG Compass and McKinsey tools), i.e. identification of the SDGs related to the activities of the company and selection of the most relevant ones.

Within Mars, three other steps have been implemented: first, they paid attention to really understand the SDGs they selected, having a poor knowledge of the field. Once well understood, for each SDG, an assessment has been made to identify the most significant and critical problems. Finally, based on the understanding and on the identification of the problems, plans of actions have been established and prioritized. These steps are linked to the second step identified in the literature review, namely "define priorities and understand the opportunities to embed the SDGs in the strategy of the organization".

3) Now the SDGs identified, it is important to ensure their implementation in the operations of the company. On this topic, different approaches have been mentioned by the interviewees:

For Firmenich, Mrs. Magarinos-Ruchat insists on the fact that without training all the employees, sustainability cannot be implemented in the operations of the company. Therefore, they are training all the 8,000 employees. Moreover, they appointed sustainability champions and a team of people to push the SDG strategy in the company's culture. For Anonymous, the only approach is to spread the SDGs from top to down. Within Mars, the strategic slogan has been adapted to the sustainability strategy established and a lot of communications by the management and the shareholders (Mars family) is made. In addition, they have implemented ambassadors programs.

Regarding Lidl and McCain, they insisted during the interview on the fact that they do not try to spread the SDGs among the operations and among the company culture but the sustainability strategy, meaning the pillars they identified and their respective initiatives/objectives. For Lidl, the means put in place to spread the sustainability strategy and ensure its effective implementation are various: first, there is the sponsor of the sustainability strategy but also within each department, each manager has been appointed with a specific pillar. Moreover, for each of the 50 objectives they defined in their sustainability strategy, one person is responsible for one objective. This last approach is suggested in the McKinsey Guide: "designate a person in charge of each SDG-related initiative to ensure its effective achievement". For McCain, there is no training directly related to the SDGs except for the C-level.

These different means put in place are linked to the third step identified in the literature review, which promotes to spread the sustainability strategy to the CEO/Board, the employees and stakeholders and integrate it into the company's culture. Obviously, each company interviewed

in the framework of this thesis has its own approach of spreading the sustainability strategy and at a different level.

4) The last step of the integration of the SDGs into the business strategy is related to progress measurement and communication about it. Each of the companies have defined KPIs/indicators/metrics related to objectives they want to achieve. KPIs help to measure and track progress made on these objectives (directly the SDGs or objectives defined by the company based on the SDGs in their sustainability strategy). Four companies out of the five are measuring and reporting progress once a year. For Anonymous, progress is reported down from a global perspective, a regional perspective and a market perspective. In addition, depending on the objectives, they have different reporting frameworks. For McCain, each region has its own sustainability roadmap with objectives specific to the region. This is the only company reporting more than once a year, specifically every three months regionally and at the group level. At McCain, KPIs are related to the executive bonuses.

At Mars side, Thomas Lederer reported during the interview the difficulty of defining indicators. For environmental aspects, the task is easy but in a social perspective (e.g. poverty and human rights), this is much more complex. According to him, the choice of indicators is political within the company. Indeed, there are two groups of people in the choice of indicators: on the one hand, those who want to measure as closely as possible the reality of the situation (i.e. those who really want to solve the problems) and on the other hand, those who push for defining indicators easy to measure and on which it is easy to make progress (i.e. those who want to improve the company's reputation). Therefore, depending on the type of people who define the indicators, the choices will be very different. To give an example, on the subject of poverty, they defined an indicator that is not relevant but for which it is easy to make progress: the number of people they help to improve their living conditions. To do that, they sent people in Africa to train people in towns on how to manage their budget. This kind of programme is very light in terms of impacts but will easily reach thousands of people.

Moreover, Mr. Lederer mentioned a tension with the local relevance of an indicator: the more local the indicator, the more relevant. But they need to have indicators easy to consolidate at the group level. And when indicators are chosen because they are easy to use, relevance is not applicable.

Finally, it is important to have robust indicators (which is not easy as mentioned just above) to create the case for change and link them to the performance and bonuses of the employees. With performance related to sustainable indicators, it will motivate them to change their way of doing business. For the moment, their performance is related to financial performance. For instance, when a buyer is asked to buy cocoa or rice, they will buy the cheapest ones. But they would like to add a sustainability dimension to their buying behavior.

This part, i.e. measuring progress and communicating on it is similar to the steps 2 and 5 introduced in the literature part.

To conclude the first research question, "How to embed the SDGs in the strategy of a company", both theoretical and practical researches align on the following critical steps to ensure a good integration: (i) identification of the SDGs related to the activities of the company and selection of the most relevant ones. (ii) Spread the sustainability strategy within the company operations through promoting it into the company's culture, designating ambassadors, sponsors, responsible people or training employees. (iii) Define KPIs/indicators/metrics allowing to measure progress and to report on it.

Research question 2: Review of the circular business models and assessment of their sustainability (See table 12)

Topic	Firmenich	Anonymous	Lidl	McCain	Mars
Type(s) of circular business model(s) implemented	- Through different partnerships, Firmenich receives food wastes from companies and through technology, upcycle these wastes and create flavors and/or perfumes. E.g. with redfruit wastes from a jelly company in Ireland, seafood wastes from Norway. They are doing it for many years. - Circular mindset in everything they do. - All their products are certified.	- Using resources such as agriculture resources, natural resources, water and packaging, they want to use them in a more efficient way. « Keeping the resources no matter the resource is food or plastic ». - Cooperation with retail, logistics and food banks to avoid food waste and informing consumers about expiration dates and how to recycle packaging. - Global packaging commitment: 2025 all packaging recyclable. Want to build recycling infrastructures and integrate recycled resources to their packaging.	Rem: Impossible to say that their business model is circular: supermarkets like Lidl are in a very linear logic – sell products, consumers consume them and they become waste. Different themes where they incorporate circularity. Examples: (i) Packaging: they have a « plastic packaging » target aiming at integrating recycled materials into their packaging and making their packaging recyclable and have a system to recycle themselves. (ii) Building a circular store, (iii) in the Netherlands, selling eggs from circular hens (industrial production but in a circular way from A to Z). (iv) For food lost, « food wastage » objective aiming at reducing waste by 25% between 2015 and 2020. Therefore, new initiative (Good Taste Zero Waste) consisting in selling food packs for 1€. It is not part of the turnover but helps to avoid wastes and to have food intented for becoming waste to be consumed. (v) Wastes to feed animals and (vi) transformation into energy.	Objective to be zero waste by 2025. Currently at 95% of the objective. For parts of the potatoes having deformities or blackheads, processed to (i) feed animals or (ii) to be transformed into biomass. The energy produced is reused in their plants. (iii) Another part is composted in natural composts. (iv) Concerning potato starch, it is revalorized and sold to factories manufacturing plastics and (v) oil waste is transformed into biofuel. In short, they have a logic of recycling all the raw materials used in plants.	Circularity within Mars concerns their factories, food factories. They have a « zero waste to landfill » commitment, consisting in finding ways to reuse waste. The goal is achieved: everything is used in one way or another.
Value chain considered?	To ensure that the supply chain and the products are responsible, Firmenich is considering the whole value chain and pays attention that everything is environmentally and socially responsible. They analyze the whole life cycle of their products, packaging and the distribution.	- Zero carbon by 2050 commitment: strategy to map the **overall** carbon footprint: from agriculture to the production process and transport. They count them as their own emissions. They are running projects with farmers to lower their emissions, bring them their expertise. Integrating renewable energy into factories, transport, … - Reduce carbon footprint has a triple effect: for climate, for biodiversity & soil and for the products.	There is a need to work with different parts of the value chain to have a good circular model.	N/A	N/A
Level/part of the production that can be labelled as circular	At Firmenich, circularity is everywhere. They don't have implemented circular models only for specific products, but for all their products. 100% of Firmenich electricity is coming from renewable energy.	High number of packaging already recycled.	For food waste, almost at 25% decrease between 2015 and 2020.	95% of waste is avoided thanks to circular initiatives.	« Zero waste to landfill » commitment achieved, meaning that there is no waste generated in the factories.
Contribution of circularity to sustainability	They produce with original food wastes (from other companies), and for them, circularity is not only about being neutral but also bring back and regenerate agriculture, forests, diversity, … In addition, use of renewable energy.	Reducing carbon footprint, rethinking of packaging to have recyclable ones and avoid waste.	Recycling of packaging and less food waste, decreasing carbon emissions.	(i) Biogas produced by the waste is used in the factories. (ii) Only 5% of raw materials entering the plants is wasted.	There is no waste generation and therefore it allows to avoid using other resources to process waste. But at the end, it has not a big impact because Mars' factories only account for 7% of the carbon emissions of the entire supply chain.
Progress measurement on circularity	Same for the SDGs : KPIs. Progress is measured all the time and reported once a year. Measuring progress helps to take decisions and to bring credibility.	KPIs and objectives per impact area. For the climate: roadmap to reach the 2050 goal with intermediary goals to reach by 2025, 2030, 2040.	Same method than for progress measurement on the subthemes (objectives).	Metrics: « Total Solid Utilization » (concerns all the solids i.e. potatoes) : the objective is to use 100% of the potato. To measure that: when a potato enters in the plant, the destination of all the products is tracked. This is done in all plants around the world, everything is measured and reported.	They use the indicators based on the SDGs but also sub-indicators and additional indicators (e.g. zero waste to landfill is a separate one).
In the context of agricultural/food sector, potential challenges in terms of compliance and regulations	They have a large compliance team and a regulatory team, experts, collaborations with universities and NGOs, to ensure higly qualitative food. Everything related to food is extremely regulated. This is on top of their agenda and their profuct quality performance is very high.	In the food sector: highest legal requirements in terms of safety. Nothing can be contaminated throughout the agricultural product and the packaging. Need to guarantee safe and healthy food. This is at the basis of all their projects.	N/A	In some regions or sectors, transforming waste into biogas can be highly taxed. It therefore becomes better to transform it into animal feed but it requires to invest in technological infrastructures. (ii) In some countries, regulatory contexts limiting the acceleration of certain technologies.	N/A
Further develop the company towards circularity ?	Yes. Especially with the current situation (Covid19), the world needs responsible business models, protecting people and the planet.	Yes, they are going to further develop circularity.	In the future, they tend to move towards more circular models. Companies that do not follow that will be out.	Objectives defined to accelerate avoiding waste, circularity will continue to be developed.	Yes but it will be extremely slow and non commensurate with the challenge.
Drivers and/or obstacles to the circular transition	Obstacles: None. They do that for so many years. For many companies obstacles can be shareholders but here it is the family so it helps. Drivers: the family, offering sufficient investments in R&D.	Obstacles: (i) need to have materials with exactly the same functions than before but recyclable. Team of experts working on that, to find a better solution than the old one. (ii) Looking for delivering systems without packaging and for new ways of delivery. (iii) Farmers have to use less water. Find solutions to help them and also helping in the transport and consumption. (iv) Find ways to collaborate with industry partners, the supply chain and also with competitors. Drivers: society asking for it and willingness from the company (management and employees) to create shared value: for the business and for stakeholders. Consumer also demanding for sustainability and circularity in the food system and in the business world. Covid19 situation: it is the moment to see how people can reuse planet resources in a more sustainable and circular way.	Obstacles: (i) lack of expertise on a lot of themes around circularity (e.g. they do not find an architect in Belgium able to build a circular building) and (ii) there is a need to work with different parts of the value chain to have a good circular model but it requires collaboration and commitment from everyone. Drivers: resource efficiency, meaning financial efficiency: organic waste is a cost.	Obstacles: (i) In some regions or sectors, transforming waste into biogas can be highly taxed. It therefore becomes better to transform it into animal feed but it requires to invest in technological infrastructures. (ii) In some countries, regulatory contexts limiting the acceleration of certain technologies. Drivers: waste optimization means economic efficiency. In addition, it is easy for engineers to understand that logic. In the whole, it is easy to move towards circularity.	Obstacles: (i) the circular model in contradiction with the model of Mars (linear). If Mars wants to become circular, it requires to completely change the company. (ii) Mars products are standardized. It requires standard raw materials with specific criteria. So it requires highly controlled crops and monocultures using fertilizers, allowing Mars to have economies of scale. (iii) Time horizon: at Mars, people come for 2-3 years and then move to another company. In this timeframe they need to get short-term results, which is in contradiction with sustainability and therefore plans that are elaborated are less ambitious to bring quick impacts. (iv) Size of the challenge: Mars is so far from being in a good sustainable situation that it requires huge efforts to solve that and then it results in slow progress. (v) Most of the employees are not aware of the issues (environmental and social) and they continue to work normally. (vi) To motivate people, need to define indicators that can be related to their bonuses but it is complex. (vii) The senior leadership (40-65 years) reluctant to sustainability (education). Drivers: (i) the shareholders are Mars family, meaning that they pay attention to their reputation and drives them to allocate resources to sustainability. (ii) Employees pressure. (iii) Pressure from NGOs and media (scandals, bad press) damaging reputation.

Table 12: Analysis of the answers given for Research Question 2 – Own compilation

As mentioned in the first part of this thesis, with the growing pressures from their stakeholders for sustainability, companies need to reinvent how they are doing business and need to innovate. In this study, attention has been paid on circular business models, the new economic model to switch towards sustainability. As a reminder, it consists in shifting from a “end-of-life” model to a “cradle-to-cradle” one, from using renewable energy, eliminating toxic chemicals use, and eliminate waste, through superior design of materials, products, systems and business models.

1) Through the five interviews, different circular models implemented within companies have been presented:

a) Firmenich: the circular model of the company is based on upcycling waste from other companies with which they have partnerships and create flavors and perfumes from them. In addition, at Firmenich, 100% of the energy used is coming from renewable energy.

b) Anonymous: the company objective is to keep the resources no matter they are food or plastic. To do so, they are cooperating with retail, logistics and food banks to avoid food wastes and they launched a 2025 global packaging commitment aiming at having 100% of their packaging recyclable and made with recycled resources.

c) At Lidl, there is also a commitment to have recycled and recyclable packaging. They go further in their circular innovation and are currently organizing the building of a circular store. They also got a partnership with a company producing circular eggs. To avoid food waste, Lidl launched an initiative consisting in selling for 1€ packs of food that are intended to be thrown away if not consumed quickly. If there is still waste, this is transformed to feed animals or into energy.

Philippe Weiler mentioned during the interview that knowing the biological, social and environmental impact to produce food is huge, they really avoid to waste food, meaning that they do everything they can to ensure food is consumed by people. If they did not make it, it is only after that they consider transforming food for animals or into energy.

d) For McCain, almost the totality of the potato is used and transformed into food. If there are some parts with deformities, they transform them to feed animals or to product biomass. The energy produced from food waste is reused in their plants. For the rest, food waste can be

composted and for potato starch, it is revalorized and sold to companies and for oil waste, it is transformed into biofuel.

e) Mars implements circularity only at the level of their factories. They have a “zero waste to landfill commitment” circular model and the objective is achieved, meaning that everything is used and not wasted.

Firmenich, Lidl and Anonymous all mentioned they were considering the whole value chain and not only their business to ensure products are socially and environmentally responsible. Firmenich makes use of the Life Cycle Assessment to know the whole emissions generated through the life of their products. Regarding Anonymous, they consider the emissions generated through the whole value chain as their own emissions and are therefore running projects with farmers to reduce the emissions.

If we compare these circular models presented here to the ReSOLVE model introduced in the literature review, we can see that circularity along the agricultural sector matches with three out of the six parts of the model (see table 13). Regenerate, optimize and Loop are parts present in the agricultural sector when speaking about circularity. There can be other parts (share, virtualize and exchange) potentially implemented within the sector but they have not been mentioned during the interviews with the five companies in the framework of this study.

Business actions	Definition	What is implemented within at least one out of the 5 companies
Regenerate	Represents actions of moving to renewable energy and materials. Implies returning recovered natural resources to the environment and aims to reclaim, retain, and regenerate the health of ecosystems	• Energy recovery • Circular supplies (using renewable energy) • Efficient buildings
Share	The utilization of products is maximized by sharing them among users, through peer-to-peer sharing of private products or public sharing of a pool of products. Share actions can also represent the reuse of products as long as they are usable (second-hand), and prolonging their life through maintenance, repair, and design-enhancing durability	
Optimise	Consists in increasing the performance of a product and removing waste in the production process and in the supply chain. Optimise actions may also be linked to leveraging big data, automation, remote sensing, and steering. The key element is that optimization does not require changing the product or the technology	• Waste production in the production process and before
Loop	The loop business actions aim at keeping components and materials in closed loops, with priority given to inner loops	• Remanufacture • Product transformation • Recovering resources out of disposed products • Upcycling (materials reused and value upgraded) • Circular supplies (using supplies from material loops, bio-based or fully recyclable)
Virtualize	Utility is delivered virtually instead of materially	
Exchange	The exchange actions consist in replacing old materials with advanced non-renewable materials and/or with applying new technologies (3D-printing). It may also be linked to choosing new products and services	

Table 13: ReSOLVE model linked to circularity within the companies interviewed

When asking the interviewees if they think their company is going to further develop towards circularity, the answer is yes. Philippe Weiler (Lidl) even added that companies that do not intend to implement circularity in their business will be “out”. As for Mars and Anonymous, they interviewees have however specified that the evolution towards circularity will be limited as their company model is linear by nature, in contradiction to circularity.

2) Assessment of the sustainability of the circular business models implemented:

Implementing circular business models is a good initiative, but to what extend does it contribute to sustainability? In the context of this question, only the environmental part of the definition of sustainability is considered. All the companies interviewed have a climate commitment. With the implementation of circular business models, their goal is to reduce their carbon emissions. Indeed, as mentioned in the theoretical part, carbon emissions in the agricultural sector are very high and it is essential to decrease them. Circularity helps to decrease the amount of waste (food or plastic waste) generated by the companies along the agricultural sector through recycling/upcycling and also to make use of renewable energy. These new models significantly decrease the carbon emissions emanating from business activity.

3) Progress measurement on circularity:

In order to measure progress made with the implementation of circular business models, companies use the same metrics or indicators than for the SDGs or define new KPIs for specific initiatives (this is the case for McCain and Mars).

4) Regulations/compliance in the context of the agricultural sector:

Firmenich and Anonymous both mentioned that everything related to the agricultural and food sector is extremely regulated in terms of safety and quality. These legal requirements must be put on top of each strategy and products must be compliant. Adding circularity to the production/processing models of companies need to be carefully implemented to ensure producing safe and healthy products. For instance, adding recycled materials into packaging must be done with the assurance that the products will not be contaminated.

5) Obstacles and drivers to the transition to circularity:

The last part of the research question around circular business models covers the obstacles and the drivers that company may have with regard to the implementation of circular business models.

a) Obstacles:

There are many obstacles mentioned by the interviewees and they can be gathered by categories. First, in terms of innovation, the obstacles are to find new solutions to offer the same products with the same functionalities but that are recyclable, or offer them without any packaging or with new delivery systems to limit carbon emissions. Moreover, Lidl added that finding people with expertise in circular domains such as circular building is not an easy task. In terms of employees, Mars mentioned different issues: first, in companies where careers are short (2-3 years), people aim at having results in this period of time, meaning that the plans elaborate are on a short-term vision and therefore less ambitious. In addition, it is difficult to find ways to motivate people to do better due to the complexity to link indicators to their performance and bonuses, but it is also complex because there is a lack of awareness from employees of the problems in the value chain. Thomas Lederer also mentioned that a specific part of the employees are very reluctant for moving to a more sustainable model: people between 40 and 65 years, as they have been educated and formed to work on optimization in business and not on corporate responsibility. To give an example, someone once answered when asked to include sustainability in its work that “Mars is not an NGO”. In terms of regulations, Mr. Tasmowski (McCain) mentioned the fact that in some countries, there are regulations slowing down the acceleration of technologies or highly taxing waste transformed into biogas, requiring to find other ways to proceed. Regarding the shift to a circular model, both Mars and Anonymous told that the circular model is in contradiction with the company model which is linear, and this would therefore require a deep change of the company to move from linear to circular. In a product perspective, Mars is producing highly standardized products, requiring standardized raw materials (and therefore the selection criteria is very specific, e.g. the size of the peanuts for the M&Ms must be between 5 and 8 mm) that can only be obtained with monocultures using pesticides, which is contradictory with sustainability. A last important point to consider when implementing circularity within the company is the need to collaborate with other parts of the food supply chain to ensure having a real circular model

bringing real positive impacts. But collaborating with stakeholders is not always easy and requires everyone to put efforts on it. This is the last obstacle mentioned during the interviews.

The notion of collaboration was also mentioned in the literature review: to implement circular business models in agriculture, all parties of the value chain need to be involved in, to overcome economic, technical, legal and social challenges. The interviews allow to highlight the complexity of the collaboration aspect in the transition to circular agriculture.

Regarding Firmenich, Mrs. Magarinos-Ruchat explained that being implementing circularity since the very beginning, they are not facing any obstacles in their circular journey.

b) Drivers:

As a first driver, both Firmenich and Mars associated being a family company as a driver to move towards circularity. The reason behind this is the allocation of investments. When a company is held by shareholders, they can quickly sell their actions but when the shareholders are the family, reputation is very important and their investment decisions need to be aligned. At Firmenich, sustainability is at the core of the business and a lot of money is put in that and for Mars, the reputation of the company is very important for the family and they therefore invest money in sustainability. Another driver comes from the fact that sustainability and circularity is increasingly in demand from the society, the consumers, the management and the employees, NGOs and medias. Last but not least, an essential driver, mentioned by Lidl and McCain, is the economic efficiency resulting from waste management. Indeed, having waste means having cost to dispose from them. If waste is reduced, fewer costs are generated and this results in a significant financial advantage for the company.

Setting up circular business models faces many obstacles but still has facilitators. Firmenich and McCain concluded the topic of circularity by mentioning that, overall, the transition to circularity is easy and with few impediments. Of course, this seems to vary from one company to another, depending on the company's model, the products it offers and the financial, human and value chain investment.

To conclude the second research question on the subject of circularity, this can be summarized as follows: in the agricultural sector, there is a lot of carbon emissions and waste generated along the value chain. Organizations are currently setting up circular models to reduce waste and give a second life to products and also to reduce their carbon footprint, while complying

with legal requirements and regulations to ensure offering safe and healthy products. When analyzing the business models implemented, “Regenerate”, “Optimise” and “Loop” are the three out of the 6 model types from the ReSOLVE model. The transition towards circular models is underway, facing certain obstacles but facilitated by certain drivers. As mentioned theoretically and in practice, there is a need for collaboration between the different parts of the food value chain to ensure an effective and impactful shift to circularity.

Research question 3: Analysis of the value and competitive advantage resulting from the implementation of the SDGs and circular business models (See table 14)

Topic	Firmenich	Anonymous	Lidl	McCain	Mars
What is value for the company ?	« No shareholder value without values »: value is financial but there are also family values, ethical values, reputation, ESG. The objective is to match the ESG values to the financial values. To measure it, big survey for all the employees, KPIs and client annual evaluation on (sustainability) performance.	To generate value, find a balance between having benefits for both the company and the community and planet. Sustainability is the starting point. A product is not good because it is sustainable, they all need to be sustainable. This should be the basis for companies and manufacturers.	5 values for the company: client-centric, enthusiasm, simplicity, responsibility and fairness. The two last ones are related to sustainability. Lidl pays a lot of attention to its values and this is key in decision making.	Lot of different values: economic, customer and consumer demands (meaning customer value and relationship value), demand from employees and from the shareholders (family). All these elements are important to consider.	Financial performance, long-term strategic positioning in the markets, sustainable development and reputation. These are the four dimensions Mars considers as value.
Value generated by the integration of the SDGs ?	Yes. Firmenich is in a highly competitive industry. But clients are evaluating the ability to align with the SDGs because they align themselves to them and it is better to buy responsible products to report a better performance. Despite competition, Firmenich's clients portfolio increases.	*Interviewee working in the company for 3 years and therefore does not know how it was before the SDGs.* But it is something very difficult to measure. We cannot link the total sales of products with sustainable initiatives. But retailers are looking at sustainability and they can have their own requirements.	Yes, the sustainability strategy brings value. Today, the management is convinced of the need to have a sustainability strategy. E.g. long-term relationship with a Belgian farmer, tomato producer. It helped him to get a loan and to invest in new infrastructures (water). For 4 years, drought in Belgium and therefore shortage of tomatoes. Thanks to the long-term relationship, the farmer is able to continue providing Lidl with tomatoes and Lidl to provide consumers, in contrast to its competitors.	Yes. (i) Thanks to that, there are cost savings. E.g. in Australia, installation of solar panels that saves annually 3 million dollars. Many examples of that. (ii) Through an annual global engagement survey, they know that sustainable development is very important and it benefits in terms of talent retention, recruiting talents and differentiating themselves as an employer. (iii) More and more customers asking their suppliers to achieve the SDGs.	Difficult to answer as they have not been able to prove it yet due to the long-term perspective of impacts. But they listed the **potential** sources of value: - Talent boost: employee retention, wages reduction, recruitment costs reduction, motivation for employees and higher skilled employees. - Cost savings: efficiency in operations, savings in raw material procurement costs if less intermediaries, less pesticides and cost of capital (some banks link the interest rate of loan to the sustainability performance of the borrower). - Growth: certified products more sold and growth from customers (retailers). - Risk reduction (biggest value in dollars): risks of business interruption, damage to brand reputation, risk of carbon tax, future increased supply costs and volatility of raw material prices.
Competitive advantage generated by the integration of the SDGs ?	Yes. In differentiating thanks to sustainability.	It is not a kind of competitive advantage. It should be the minimum basis of doing business.	Yes. Thanks to the strategy of building long-term relationships with suppliers and short chains, suppliers are also integrating sustainability and they become more robust and this gives a competitive advantage (see example with tomatoes above).	When they reduce their environmental footprint, cost savings	If the potential sources of value mentionned above are materialized, there would be a competitive advantage. Again, with the results taking time to come, cannot say but the interviewee is conviced that circularity will become a competitive advantage for Mars.
Value generated by circularity ?	Timing is important: Firmenich has always been circular but for 5 years, it becomes a business advantage as consumers are now demanding for responsible and healthy products. Moreover, young generation is pushing brands to improve in sustainability.	Circularity is growing everyday but there is no « start date » so difficult to compare before and after.	Yes. For example, with the Good Taste Zero Waste initiative, reduction of costs. Financial advantage over competition. Anything that is sustainable costs less.	Cost savings.	Two parts within Mars: (i) value generated among the factories where people having implemented the « zero waste to landfill » commitment are proud of it. (ii) There is a positive impact on the company's reputation.
Competitive advantage generated by circularity ?	Idem above.	Idem above.	Idem above.	Idem above.	*The interviewee is not able to say if the reduction of waste has really an impact on cost savings.*

Table 14: Analysis of the answers given for Research Question 3 – Own compilation

During the interviews, the first question asked regarding the value topic was to explain what is value for the company in question. This question is important because, as mentioned in the literature review, the notion of business value is subjective and depends on what the organization needs. This has been confirmed on the field, as answers about what is value for each company is different. The main values that emerge from the interviews are corporate and shareholder value, value for the planet and society, and reputation.

To answer the third and last research question, the answer will be split in two parts: in a first time, the analysis of the value and competitive advantage generated by the SDGs and in a second time, by the circular business models.

a) Integration of the Sustainable Development Goals:

- Value

In terms of value, Firmenich, Lidl and McCain explained that the SDGs integration was clearly bringing value for the company. Anonymous has not been able to answer the question as the interviewee recently joined the company and cannot certify there is a difference between before and after the SDGs integration into the company. Regarding Mars, the interviewee explained that this is not possible to confirm yet there is value creation for the company, due to the time it takes to observe benefits from this, but he explained that the company mapped all the different potential sources of value that can be generated with the SDGs. First, let's analyze the reasons for value creation and then the potential sources of value formulated by Mars.

On Firmenich side, the company facing a very high competition sees its clients portfolio grow thanks to the implementation of sustainability. In fact, the customers are themselves implementing the Global Goals and are looking for suppliers doing the self, as it helps to be even more responsible and to report on it. This clearly benefits to Firmenich in terms of growth. On Lidl side, Mr. Weiler also explained that the SDGs and sustainability are bringing value to the company and illustrated it with the following example: Lidl is building long-term relationships with its suppliers. Thanks to this, a tomato farmer has been able to borrow from the bank and to invest in new infrastructure in particular in the recovery of water. For four years now, Belgium undergoes drought during summer, preventing farms to produce good tomatoes. But Lidl supplier, thanks to its loan, is able to provide the supermarket with tomatoes, which is not the case for the other supermarkets. Therefore, it is clearly a benefit for Lidl to continue offering Belgian tomatoes while the competitors need to buy foreign products, increasing their

costs. Regarding McCain, the SDGs bring value in terms of cost savings (e.g. solar panels allowing to save millions of dollars annually), in terms of talent retention, talent recruitment and brand image attracting talents and finally, in terms of clients portfolio, as McCain customers are demanding for sustainability.

Concerning Mars, they identified four main channels where SDGs can bring value: in a talent perspective, cost savings growth, and risk reduction:

Talent boost: increased employee retention, potential wages reduction as people may want to work for a sustainable company and accept a lower salary, recruitment costs reduction as a sustainable company attracts more talents and therefore the company has a greater choice and can attract higher skilled employees and motivation for employees.

Cost savings: as mentioned by McCain and in the second research question, implementing sustainability leads to cost efficiencies. Savings can also come to the reduced number of intermediaries, decreasing the costs of raw material supply, or come from the reduction of use of pesticides and finally cost savings could also come from banks, as some banks are making loans with the interest rate linked to the sustainability performance of the company.

Growth: growth can be in sales to the final consumers, as certified products are more sold or from a client portfolio increase as customers (retailers) are paying attention to sustainability from their suppliers.

Risk reduction: in terms of risk reduction, it can come from five parts: risk of business interruption, if specific regulations are established for non-sustainable products, damage to brand reputation (Mars has already met this challenge and had to spend millions to solve it), risk of carbon tax, potential future increased supply costs for non-sustainable products and volatility of raw material prices.

Looking at what has been mentioned in the literature part, there are several similarities between theory and practice, as shown on table 15:

Business area	Why?	Primary areas in which value can be created from SDGs
Organisational performance	Integrating the SDGs into the corporate strategy ensures leading to a diverse and dynamic organisation. In addition, it is now well-known that younger generations but also a growing part of employees are willing to work for organisations that have set a clear mission with sustainability as an essential part.	Develop value-creating partnerships with other organizations and stakeholders to achieve the full value potential of the SDGs
		Attract, maintain, and develop the best talent through inclusive and sustainable employee and education regulations
		Build a clear mission through the SDGs – something that the employees increasingly care about
Growth	The Global Goals are shaping existing markets and driving new markets, full of growth opportunities.	Develop sustainability-related products, technologies, and new business models
		Understand and develop strategies to create sustainability-related opportunities in new market segments or geographies
		Let sustainability Guide acquisitions and divesture decisions on a portfolio level
Risk Management	With the embedding of sustainable objectives in the organisation, stabile and continuous performance is ensured. Indeed, with more than 190 countries having agreed to engage in the SDGs, legislative measures can be used or reputational issues can be encountered.	Mitigate regulatory risks and create opportunities by being at the forefront of new legislation
		Reduce reputational risks and receive positive appraisal for sustainable actions
		Handle operational risks (from resource scarcity, climate changes, or societal risks)
Return on Capital	Companies' margins can be increased thanks to cuts in companies' costs : pursueing sustainable goals can contribute to an optimised consumption of water, energy, raw materials and therefore lead to costs reduction.	Demand higher prices warranted by marketing sustainable characteristics
		Reduce costs by optimizing resource management and environmental impact in the value chain
		Reduce operational costs through improved internal resource management (e.g., water, waste, and energy)

Table 15: Sources of value from implementing the SDGs – Own compilation (McKinsey, 2019)

To summarize, three out of the five interviewees agreed to say that implementing the SDGs in the company is a source of business value. For the two others, the answer was not negative but one says it is too early to confirm and the other one cannot answer.

- Competitive advantage

In terms of competitive advantage, Firmenich, Lidl and McCain explain that the SDGs are source of competitive edge through differentiation and costs savings: for Lidl, building long-term relationships with suppliers, influencing them to integrate sustainability making them more robust is a way to create an advantage in front of competition (as shown in the example with the tomatoes). For McCain, the form of competitive advantage comes from the cost savings made and reducing environmental footprint thanks to sustainability and for Firmenich from differentiating against competitors thanks to the SDGs.

Concerning Anonymous, the interviewee considers that implementing the SDGs should be seen as a source of competitive advantage, but should be considered as the minimum basis doing

business. Regarding Mars, Mr. Lederer explains that he is convinced the SDGs will become a competitive advantage for Mars but cannot confirm it for the moment.

The elements mentioned above were mentioned in the literature review, like for the creation of a competitive advantage with key relationships, reduction of the fluctuations of personnel, better image of the company, energy savings and reduced costs.

b) Implementation of circular business models:

- Value

Regarding the implementation of CBMs, Firmenich, Lidl, McCain and Mars agree to say that it generates value for the company. Here again, Anonymous cannot answer the question for the same reason as mentioned above. Regarding Firmenich, circularity is part of the company since the very beginning but it is only for a few years that it can be considered as generating value for the company, as consumers are demanding for responsible products and employees are also pushing in this way. For both Lidl and McCain, circularity allows the company to make cost savings and Lidl adds that “everything that is sustainable costs less”. On Mars side, value is generated through CBMs in terms of company reputation and employees pride (employees in factories having succeeded in achieving the zero waste commitment).

In the literature review, there are four types of value that can be generated through the implementation of circularity within companies: sourcing value, environmental value, customer value and informational value. Making the link with what has been said during the interviews, three out of the four types of value are mentioned, namely sourcing value (related to cost savings), environmental value and customer value (good corporate image).

- Competitive advantage

Regarding creating a competitive edge through the implementation of CBMs, nothing new emerged from the interviews than what has been said for value and CBMs.

To conclude this last research question, two points to note: first, value can indeed take many different forms in the eyes of each company. The second thing is that the interviews clearly confirm what has been mentioned in the literature part of this study, i.e. embedding the SDGs in the strategy of a company is source of value creation and competitive advantage. The same conclusion can be drawn for the implementation of circular business models.

Link between the FAO principles for sustainable food and agriculture and the interviews:

In the literature part of this thesis, the concept of sustainable agriculture has been introduced and the five FAO principles for ensuring sustainable food and agriculture have been described. Based on the information gathered during the interviews, we can analyze to what extent the principles are applied:

Principle 1: Improving efficiency in the use of resources is crucial to sustainable agriculture: the first principle is verified, as each company interviewed has implemented circularity and systems to improve efficiency and reduce waste and for some of them using less energy resources.

Principle 2: Sustainability requires direct action to conserve, protect and enhance natural resources: this principle is also verified, as the objective of the five companies is to decrease their environmental footprint, reducing the use of natural resources and preventing wastage.

Principle 3: Agriculture that fails to protect and improve rural livelihoods, equity and social well-being is unsustainable: the social aspect of sustainable agriculture was only slightly addressed in this study, as the main topics were environment-oriented and verifying if this principle is well performed cannot be done here. But for each company interviewed, the sustainability strategy covers both environmental and social pillars.

Principle 4: Enhanced resilience of people, communities and ecosystems is key to sustainable agriculture: the notion of resilience has not been directly mentioned during the interviews but in view of the current and future world situation with Covid-19 pandemic for instance and the coming global economic crisis, resilience in agriculture and other sectors will probably become one of the most important topics for the next coming months and years.

Principle 5: Sustainable food and agriculture requires responsible and effective governance mechanisms: two of the interviewees mentioned the legal requirements and regulations put in place to ensure companies are producing safe, healthy and responsible food to consumers.

Additional topics raised on the interviews:

Based on the interviews conducted, several points can be highlighted. These points are relevant in the context of this research as they are linked with elements mentioned in the theory or are raising new topics.

SDGs are a universal language:

In the theoretical part, the Global Goals are described as aiming to be a universal framework and language for all stakeholders. This statement is confirmed by both Firmenich and Mars.

Two ways to select SDGs to work on:

As explained in Research question 1, Philippe Weiler has mentioned two ways to identify the SDGs to work on. The first approach is to link the SDGs with the already existing activities and initiatives implemented within the company. The second, much more proactive in terms of contribution to sustainability is to analyze all the SDGs and identify areas where the company is not working on but is willing to contribute.

In addition, a way to identify the key areas to work on can be made through a dialogue with the stakeholders, considering pertinence of the goals for both the company and the stakeholders.

Difficulties to define indicators:

On the subject of progress measurement, Thomas Lederer mentioned the difficulty of defining indicators that are robust and reflect the reality of the situation. For environmental aspects, it is easier, but for social aspects the difficulty is there.

The difficulty lies in two aspects: first, the definition of indicators is, as mentioned earlier, political within the company. By political, this means that some people give priority to indicators allowing to easily report on them and make them quickly progress while others insist on defining indicators reflecting the reality of things. Second, when defining global indicators, they are less relevant because indicators are often region-related. So within Mars, there is a real issue in defining good indicators to measure progress on the SDGs.

Misalignment between SDGs & operations:

Another point mentioned by Mr. Lederer is the misalignment between the sustainability strategy and the operations. They have defined the sustainability strategy beside the business strategy and this is not reflected into the operations. Many reasons have been mentioned such as the difficulty to link employee sustainability performance to indicators, the reluctancy of 40-65 years old employees to change, the financial indicators, …

SDGs need businesses and businesses need SDGs:

In the literature review, the following assumption is made: “SDGs need businesses and businesses need SDGs”. The first part is clear, as without companies resources and involvement progress could not be made on the SDGs. The second part is confirmed by the interviews, looking at the value generated and competitive advantage brought thanks to their implementation.

Need for collaboration:

Even if the companies interviewed have a significant size, all the progress on SDGs and circularity cannot be done individually. The need of collaboration is mentioned in the first part of this study and seems verified in the interviews. Thus, joining forces would allow for greater progress than an isolated approach.

Family company:

Mrs. Magarinos-Ruchat (Firmenich) insisted during the interview to mention in the paper the fact that being a family company can really make a difference in terms of sustainability implementation. Indeed, at Firmenich, the family is really paying attention for having a sustainable and responsible business and therefore invest millions in sustainability. The benefit of being a family company was also mentioned by Mr. Lederer (Mars), as shareholders, i.e. family members want to ensure the sustainability of their company for the next generations and also pay attention to their reputation, leading to high investments in sustainable programmes.

Invest in R&D:

Mrs. Magarinos-Ruchat (Firmenich) also insisted on the fact that without Research and Development, a business cannot be good in circular economy. It emerges from all the interviews that innovation and technology are part of their circular journey.

Mergers and Acquisitions (M&A):

The last point raised in the discussion is mergers and acquisitions. At Firmenich, having a strong M&A strategy significantly contribute to move towards circularity. Indeed, buying the right companies can easily help to integrate circular aspects, methods and R&D.

The analysis of the interviews achieved, the next and last part of this thesis intends to conclude on what has been learnt throughout the whole study, to set the managerial implications emerging from it, to discuss about the limitations of this study and generate suggestions for further research about the topic.

Conclusions

Purpose of this research

This master's thesis intends to, in the context of the agricultural sector, study how companies can integrate the UN Sustainable Development Goals into the strategy of a company, review the emerging circular business models implemented in businesses and find out if the SDGs and CBMs are source of value for the company and competitive advantage. In order to provide insights over these topics, both a literature review around the agricultural sector, the SDGs, circularity, value and competitive advantage and a field study have been conducted.

Main findings

The main findings of this study are various and can be organized around the three research questions that guide the thesis structure.

On the subject of the SDGs embedding in the strategy of the company, the critical steps to ensure a good integration are first, to identify, through a mapping or materiality study, the activities and commitments of the company linked to the SDGs. Then, if needed, the company can decide if it wants to select or not among the SDGs those that are the most relevant to its activities and on which it has an impact. In the SDGs selection process, a dialogue with stakeholders can be insightful to include impact areas relevant to them and the company. Once the SDGs selected and linked to the activities of the company, they need to be implemented in the operations of the organization, and different methods can be put in place such as employees training, designate ambassadors or team of people spreading the sustainability strategy and making it part of the company's culture, appoint responsible persons for each objective or sponsors to ensure their achievement. The last step is to define KPIs or metrics - this can be a complex task, as seen with Mars experience - allowing to measure progress made on the objectives and report on them.

Regarding the second research question of this study, different circular business models have been put in place within the companies interviewed, around food, packaging/plastic and energy. A common "scheme" is emerging from the interviews on the management of food waste: the main objective is clearly to avoid food becoming wasted, and accent is put on selling it/giving it for human consumption and if not, for feeding animals or transforming it into energy. It also emerges from the interviews that there exist companies engaged in partnerships to recover food waste from other organizations and upcycling them to create new resources. From the study on the field, it clearly appears that the transition towards circularity is in progress and that it will become more and more pronounced in the future.

Finally, the interviews of companies allow to corroborate the fact that implementing the SDGs and circularity in companies can generate various sources of value and competitive advantage.

Managerial implications

The results of this study can be applied to companies no matter their size and structure, aiming at contributing to sustainability, operating in the agricultural sector and potentially in other sectors of activity.

Regarding companies willing to integrate sustainability into their strategy, the UN Sustainable Development Goals are a relevant framework and universal language on which to define the sustainability strategy and to report on. Their integration into the company requires to follow the above-mentioned critical steps. To ensure alignment between the sustainable goals defined and the operations, companies can implement different techniques but there is a real need to reflect the sustainability strategy in the operations to have real impacts. The SDGs are a good way to communicate and report on progress made in terms of environmental and social responsibility but the companies really need to define strong and relevant indicators. Indeed, the indicators need to reflect the real progress made, they also need to be long-term oriented to generate real impacts and organizations can link the sustainable indicators to employee performance and bonuses to encourage them integrating sustainability into their day-to-day work.

On the subject of circularity, it emerges that circular business models are for some companies very easy to implement (especially for family companies), as there are many drivers and for other companies, for which the structure is initially very linear, such models can still be

implemented at different levels of the company (e.g. food factories). It can be concluded that moving to circularity becomes essential if companies want to survive on the long run, as there is a growing demand from society, consumers, customers and employees.

Finally, for companies that do not find the business case for sustainability, this study clearly demonstrates that implementing the Global Goals and/or circular business models in their business are sources of value and competitive advantage, for instance in terms of talents, cost efficiencies or reputation.

Limitations

Some limitations to this study need to be discussed. First, the UN SDGs were born only 4 years ago, in 2015. As this framework is recent, few academic and scientific literature have been found on the subject. Moreover, companies who discussed their experience about the integration of SDGs into their business are companies who agreed to contribute to this research but this does not mean that their experience and methods can be qualified as “best practice”. Second, the analysis is based on the content gathered during the interviews but, some information is missing for some interviews (N/A in the tables). The conclusions have been drawn based on the answers received, ignoring the missing elements.

Suggestions for further research

In the course of this study, several topics emerged as possible avenues for future research. First, on the subject of circularity, biotechnology is highly interesting to explore as track to implement stronger circular models among businesses.

Second, the issue of defining relevant and robust indicators seems to be key to implement sustainability in the business operations. The questions of geographical versus global indicators, long-term versus short-term and their related magnitude of impact and finally the feasibility of linking these indicators to employees performance to encourage and motivate them to integrate sustainability into their operations should be topics for further research.

Third, another avenue of research would be to find a way to encourage employees who refuse to switch to a more responsible business, specifically employees who have been trained to optimize and make the company more efficient and who have not had the chance to be sensitized to corporate social responsibility. Indeed, younger population seems to be

particularly involved and affected by sustainability aspects and this surely comes partly from the education they received. Education is very likely to be a key element in the transition towards a more responsible and sustainable society.

Lastly, a part of this study was written during the Covid-19 lockdown and this pandemic and the coming global economic crisis will probably be a revealing element in rethinking the agricultural model and the business model to ensure more sustainable agriculture and food. Resilience will be a key element in this transition.

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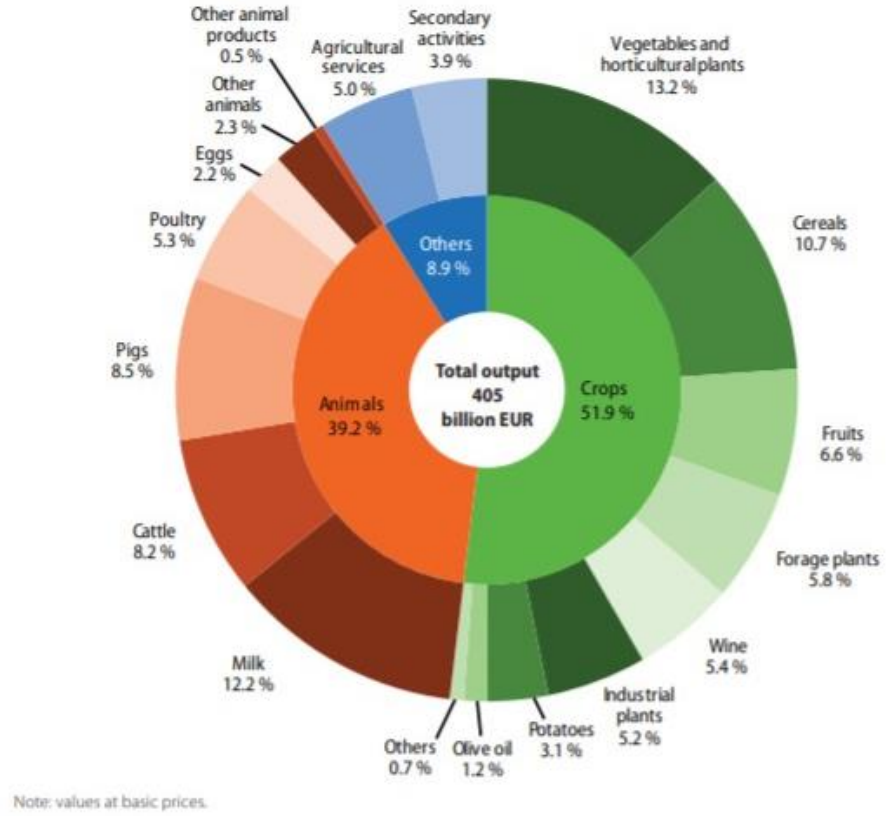
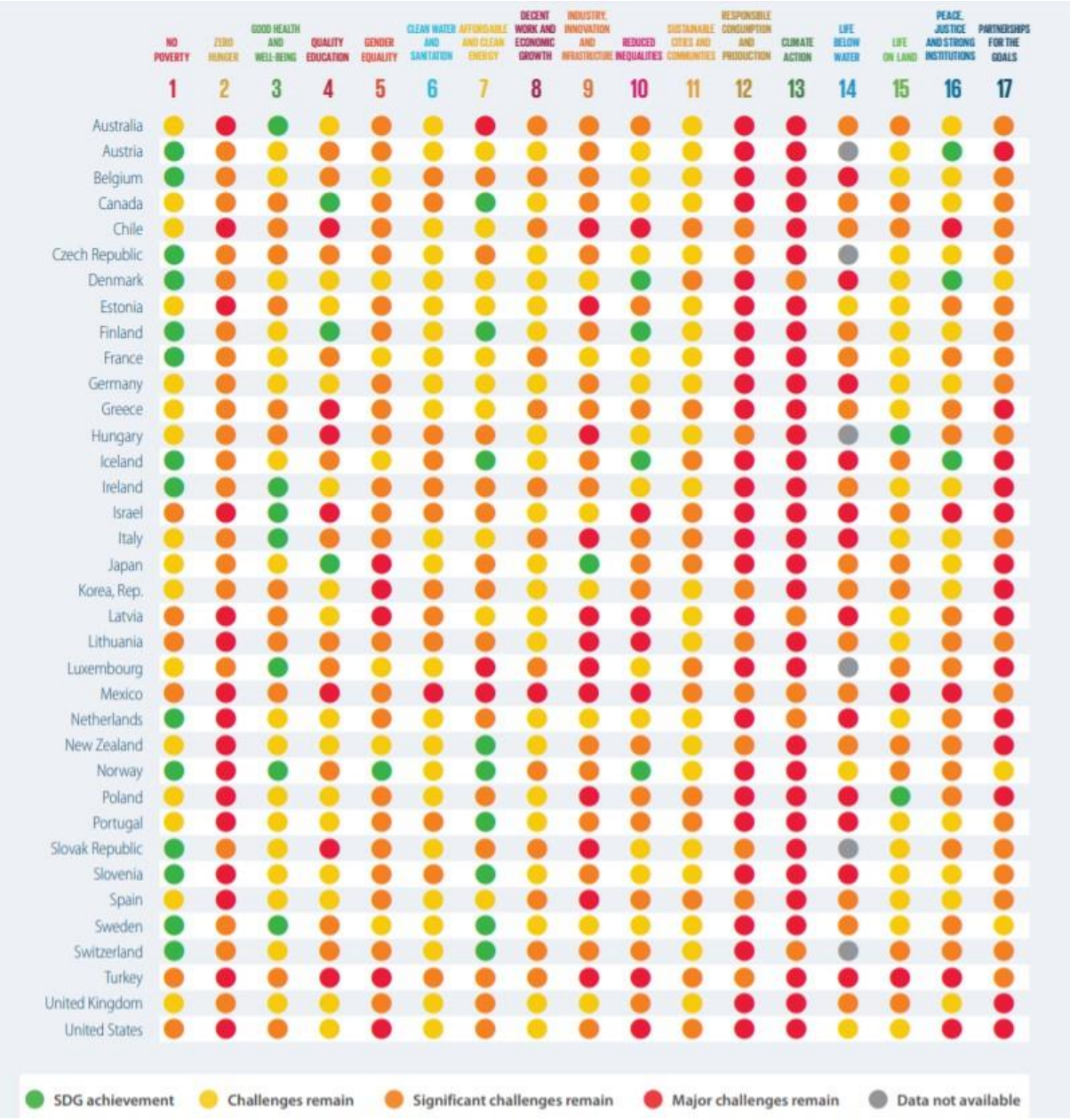
Appendix

Appendix A: Agricultural industry output



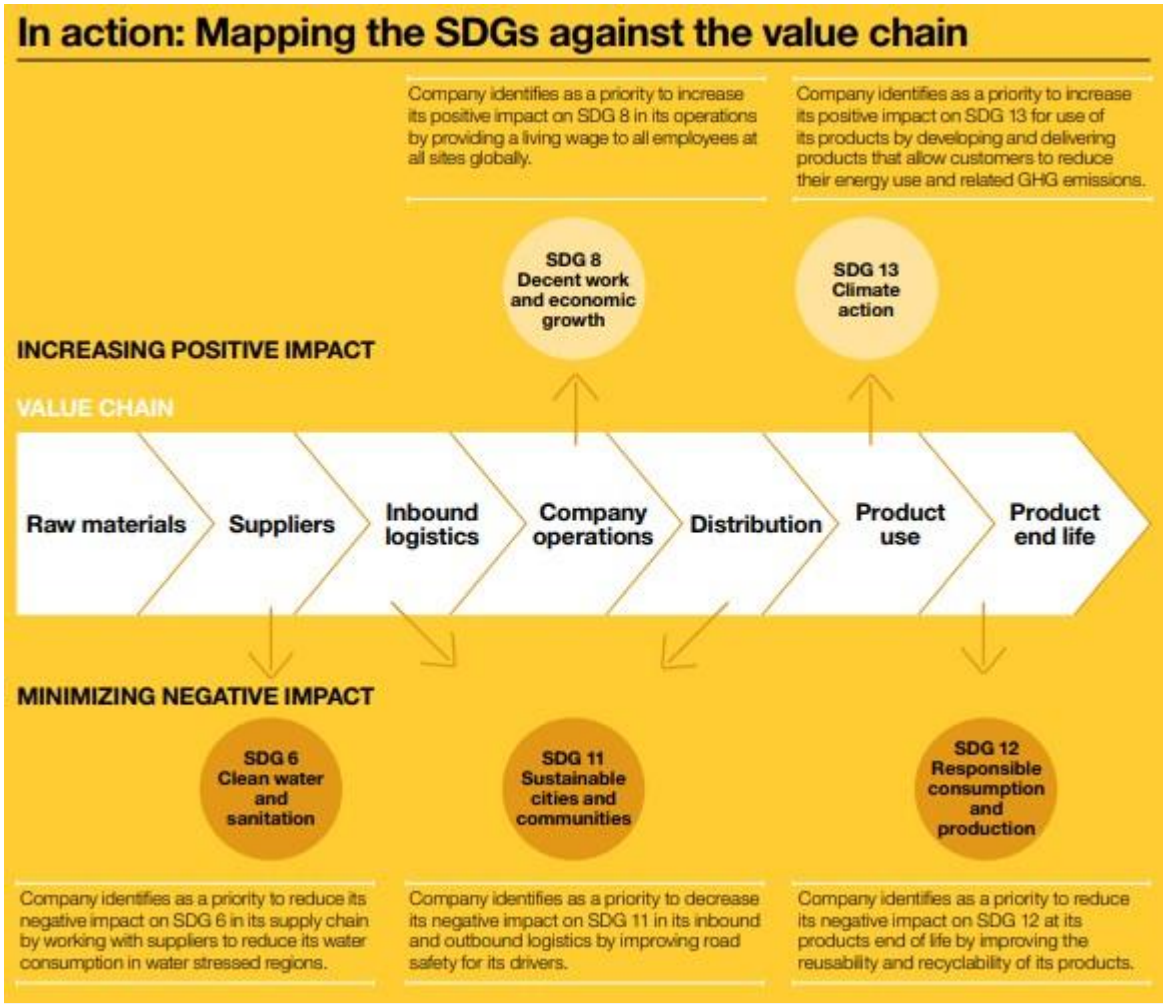
Total output from the Agricultural industry in EU in 2016 (Eurostat, 2017)

Appendix B: SDG progress



Dashboard for OECD countries (United Nations, 2019)

Appendix C: Example of value chain consideration method



Mapping the SDGs along the value chain (GRI, UN Compact, WBCSD, 2015)

Appendix D

A. Interview guide

3 sections:

1. SDGs integration

The interest in the study is to understand how the company has integrated SDGs into its strategy. By how, I mean:

- What are the critical steps to this integration?
- Has the company made this integration on the basis of a model/methodology/...? If yes, can you explain further?
- To ensure the integration of the SDGs and their integration in operations, what is implemented (Question of corporate culture and vision, ambassadors, board, team management, ...)?
- How do you track the progress made on the sustainable objectives?

2. Circular Business Models

As part of my thesis, I would also like to learn more about the subject of CBMs.

- Could you describe/explain me what has been put in place in the company in this regard? How are this/these specific business model(s) circular?
- What is the impact of circularity on the total production life cycle?
- What is the level or percentage of your total production that can be labelled as circular?
- How does the circular business model put in place contribute, in the end, to sustainability (does it reduce energy/resources/inputs needed, waste management, ...)?
- How do you track progress made through the implementation of CBMs ?
- What are potential challenges you face with regard to reuse materials that need to be compliant with current or future regulations, especially in the agricultural/food sector?
- Today, would you consider the company is going to further develop towards circularity ? What are the main drivers for that, or if not, what are the main obstacles (supply chain, consumer behavior, legal, R&D, …) preventing to accelerate this transition?

3. Value creation and competitive advantage

What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- First of all, could you explain me what is value for your company? Is value considered only financial? Or is value also considered when it is non-financial?
- Could you tell me how value creation is measured within the company, do you have KPIs in place and if so, could you give me some examples?

Value and competitive advantage regarding SDGs:

- Following the integration of SDGs within the company, have you observed any particular value creation? If so, could you illustrate what you are saying with concrete examples/KPIs/figures?
- Do you think that the integration of SDGs can bring a form of competitive advantage to the company (As a reminder, the definition of competitive advantage is based on two axes: the first, differentiation by costs, and the second, differentiation in the product/service offer compared to competitors). Explain.

Value and competitive advantage regarding CBMs:

-On the subject of CBMs: following the implementation of the CBM that you described to me, have you observed any value creation for the company? Could you please again illustrate your words?

-Do you think that the implementation of this CBM gives the company a form of competitive advantage? Please explain.

B. Interview with Bérengère Magarinos-Ruchat, Firmenich

Interview date: 07/04/2020

Contact email address: berangere.magarinos-ruchat@firmenich.com

Introduction of Mrs. Bérengère Magarinos-Ruchat from Firmenich.

Mrs. Magarinos-Ruchat: I am the Chief Sustainability Officer at Firmenich, working at Firmenich for 10 years now, always in sustainability. I am currently managing the company's sustainability strategy and am also working on sustainability reporting. I also have a mission for the overall responsible sourcing strategy of the company, working on how Firmenich integrates sustainability among its suppliers worldwide.

Regarding the interview, there will be three main topics. The first one will be about SDGs integration into the company, the second one about circular business models and finally, I would like to learn about value creation and competitive advantage generated from SDGs and circular business models.

1. SDGs integration

I read in the Sustainability Report that Firmenich was implementing the UN SDGs, and choose to follow as guideline 6 of the 17 goals. The interest in the study is to understand how Firmenich has integrated those SDGs into its strategy. By how, I mean:

- **What are the critical steps to this integration?**

In 2013 and 2014, Firmenich was working with the Swiss Government on the definition of the SDGs. So as you may know, the SDGs are real negotiations at the international level, with all the countries. The entry point of that approach is the involvement of all the countries and the Public Sector in the definition of the SDGs from the top. You of course know that before the SDGs there were the MDGs, the Millennium Development Goals, where businesses where not involved at all. The MDGs were only competing on goals for agencies and governments but not including business. So we decided to work on the definition of the goals with national governments and the Swiss government to work on that issue. From that, it means that from the beginning we were familiar with the SDGs and the first step for us to integrate the SDGs was to map them within a Materiality Matrix. This is a tool to make sure that the sustainability strategy not only just rely on nice projects or ideas but really meets your business requirements. When we did that, we tried to align with the SDGs. So that is the tool we used to align with the SDGs through that materiality analysis. Then, we are of course in our strategy reporting on the

progress we make every year. You can see in all our sustainability reports from 2016 to today that we have mapped our performance within the SDGs. And at that moment we are developing a strategy for 2030 and again we are developing KPIs and goals that are aligned with the SDGs. Now, the most recent tool we have used that you may have seen on the UN Global Compact website, it is a new tool published in February: SDG Action Manager. We are using this tool to evaluate what SDGs are relevant to Firmenich. We use this methodology to inject budget, to re-budget into your ESG so environmental and social confident performance and this tool is advising which SDGs you need to report on and we received last week the feedback that we can report on twelve SDGs. Why is it important to Firmenich is because we are a business-to-business company meaning that we are a in the value chain of many brands, of many companies around the world but never directly to consumers. This means that all our clients like P&G, Unilever, Nestlé, L'Oréal, … so all the brands that we find at supermarkets or duty frees that help to fuel people they are following the SDGs. And I think that the SDGs are a common language for us, or clients and our suppliers. So in a nutshell, this is how we integrated the SDGs but we are also training very intensively our colleagues about the SDGs. We are around 8000 people at Firmenich and we are training them all so anybody knows what the SDGs are. We believe the SDGs must be in our day-to-day business and are the work of everybody in the company. If you want to integrate the SDGs, you have to train people. These are the main steps we implemented to integrate the SDGs.

- **Do you also have people like ambassadors to spread the word inside the company?**

Yes, we have sustainability champions and we also have a team of younger people, pushing that culture into the company.

- **You talked about KPIs, that is how you track the progress made on the sustainable objectives?**

Yes, absolutely.

Ok, the first topic is covered, thank you.

2. Circular Business Models

Regarding circular business models, I discovered in the Sustainability Report that Firmenich aims at driving down waste and put in place circular business models to transform food waste.

As part of my thesis, I would also like to learn more about the subject of CBMs in the context of agriculture, so could you explain me what has been put in place in the context of your company in this regard?

So this part in Firmenich is very technical so I will give you some examples. For instance, we have a partnership with a company in Ireland, that uses red fruits like strawberries, raspberries, … and they make jellies, marmalades with these red fruits. But when they do that they have a lot of food wastes. You have the same in the Fruit/Juice Industry. They make juice, … and wastes are left over. So we are able with our technologies to clean those wastes and to convert them. In the same way, in the Seafood Industry in Norway where there are wastes from the fishes and seafoods and we make with that seafood flavors. You know those flavors you find in Asia in condiments, soups, … and then we are able to create fish flavors that come from the wastes of sea products. So for us, it is a way to, with technologies, upcycle – I don't like the term "recycle" – those wastes. So these are examples of what we do with food wastes.

- **Ok. Do you have a lot of partnerships with companies where you upcycle their wastes and transform them into flavors?**

Yes. I think you can find the seafood example on our website…

- **Yes, I've seen that in your 2018 Sustainability Report, there is the example of the seafood byproducts.**

Yes. And we have been doing that for many years and the idea, before they went sold, is that we want to make sure that what we produce from those wastes is certified. So we want to make sure that first the value chain and the products are responsible so we work on that as well.

- **Ok so you pay attention to the whole value chain.**

Yes, absolutely. We make sur that they are responsible in terms of environmental impacts but also social impacts.

- **Could you explain me what is the impact of circularity on the total production life cycle?**

If you mean in terms of life cycle analysis of products, we have a tool to analyse the full life cycle of products, Quantis. Quantis was created in 2011 in the engineering school of Lausanne and is now the world leader in life cycle analysis. We are able to measure the environmental impacts through the life cycle of our products and from packaging, distribution, and the direct footprint of the product.

- **So you use a life cycle analysis tool. Could you now explain me what is the level or percentage of your total production that can be labelled as circular?**

To give a percentage, in the top of my mind, no but when you see Firmenich's environmental performance, we can say that the circular mindset is in everything we do.

- **Ok, so you have not implemented circular business models for specific products, it is cross-products line.**

Yes, it is really in everything we do.

- **How does the circular business model put in place contribute, in the end, to sustainability? I already know you upcycle waste, but do you use less energy, or something else?**

Yes. For instance, you can see on the website since a few weeks ago, that we have 100% of our electricity is coming from renewable energy, so for us it is also making sure that not only there is a decrease of electricity but also that we use quality electricity, that is responsible. But also we are planting millions of trees, … So for us circularity, it is not only being neutral but also bringing back and regenerate agriculture, forests, diversity, …

- **How do you track progress made through the implementation of circularity?**

With the KPIs we were talking about. We are reporting on it once a year. We have environmental teams all around the world reporting on all these measurements. We are reporting internally and externally. For instance the CDP is also a way to report on performance. So yes, we measure progress all the time. Measurement also helps to take decision and if we do not measure, we are not credible.

- **What are potential challenges you face with regard to reuse materials that need to be compliant with current or future regulations, especially in the agricultural/food sector?**

It's a good point. You know we have a very large compliance team and regulatory team for food quality, food technologies, food toxicologist, so yes, everything we do around food quality, food safety, is extremely regulated. So this is on top of our agenda and we have a lot of experts working on that, we are also working with universities, with NGOs, with all industries to make sure that we are really providing the best products to our clients. As you can see in our 2019 Sustainability Report, our product quality performance is extremely high. We do not get returns of products and that is because we really care about consumers and we did not discuss about that yet but Firmenich is a family company, at 100%, so there is no policy from the stock exchange, and therefore makes a huge difference about how much money we decide to invest, in being a responsible company, in conforming everything, and you should point out in your research that when you look at private companies, they are managing sustainability and responsible business differently.

- **Ok, I did not know that. Today, it seems that Firmenich is going to further develop towards circularity.**

Yes absolutely. You know this is the way the world is going and when we see the situation with Covid-19, the world needs more responsible business models and more strategies that are protecting nature and people. So continuing in that way is clearly in the vision of the company.

- **With what you said, it seems to exist a lot of drivers for that, but could you tell me what are the main obstacles preventing to accelerate this transition?**

Well, that is a good point… You know we do so much and for so many years… I don't fear about obstacles today, honestly. I think obstacles can be people mindsets, when you work with them. For many companies obstacles can be the shareholders but here as a family company we don't have that.

- **And in terms of Research and Development, do you have sufficient investments ?**

Oh yes, we have. We have been investing 10% of our turnover in Research for some years ago, we have these resources, we have Research people. When you see all our work on biotech, we have not talked about that but biotech is an amazing example of circularity but this is the future of circularity enabled by technology. So you cannot be good in circular economy if you do not invest in Research, that is absolutely fundamental. And now, another way to move forward circularity is through your M&A strategy. We recently acquired a company called CRD, working around renewable materials. So it is very important to buy the right companies to move forward circularity.

3. Value creation and competitive advantage

The last topic to be covered is about value creation and competitive advantage. What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- **First of all, could you explain me what is value for Firmenich? Is value considered only financial? Or is value also considered when it is non-financial?**

We have a beautiful quote from Patrick Firmenich: "No shareholder value without values". So for us, value creation is certainly about the financial aspects because we are a business, we are not a NGO, but beyond that there are family values, ethical values, we have defined our fundamentals for 9 years now, that drive every decision at Firmenich. The values of the

company today are your environmental and social performance, your reputation, huge values for the company. I think you really need to match your ESG values and your financial values.

- **You spoke about reputation, family values, environmental and social values, could you tell me how value creation is measured within the company, do you have KPIs in place and if so, could you give me some examples?**

We do for instance once a year a very big survey for all our colleagues, to measure their understanding of the values, how they lead them every day, that kind of thing. What we also measure is for example the number of unsolicited resumes, because a lot of people around the world, even if our name is not well-known, want to join our company for our values, they have heard about our responsible values and we become an employer of choice and so we think it is important to measure that. What we also measure is with our clients, many of them give us an annual evaluation on our sustainability performance and here again, our values are integrated into many business reviews.

I will split my question in two. First, value and competitive advantage regarding SDGs:

- **Following the integration of SDGs within the company, have you observed any particular value creation? If so, could you illustrate what you are saying with concrete examples/KPIs/figures?**

Yes, of course. Our industry is an industry where we need to create new perfumes, new flavors and it is an industry where competition is very high and it is very hard to develop your projects. In the past few years, and also in the past few months, your sustainability work, your alignment with the SDGs get reviewed in the selection process which means that our clients are evaluating our ability to align with the SDGs. Why? Because they align with the SDGs themselves, they need to report themselves on the SDGs and so they prefer to buy products that are responsible to report a better performance. So they prefer to have a value chain that is SDGs friendly and so they align with the way we do business. Despite the huge competition, Firmenich's clients portfolio increases.

- **It partly answers to the question of competitive advantage because your alignment to sustainability and the SDGs is for potential future clients a way to differentiate.**

Yes.

- **Is there also a differentiation by the costs, thanks to the integration of the SDGs?**

The costs are a completely different point. You know, if you are not competitive by the cost but have amazing SDGs alignment, there are no wins.

- **You need to find the good balance to face the competition.**

Yes.

The second part of the question: regarding circularity, you said Firmenich has started since day one but have you seen a particular value creation recently ?

Your point is interesting. The company is 125 years old and we are integrating that since the beginning. You're right, the timing is important. To really focus on measuring environmental impacts, understanding circularity, we do that since the late 80s/early 90s, so is there really a business advantage ? I would say probably it was not the case twenty years ago and it is certainly the case in the past five years. And I think that because the consumers are expecting to buy products that are respecting the environment, that are respecting the health of the consumer and I think the best way to change the world and to have companies doing better, is when consumers put pressure. You guys, young people are really good at putting pressure "I don't want packaging anymore, I want to refill, …". You are really pushing brands to do better every day and when that happens, companies have to change and are investing in Research, in reinventing, to meet the new requirements and doing better.

- **If I can summarize that, you have always implemented circularity at Firmenich but NOW, with the evolving society, turning into a more sustainable way, it can be considered for you as a big advantage for Firmenich to implement circularity?**

Exactly.

C. Interview with X, Anonymous

Interview date: 23/04/2020

Introduction of Mr. X from Anonymous.
Mr. X: I am the environment and sustainability communications manager for Anonymous in Europe, Middle East and North Africa, based in Brussels because our all corporate communications for these regions of the world are based in Anderlecht.

Regarding the interview, there will be three main topics. The first one will be about SDGs integration into the company, the second one about circular business models and finally, I would like to learn about value creation and competitive advantage generated from SDGs and circular business models.

1. SDGs integration

I read in the Sustainability Report that Anonymous was aligning its strategy with the 17 UN SDGs.
The interest in the study is to understand how the company has integrated SDGs into its strategy. By how, I mean:

- **What are the critical steps to this integration?**

The strategy of the company is around the CSV – Creating Shared Value – meaning that we are conducting our operations and our business in a way that there is benefits for the society at large but also benefits for our shareholders, so this is kind of the combination and purpose and the objectives also, we run our business and this is expressed in the CSV report you mentioned already, where we have a clear integration of the 17 SDGs into the different impact pillars of our engagements. What we are trying to do, so we have different pillars, so basically how we run our business, there is a commitment pillar for the individuals and families, one for the communities – so the communities around our operations, so this could be the factories workers, this could be the families around our factories, but also imagine around the water factories, there is a broader community living in the area around. So we are not only looking at our factories and employees but also into the region around our operations. And then there is the third pillar which is the planet pillar. So our ambition and the aim here is also that our operations leave the minimum negative impacts towards the nature and as you can imagine,

this is linked to water, climate change, plastic and other environmental issues. And then going deeper into these three big pillars, we have initiatives. So for the first pillar, we have a projects around healthier kids, so we would like to support better kids' health, then for the middle pillar we have "Anonymous needs youth" so this is an engagement on young people employment and then for the planet pillar we have a third reflection which is around water - using water sustainably and making water available for communities and basically stewarding water in a joint approach for the business, the community and the planet in general.

And when we break this down into more details, we are mapping these 17 SDGs and what we do is that we have a matrix where we see our three impact pillars plus their detailed initiatives and then we do a matrix and see in which areas we can influence and benefit towards SDGs. *Mr. X sharing its screen and showing the matrix*. On the matrix, we can see the three pillars and then benchmarks we are putting this into and then looking at the SDGs we have the 17 and we are trying to map which activities are impacting the SDGs. And what might be more interesting for this call is the planet pillar which could be translated into the environmental sustainability. Because sustainability can also be socially for individuals, families, communities, also the whole business with a sustainable growth, but when it comes to environmental sustainability, this is clearly the third pillar we are talking about, about climate, water, natural resources, circular economy, food waste, and here we clearly map and see how our activities and commitments are interlinked with the SDGs and how our whole commitment can positively influence the SDGs and their achievement.

- **Ok, the matrix is very clear. I if understand well, you are considering the 17 SDGs. You did not choose specific SDGs ?**

Definitely. As you can see, we are not missing any of the SDGs. The impacts of our three pillars are matched with the 17 SDGs. We assume that we have impact by our activities and our commitments on all of those. Obviously to a different level because there can be only one or two dots per SDG or a lot of dots for instance for the industry collaboration because we assume we have a lot of impact. Anonymous is a big company but we cannot most of this stuff do all on our own so this is more effective if we do it in a joint approach.

- **To ensure the integration of the SDGs and their integration in operations, what is implemented (Question of corporate culture and vision, ambassadors, board, team management, ...)?**

We communicate it from the top/senior management down to the single employee, this is the focus and the basis of the business for Anonymous and we want to make sure that all those impact areas are known and supported internally – change starts from within. We have a lot of commitments, as you can read through the CSV report. Going back to the planet pillar, we launched last year in September a communication and a commitment that Anonymous will be carbon neutral by 2050 so we want net-zero GHG emissions by 2050, this is a very holistic commitment but it can be split between our activities so we have activities around packaging, water – we would like to use water more efficiently in our factories but also for example support the farmers in our supply-chain for more sustainable and climate friendly agriculture, e.g. helping the farmers to use water in a more efficient way also and to not waste any water. For example, growing tomatoes in Spain. So we have ambitions and overarching commitments and we have concrete markers, concrete examples of the projects we are running.

- **How do you track the progress made on the sustainable objectives?**

Obviously there are KPIs, clear targets, that are partially in the report. The KPIs are the objectives we would like to see and also where we stand. You can see the one or two or three bullets out of three. We track every year where we are standing, where we achieved the overall ambitions of the pillars and also how does it look like in more concrete terms and projects and this goes down from a global perspective for Anonymous as a global group and then down to the regions (e.g. Europe, North Africa, Middle East) but also down to the very local markets (for Belgium, France, Germany, …). The figures part of the projects are reported under different reporting frameworks and also certified by a third party audit. The way of reporting is also different depending on the commitment. So it is a very precise and specific reporting.

2. Circular Business Models

I discovered in the Sustainability Report that Anonymous aims at driving down waste and put in place circular business models to transform food waste (for instance, recycle waste into fertilizers).

- **Could you describe/explain me what has been put in place in the company in this regard? How are this/these specific business model(s) circular?**

The circularity, so here we are talking about environmental sustainability where we have the overarching vision for having no negative impact on the environment through our operations so this means that the resources we are using such as agriculture goods, natural resources, water, or also packaging and plastics, we would like to use those resources in the most

sustainable way. Circularity means using those resources in the most efficient way. We don't want to waste those resources, we don't want to waste food, plastic, … That is why we don't want our plastic packaging floating in the environment but we would rather get it back and recycle it and make new packaging instead of "losing" it in the oceans or in the rivers. So this notion of circularity is a lot about using our resources in an efficient way, keeping them in a use-circle and not "losing" them into the environment. When it comes for example to the packaging, we have since 2018 a global packaging commitment saying that by 2025 all our packaging will be recyclable and that also we would like to establish recycling infrastructure so for example waste collection, waste sorting and recycling facilities and produce recycled packaging material and we also would like to use more recycled food-grade materials in our packaging. So again this notion of circularity: we want to make sure that the packaging is designed to be recycled, that we have the infrastructure that can recycle all the material, and that we also use the recycled material in our new packaging.

- **So it is important to consider the whole life cycle of the product, from the beginning until the end.**

Exactly. This is not a linear economy where we are producing it, using it and disposing it, but more keeping the resources no matter what the resource is whether it is plastic or food, we want to keep the resources in a loop.

- **Regarding food, what have you implemented ?**

I am not the expert in food waste to be honest but we also there have targets and we would like to decrease the food that is wasted overall. We do cooperation with retail, with the logistics to make sure that our food, is not wasted. But this also translates into activities our colleagues are doing locally in the markets. So for example cooperation with food banks and also informing the consumer about the date on the packaging and its correct meaning. So there is a lot about awareness raising to help the consumer knowing what the date is about but also how to recycle the packaging for instance.

- **What is the level or percentage of your total production that can be labelled as circular?**

This is a pretty good question. Circularity is everywhere. It also depends on which circularity you are talking about, circularity for food, or circularity for packaging, … I cannot give a number but for example how much our packaging is recyclable, there we have a very high number of packaging that is recyclable already (nearly 90%). But it is important to answer if circularity is about food not wasted or plastic, or maybe transports with renewable energy, …

There is a lot of elements and the big climate commitment, net-zero GHG emissions by 2050, we are really looking for a holistic strategy to map the overall carbon footprint for Anonymous as a company. This is not only in and our factories, but we feel responsible also for the emissions produced in the agriculture supply chain – emissions from the farmers, we count them as our own emissions so this really comes from the agriculture production from the farmers to our factory production process, through the transport and then the consumption. So these are all the emissions we feel responsible for.

- **So you consider the whole value chain instead of focusing on your part of the production.**

Yes. When you look at the breakdown of the emissions, there is only, in our factories, around 10% of the overall emissions and more than half of the emissions we are trying to bring down to net-zero are currently coming from the agricultural sector. This is also very important that we are running projects with our farmers to help with our expertise on how to lower their emissions. So for example for more carbon storage or climate resilient products maybe moving from very emissions intense agriculture to lower emissions agriculture and we have also a project for example in France where we do together with an NGO and together with the farmers a common initiative so that there is more carbon stored in the fields and an increased organic matter and this gives a climate angle but also a better soil for the farmers and then also better products in the end. So there is a kind of triple effect: a climate effect, an effect for the farmers through better biodiversity and soils and finally for the better products. So speaking about circularity, there are multiple beneficial effects.

- **How does the circular business models put in place contribute, in the end, to sustainability ? You are recycling food waste, packaging, but do you also reduce for instance the energy or do you use renewable resources?**

Using more renewable energy, when it comes to the factories but also in the transport, are elements of the big climate commitment we launched last year. So here we really see how to be carbon neutral by 2050. We are looking very much in renewable energies in our factories, reducing also for example the fresh water we use, reducing our energy, how can we use more electricity in transports, how can we move from streets to trains more, … So we look into each part of these elements to try to help reducing our carbon footprint and emissions.

- **How do you track progress made through the implementation of CBMs ? Is it the same method than for tracking progress made on the SDGs that you showed me in the materiality matrix ?**

For the climate, we are currently working on a roadmap, how we will reach the 2050 goal. So we see how we can reach milestones by 2025, 2030, 2040, and there we are establishing a clear roadmap and we look at what are the projects we need to do and at what are the impacts of those projects, when it comes to our climate roadmap. Again there are clear KPIs and objectives per impact area along the climate and all the CO2 emissions we are responsible for from the agricultural supply-chain, to the operations, through transport and to the consumers.

- **What are potential challenges you face with regard to reuse materials that need to be compliant with current or future regulations, especially in the agricultural/food sector?**

As you can imagine, in the food sector we have the highest criteria and also legal requirements in terms of safety. We are talking about food so nothing can be contaminated from the agricultural product to the packaging. So this is really important that we can guarantee healthy and safe food. So this is the basis for all the projects. The safety guaranty is definitively the most important one. When it comes to the packaging and recycled packaging, we have to make sure that the recycled materials is safe (food-grade). There are high standards in terms of safety and in terms of using recycled material. And this can also go with agriculture and supply chain because we would like to help the farmers and so we look at better biodiversity, to use less pesticides, and to make the agriculture also a more sustainable one. We need to make sure we have the least environmental impacts.

- **You told me that Anonymous was pursuing a strategy for 2050 regarding climate neutrality. So we can consider that Anonymous is going to further develop towards circularity. But what are the main drivers and obstacles to accelerate this transition ?**

The drivers are very obvious: the society is asking for that from companies and at the same time we would like to help and drive the society to use the limited resources we have on the planet in a more responsible way**.** This is all about creating shared value. Creating basically value for the stakeholders of the companies but also creating value for the society in general. We cannot afford a new crisis and unfortunately the current Corona situation is a clear example that we cannot afford using resources in a linear way anymore. I think it is really the moment to see how we can use/reuse the resources we have on this planet in a more sustainable and more circular way. So there is a clear drive from inside the company that we would like to change our operations, our activities towards a more circular way and this is very much also supported by the consumer. More and more consumers and the society at large are sensitive and very demanding for sustainability. So it is both: it comes very much from the inside of the

company, by people within the company and people are very aware of sustainability when it comes to employees and they would like also to change the company and also their daily work and also the consumer obviously is demanding for sustainability and circularity in the food business model and I guess in the whole industry, in the whole business world.

- **So these are the main drivers, but is there obstacles like maybe R&D, legal, supply chain, …?**

It is not really obstacles we have in this path to 2050. We are facing a couple of challenges. If we want to use materials with exactly the same functions and also the packaging, but then these materials should be more recyclable. Plastic has good functionalities and the CO2 footprint compared to other materials is in general not bad but we still need to come with a better solution than the old one. Also we have a whole team on R&D in Switzerland looking into new solutions when it comes to food, to ingredients, agriculture and supply chain that need to be more climate friendly but also packaging. And for the future we are also looking for delivering food in alternative systems, e.g. without packaging and bulk delivery for example, or more reusable systems. So yes we are encountering challenges in all those aspects but I guess this is also the overall challenge we have to face. Then also looking at areas where we use water, how can we help the farmers to grow their agricultural products with less water, so this means finding solutions for agriculture but also solutions in transport, in consume and also we can collaborate with our industry partners with the packaging and supply-chain for example, how can we also collaborate with our competitors, in the pre-competitive stage, and also the legal requirements supporting this sustainability thinking. When you look at the European Union, we now have the European Green Deal, which gives a holistic framework which helps us to fulfil our commitments and also gives us a playing field for the whole industry, the whole group of businesses which should follow those ideas in terms of circularity and sustainability.

3. Value creation and competitive advantage

What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- **First of all, could you explain me what is value for your company? You talked about value for the stakeholders but also for the community, but concretely, what is value for Anonymous?**

That is about value to produce a product, what is a product, what is accepted by the consumer but also acceptable in terms of the resources used and the impact on the planet. We are looking for the best compromise, for the company and for the business as such, but also giving the consumer the right choice when it comes to a sustainability product. This is the value we would like to create. So we strike for this balance and have benefits for both the company but also the community.

Regarding circularity, this is the basis of our business. Sustainability is the starting point and I think we cannot say this one product is good because it is sustainable, but all the products need to be sustainable and then I can say "OK, I choose this one because I like better the taste" but sustainability in packaging and in ingredients need to become the new normal. This should be the basis for all the companies and manufacturers. This is how we think and how we try to produce our goods.

- **Could you tell me how value creation is measured within the company, do you have KPIs in place and if so, could you give me some examples?**

Measure is what we have in front here in the CSV report. In the report we tried to put all those figures together which are not the financial figures. We can look at the sales but here we look at the sustainability starting from the top of the supply chain to the communities. This is the other part of the value when it comes to the three pillars of our Creating Shared Value report and thinking. Value comes from both the sales on the one side and this is the stakeholder part I explained earlier and on the other side the value for the communities and the planet. We would like to combine and perform best on both of them.

Value and competitive advantage regarding SDGs:

- **Following the integration of SDGs within the company, have you observed any particular value creation? In other words, did you observe value creation between before the integration of the SDGs and after?**

Since I'm working with Anonymous only for 2 years I cannot tell you how it was handled before the integration of the SDGs. I cannot answer to this because I only know what is happening now. Due to this I cannot compare with what happened before the integration of the SDGs.

- **Do you know if in terms of number of consumers for instance, Anonymous is differentiating with the integration of the SDGs?**

No. And this is very difficult to measure. Maybe you can compare the sales of one year to the sales of another year but it can be explained by the fact that consumers like better a new product.

It is really tricky to assess. Imagine you have a nice water project with the farmers and then this is very difficult to link that with the sales and say “this project brings better sales”. You cannot just link one product to one project. It is the overall mindset to be streamlined through all the activities.

- **Do you think that the integration of SDGs can bring a form of competitive advantage to the company, in terms of costs and/or in terms of differentiation ?**

By Anonymous integrating the SDGs we would like to show to our competitors but also to the food industry but also the economy in general that it makes a lot of sense to integrate the SDGs and sustainability and this should motivate other companies to do the same. I think this is not even a kind of competitive advantage but it should be the minimum basis of doing business.

- **Is the retail sector paying a lot of attention to the fact that you are implementing sustainability or not especially ?**

Absolutely. This is also the retailers that are looking at that very much and sometimes they even have their own requirements when it comes to packaging for instance. So this is also very much the shops who are looking more and more at sustainability issues because the consumer wants more sustainability and the society in general is more sensitive to sustainability and circularity and this goes down the whole value chain: from the consumer to the retailer, from the retailer to the brand owners etc.

- **I don’t know if you will be able to answer the last question with regard to the previous one but on the subject of CBMs: following the implementation of the CBM that you described to me, have you observed any value creation for the company?**

I am not sure there was a day X when circularity has been implemented, has started. Circularity is growing every day, as we can see with our commitments that are bigger and bigger and also more ambitious. So I think there is no date for the start of circularity to compare. I think there is not a date before and a date after, it is more gradual and an increase of sustainability thinking. But the thing is that today the notion of circularity is getting more and more in people minds so we are looking for innovation and as I said before we are trying to also look at innovative reusable packaging, packaging-free delivery systems, … I think this is also the notion of new circular thinking and new circular business models. It is more about evolution and new ideas.

D. Interview with Philippe Weiler, Lidl

Date: 29/04/2020

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Introduction of Mr. Philippe Weiler.

Mr. Weiler: I have been working at Lidl Belgium for 4 years as Head of the Sustainability Programme.

3 sections:

1. SDGs integration

I read about Lidl and discovered that the company is aligning its strategy with the UN SDGs.

The interest in the study is to understand how the company has integrated SDGs into its strategy. By how, I mean:

- **What are the critical steps to this integration?**

I'm responsible for the sustainability programme for Lidl Belgium. Lidl France or the other countries do not do the same thing as what is done in Belgium in terms of sustainability. Lidl France for example, they are really quite at the beginning. Regarding SDGs, Lidl Belgium has signed the charter at the level of the Belgian government, which means that we are a company that has an official commitment to contribute and analyze SDGs and see how we can contribute with impact to SDGs. So this is the charter which is from Minister De Croo.

For all businesses, there are two ways to contribute:

1) Either the company analyzes its activities and then tries to find links: for example, a company has a strategy around climate change and therefore contributes to the climate change objective. This is one way, and most companies do it this way: "this is how our business is, and this is how we contribute. »

2) The other way is more difficult and more complex and is done the other way around: it is a matter of analyzing the 17 SDGs and sub-targets and finding out which activities in the SDGs we are not yet contributing to but should contribute to. That's a smarter way because you start

with an analysis of the SDGs and you're going to think about how the company can really contribute and is not yet contributing.

So at Lidl Belgium, we did the analysis in both directions and on the basis of the analysis in the other direction, in 2016, when we developed our strategy and when we defined the themes on which we were going to work, that's when we defined certain themes on which we weren't working yet but where we said to ourselves that this was the opportunity to do something. So we see an objective of the SDGs where we do nothing and we decide to integrate it and make it an essential part of our strategy. So that's what we did. An example is the collaboration with schools. Lidl did not work proactively with vocational schools in all aspects of alternative education. We decided to define a specific objective in this area, which is part of the SDGs, it's important and so we are doing it.

In 2016, we developed a CSR strategy based on 5 major themes, 5 pillars. One of the 5 pillars is the HR pillar, i.e. our employees and collaborators. For this pillar, we have defined 13 themes in 2016 for which we have set a very concrete objective. One of these themes is collaboration with schools. This is a theme where we said that it was absolutely necessary to develop an action plan, to develop a programme and we defined a specific objective. In the report, for each objective, we find the wording of the objective, what was done, what the result is, the progress over a defined period of time, and whether or not it is ongoing. So collaboration with schools is an example of a theme that was added following the analysis of the SDGs in the other direction, in the proactive direction.

- **Have you used a materiality matrix to link SDGs to your strategy?**

We didn't do this in 2016 when we developed the strategy, but we are doing it now. We are now working with an external consultant and between now and 2020 we are redefining the strategy. The 2019 report describes the progress made and is an interim report for a 2015-2020 strategy. The objectives are mainly targets for 2020. If you look at the objectives of our assortment, of the products we sell: the coffee objective is 2020, the fish objective is 2020, ... In 2016 when we defined the strategy, we analyzed the SDGs and defined which were the most important SDGs, we had a dialogue with the stakeholders (in these stakeholders there are SDG experts). So we did this materiality analysis in dialogue with the stakeholders.

Today, Lidl Belgium has 50 objectives or themes on which we are working. They are all mentioned on the matrix. We calculated the impact Lidl has on the objectives and also the relevance from the point of view of our stakeholders. For example, for food waste, we gave a

score of 1 out of 10: this is Lidl's impact on the environment in terms of food waste. Why 1 out of 10? Because when you look at food waste, about a third of food products are wasted throughout the value chain, from production to consumption. So 1 out of 3 calories is not consumed (at world, European and Belgian level). But when you look at the total amount of waste, less than 5% is wasted in supermarkets. So the impact that supermarkets have is less than 5%. 30% of the waste is at the level of the production and therefore at the level of the farmer. For example, a whole farm that fails, a corn production that fails, or that doesn't arrive on time at the port of Antwerp, ... Then 30% is wasted at the level of the consumer. And there is only 5% at our level, so the impact is limited, hence the score of 1 out of 10. But our stakeholders, for them, food waste is super important so they gave us, during the interviews with them, a score of 9 out of 10. So that means that it is a theme that we have to take, even if our impact is relatively limited. So this materiality analysis, there are the SDGs that are taken into account indirectly. Today, we are in the process of redoing a strategy for 2020-2025, and what we have done is that we have included the 17 SDGs and also the sub-targets and we are mapping to see which sub-targets and SDGs must absolutely be taken into account.

- **To ensure the integration of the SDGs and their integration in operations, what is implemented (Question of corporate culture and vision, ambassadors, board, team management, ...)?**

We don't have a specific method for SDGs. What we have done is defining the anchoring of our strategy in the company. So there are the 5 pillars (product range, HR strategy, environment, communities and stakeholders and business partners) for which we have defined the objectives and we have defined managers for each of the departments and we have a director sponsoring one of the 5 pillars. So you have the general manager who is the big sponsor of the sustainability strategy, then each manager takes a pillar for himself, we have CSR managers in each department (they are SPOCs). And for each of the objectives, we have a person responsible. For example, for the "fish" objective, or the objective for schools, there is someone responsible for the strategy around the objective. So we have identified ambassadors, sponsors, people responsible for the whole CSR strategy but not specifically for the SDGs.

- **How do you track the progress made on the sustainable objectives?**

The objectives that we have defined are objectives that are objectives according to the material themes that we have defined. So we defined "fish" as a material theme. We have a very concrete objective: 2020, 100% sustainable fish. The indicator describes how we have defined what a

sustainable fish is, in this case a fish that meets the AFP standard, then we measured where we are (2017 we are at 56%, 2018 at 60%) and then we see that the progress made towards the objective is 3 out of 5 and so we are on track. We are on track to reach the 2020 target. So this is a specific "sustainable fish" objective. We do not measure the SDG objective. The SDG objective is different, "conservation of marine ecosystems" and therefore it is not an objective that we can use as it is. We need to translate the SDG objective into a relevant objective for the supermarket.

2. Circular Business Models

I discovered that Lidl aims at driving down waste and therefore put in place circular business models to transform waste.

- **Could you describe/explain me what has been put in place in the company in this regard? How are this/these specific business model(s) circular?**

The Lidl Belgium strategy is quite unique within the group. Lidl is a huge multinational company. We are the largest supermarket in Europe and number 4 worldwide. We have a turnover of almost 100 billion and we are active in 30 countries, but Belgium is the only country with such a developed strategy, with a 360-degree view, concrete and very ambitious objectives. The climate change strategy, for example, are objectives based on the Paris Agreement and therefore they are objectives that have been validated by an international committee of scientists. So this is for Belgium. Lidl in other countries or other supermarkets, they don't have strategies. They do actions but it is not based on a strategy. Delhaize and Colruyt have a strategy.

As far as circular business models are concerned, there is no company that has a circular economy strategy because it is quite new on the one hand and on the other hand it touches so many aspects that it is very complicated to be able to say we have a circular economy strategy or our business model is circular. This is impossible for us in any case. There are start-ups and companies that are based on a circular business model but for supermarkets like us, where we sell more than 2000 products, we are in a very linear logic, in the sense that we sell products (not only food products) containing cobalt, copper, ... and we sell them, consumers use them and they become waste. Having said that, there are several themes on which we are trying to incorporate a circular model. For example, for all packaging, we have an ambitious "plastic packaging" target. To achieve this goal of reducing plastic packaging, we are going to have to move towards a circular economy and therefore think about how to integrate a resource that is

already recycled into new packaging, on the one hand, and also how this packaging can be recyclable, which is not the case for all packaging. And then use a system where we can recycle ourselves but we are not there yet. For the moment, we have not yet made much progress on this objective (packaging) in terms of circular economy. On the other hand, in terms of construction, we are in the process of seeing if we can't build a circular store. This is circular construction. We have built a lot, every two or three weeks we build a new store (today we have 300 stores in Belgium). Again, a construction is very linear: we build and 20 years later the building is destroyed and the elements are thrown away. What is very new is the circular construction and in Belgium there is very little expertise. We have just signed a strategic partnership with experts to analyze how we can build in a more circular way. There are several other examples of circularity. For example, in the Netherlands, they sell eggs from circular hens, "Kipster", it's an egg production but when you look at the farmer, he goes from A to Z in a circular way, even though he is an industrial company, because all the food that is used to feed the hens comes from the waste of the companies in the neighborhood, ... so there is a circular business model. We have signed a contract with them, but we are still in the phase of applying for a building permit.

- **Do you have any partnerships to limit food losses?**

For food losses, we have a "food wastage" objective which is super ambitious (25% less than in 2015) and the progress made between 2017 and 2018 is not enormous but we have just launched an initiative at the national level. Instead of working with food banks, we are going to work in another way that is much more effective in reducing food waste. The progress (5%) between 2017 and 2018, with our new initiative, we are already almost at the expected 25%. So we're working on that. This initiative consists in selling food packs for 1€ and so it's circular because we give a second life to food and we avoid it becoming a waste, we make sure that it is consumed by human beings. It doesn't fit into our turnover, it's already out of the commercial context but it's still consumed.

- **Many companies convert their waste into energy, does Lidl do that as well?**

We do it too, but for everything that is waste, the biological impact, the social impact, the environmental impact to produce a food it is huge. If we produce food, we really must avoid using it for anything other than human consumption. So all the other functions of consumption by animals or transformation into energy, all this is already a huge loss of this resource. So that means that we have to do everything we can to prevent it from being sold as food. If we can't

sell it, we have to find a way to give it away so that it can still be consumed by human beings (zero waste program or what we do with food banks), then we try to think about recycling it for animal consumption or else the last resort is to make it into energy because it is a product that is so valuable that it should not be used to produce energy. If that is the last resort, then for example a food that is too rotten to be consumed by humans or animals, of course we make organic waste a "green" gas. Everybody does it, every supermarket does it.

- **Today, would you consider that Lidl is going to further develop towards circularity?**

Yes, it is. The "circular economy" objective defined in 2016, we had said that we were not going to put an objective on it but rather develop a circular economy strategy. But as I said at the beginning, it is almost impossible to develop a circular strategy. You can develop circular themes or initiatives such as "circular buildings", "circular packaging", "circularity of food waste", ... So in fact, to develop a strategy at the group level, we did not do it. But that doesn't mean that we don't have a circular activity, as illustrated in my examples earlier. But in the future, we tend to move towards more circularity, and all companies are going to have to integrate more and more circular models into their business and those that don't will be out of business.

- **Do you see obstacles preventing to accelerate this transition or drivers?**

Drivers are models that are much more efficient: "resource efficiency" is paramount. Resource efficiency also means financial efficiency. For Lidl, organic waste is a cost. The more organic waste you have, the higher the bill you pay. So the less organic waste we have, the better from a financial point of view. So the more we manage to sell or distribute products and avoid organic waste, the better.

As far as challenges are concerned, it is for example in case we would like to build a circular store: we need from the beginning an architect who has to think about how to design a circular store - that is to say that he will be responsible for the walls he will build, and when the building is dismantled, the pieces have to be reused. Already, an architect like that, there is no such architect in Belgium, there is no expertise. We are really at the very beginning. There is a lack of expertise on a lot of themes around circularity.

A second challenge is that to have a good circular model, we have to work with the different links of the value chain. And that requires a commitment from everyone, that everyone works together to find a solution. It's very complex, it takes time and HR resources, ...

3. Value creation and competitive advantage

What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- **First of all, could you explain me what is value for your company? Is value considered only financial? Or is value also considered when it is non-financial?**

Lidl Belgium has defined 5 values for the company. Responsibility and fairness are two values that have a direct bearing on sustainability. Responsibility because we want to take responsibility. The definition of CSR, according to the European Commission, is that the company must take responsibility for the impacts you have. So I, as a sustainability manager, I use the fact that it is one of the five values to impose on the management committee that we must have a sustainability strategy because responsibility is part of our values. For the "fairness" value, it is towards our employees and also towards our suppliers. We want to develop fair relationships with our suppliers. The value we have behind our sustainability strategy is directly included in the five official Lidl values. Lidl is a company that pays a lot of attention to its values and therefore, when making decisions, we will look at our values to decide whether we have several options and whether we have to make a choice.

A second element is that the value of sustainability for us, we have not tried to translate what a tonne of CO2 emitted is worth to us, we have not put a price tag on it. There are many companies that do, but we are not yet at that stage. Solvay has defined that a tonne of CO2 was worth €100 and they use this as a basis for choosing a project A or a project B and so it helps them to make decisions. Our sustainability strategy is so well integrated in our company that it is very often used as a decision-making tool. Our managers, the final decision-makers, use this framework, this strategy to make decisions. For example, the real estate manager had to make the decision to invest in a wind turbine. He asked me what I thought about it. At that time, we didn't have a strategy yet. Two years later, we developed our strategy and for the "global warming" objectives, there is a "renewable energies" objective: by 2020, 12.5% consumption of renewable energies. Here in Belgium we are at 6.9% in 2018 and in 2017 we were at 3.6%. Now that we have defined the strategy and the objectives, in 2017 he saw that we had an objective of 12.5% but that we were only at 3.6%. So he made up his mind, as his business case

is still positive. So a year earlier he could not make this decision and a year later he was able to make this decision. It was an economic decision, since investing in a wind turbine is purely financial. He was able to make that decision because there was an additional framework that helped him make that decision.

The value of sustainability is a value that is becoming more and more integrated into the business strategy of the company.

Value and competitive advantage regarding SDGs:

- **Following the integration of SDGs within the company, have you observed any particular value creation? If so, could you illustrate what you are saying with concrete examples/KPIs/figures?**

Yes, it is. Throughout the company today, at management level, everyone is convinced of the need to have a sustainability strategy. It's an "on top" strategy and it's part of the company's business strategy. This is similar to the example with the wind turbine and another example is that today in April, we are returning for the fourth consecutive year to a period of drought in Belgium, but the fact that we are working with our suppliers in the long term creates value. To illustrate this, we worked with an Antwerp farmer, a tomato producer, and signed a long-term contract and he decided to invest in rainwater harvesting and the production of green energy. He was able to do that because he had access to a loan from his bank. To get that loan, he had to show that he had a long-term contract with Lidl. And last year there was a severe drought, and one of the only farmers who did not have a problem was him. He was able to grow tomatoes without any problems and our tomato supply was never in danger. While our competitors ran out of tomatoes, they had to go and get them from all over Europe, they had to sell tomatoes at a higher price, and so we, in terms of competition, had a very great advantage, thanks to this long-term, lasting relationship with our tomato producer. Part of our strategy is to have short and long term relationships with our producers and our buyers now are convinced that this is a commercial benefit. They saw it last year when they bought tomatoes. So the value we have is that the majority of the top and middle management is convinced of the added value of this sustainability strategy, as an integral part of our business strategy.

- **Do you think that the integration of SDGs can bring a form of competitive advantage to the company. Explain.**

That's right. For the example of tomatoes, the margin we made was higher, so our income was higher too. Our supply of tomatoes was never in danger. It has not been a problem for us. As we have a strategy based on long-term relationships with suppliers and short chains, the majority of our producers and suppliers are gradually succeeding in integrating sustainability aspects into their business. And the more sustainable and robust they are, the more this will give us a competitive advantage. The more we develop these kinds of relationships, the more our business will be protected against sustainability challenges.

- **Value and competitive advantage regarding CBMs:**

-On the subject of CBMs: following the implementation of the CBM that you described to me, have you observed any value creation for the company? Could you please again illustrate your words?

Here it's the same. For example, with the zero waste project, for each retailer the waste is a cost (with the supplier to whom we have to sell the organic waste). With our Good Taste Zero Waste initiative, we have managed to reduce our costs. So it's a circular project and it's a good example of the benefits it produces. So it will give us a financial advantage over our competitors and it means that we will be able to sell cheaper products and at the same time they will be more sustainable because the packaging will be made with much more sustainable products and with fewer resources. So anything that's sustainable costs less.

E. Interview with François Tasmowski, McCain

Date: 01/05/2020

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Mr. Tasmowski: I'm director for sustainable development for the McCain group, a Canadian family group with 20,000 employees, 44 plants around the world. McCain consists of food products derived from potatoes and appetizers.

3 sections:

1. SDGs integration

I read from the Shift about McCain and discovered that the company is aligning its strategy with the UN SDGs.

The interest in the study is to understand how the company has integrated SDGs into its strategy. By how, I mean:

- **What are the critical steps to this integration?**

A CSR strategy has been developed based on the most material elements of the company. By material, I mean the social and environmental impacts where we have the most impact. We have built our strategy around four pillars: sustainable agriculture, because we are one of the largest buyers of potatoes in the world, at least for the processing industry, and so we work directly with nearly 4,000 farmers worldwide and we have about 450 agricultural technicians who are in contact with farmers and transfer their knowledge of technologies to them. They coach them, as it were, in order to move towards a more profitable and environmentally friendly agriculture. So this is a place where we have a significant impact on our value chain and on the environment. The second pillar is operations. We have close to 54 plants around the world, which use a lot of energy, water, waste and packaging (plastic and cardboard), so this is our second pillar where we have put in place commitments to reduce our environmental footprint at the operations level. The third pillar is responsible food, where on the one hand we are committed to reformulating our existing products towards better nutritional benefits (less salt, less fat) and on the other hand we are committed to diversifying our product portfolio and bringing more products with explicit health challenges. The fourth pillar is all that has to do

with communities because the factories operate in rural communities because the potatoes have to come from a maximum of 150km from the factories so we have an implementation in rural areas and therefore we create a lot of jobs in rural areas through our direct and indirect jobs (suppliers). And so having mapped all these impacts, where we have the greatest social and environmental impact, we compared where these impacts are related to the SDGs and prioritized the SDGs that were the most relevant for us. So we identified 6: responsible production and consumption, water, health, economic development, ... So we identified the most relevant SDGs in line with our strategic pillars and in line with the different commitments we identified in our sustainable development strategy.

Secondly, we identified that sustainable development was what we call a corporate strategy accelerator and therefore we have three strategic business pillars which are to continue to grow our core business, to diversify our portfolio through innovation and thirdly, to accelerate our business in emerging countries (China, Russia, India, ...). The three accelerators of our strategic pillars are, on the one hand, to have a sustainable cost advantage and therefore to continue to have a lean, efficient cost management. The second accelerator is sustainable development, so the four pillars mentioned above and then the last one is to have a winning culture, which comes back to everything that is employee engagement, employee development, diversity, inclusion, ... So sustainable development supports the business strategy and the SDGs are mapped on our sustainable development strategy.

- **To ensure the integration of the SDGs and their integration in operations, what is implemented (Question of corporate culture and vision, ambassadors, board, team management, ...)?**

We have integrated sustainable development commitments into our operations. For example, we have clear commitments to reduce our carbon footprint (commitment to reduce it by half) and that is obviously the KPIs, the metrics that are integrated into the operational processes. So we have energy efficiency plans in each of our plants, we have put in place a central team that drives the purchase of renewable energy, which makes partnerships with third parties to produce renewable electricity with solar panels or wind turbines on our production sites. So the integration in the culture and in the operations, in the behaviors and the integration in the processes and the reporting are done through our specific commitments - reduction of waste, reduction of water, reduction of carbon footprint, ... - but not at the SDGs level. SDGs are more a background that has been used to identify and map the commitment of our sustainable

development strategy but it is not a language that we integrate into our operations. So if you're going to talk to operators in our plants, probably 90% won't know what it is. We haven't done any training on the subject. We did a training session for our managers, the management committee around our CEO, around the SDGs and on how our sustainable development strategy fits with the SDGs, but it remained at the C-level. It was not passed on to the rest.

- **How do you track the progress made on the sustainable objectives?**

We have KPIs on carbon reduction, water reduction, waste reduction, packaging reduction, ... and so we have trackers in place. Each region has made its own sustainable development roadmap with commitments per region. These commitments are then translated into trackers. Templates have to be filled in by the regions every three months and they have to report at group level on the progress behind the metrics, so once every three months, there are two governance bodies (the steering committee and the board with shareholders, i.e. the McCain family) where the progress around these metrics is reported to these two governance bodies. And so it's also part of the executive bonuses. There are two metrics, on the one hand the CO2 and on the other hand the nutritional product of our product, which are in what is called the president scorecard and which defines the bonuses of the top 300 managers of the organization.

2. Circular Business Models

I discovered in that McCain aims at driving down waste and therefore put in place circular business models to create value from waste.

- **Could you describe/explain me what has been put in place in the company in this regard? How are this/these specific business model(s) circular?**

One of the goals is to be zero waste, worldwide, by 2025. We're already 95% there. So when the potatoes go into the factory, most of them are processed into French fries, the smaller potatoes are processed either into other potato by-products or into mashed potatoes (dehydrated potato flakes). Then, the smaller parts with blackheads, deformities are either processed to be used as animal feed or transformed into biomass and the energy produced is reused in our plants and another part is composted in natural composts.

- **How do you track progress made through the implementation of CBMs ? Do you use the same metrics/KPIs than with the SDGs?**

That's it. We use "Total Solid Utilization", which means the use of all solids (potatoes) so KPIs of 100% potato utilization. When a potato enters the factory, we measure the destination of all

the products of this potato: how many potato products are transformed into chips, how many into by-products, animal feed, ... Everything is measured and reported so we know exactly in which factory all over the world, so we can see how we can manage even more waste in each factory. We also have potato starch which is revalorized and sold to factories that make plastics for example, we have oil waste which is revalorized and transformed into biofuel. So we really have a logic of recycling all the raw material used in the plant.

- **What are potential challenges/obstacles and drivers in implementing circularity?**

Drivers is that there is clearly a cost logic behind it. There is a logic of waste optimization and therefore a logic of economic efficiency behind it. It's a logic that is easy for engineers to understand.

Concerning the obstacles, I sometimes think that in some regions there are obstacles such as in some sectors, for example, translating our potato waste into biogas is highly taxed and therefore it is better to transform it into animal feed and therefore invest in expensive technological infrastructures. There are sometimes regulatory contexts in some countries that limit the acceleration of certain technologies, but if not on the whole, it is a fairly natural and easy movement to implement.

3. Value creation and competitive advantage

What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- **First of all, could you explain me what is value for your company? Is value considered only financial? Or is value also considered when it is non-financial?**

There are a lot of different values. There is obviously an economic value, especially in operations, and when we reduce our environmental footprint there are cost savings. On the other hand, there are more and more customer and consumer demands that are moving in these directions. A demand for a brand like McCain to take its social and environmental responsibilities. So that's part of the customer value and the relationship value. Thirdly, very important is the very explicit demand of our employees who expect us to be leaders in this area and to take our responsibilities to society. These are the most important elements, and then of course there is the family, our shareholders, and it's an advantage to be a private company. The McCain family is doing business for future generations, very clearly because the children will inherit the company, which is a very important economic guarantee for the shareholders and

therefore sustainable development, which is a long-term commitment, is very important for the McCain family and for the shareholders.

Value and competitive advantage regarding SDGs:

- **Following the integration of SDGs within the company, have you observed any particular value creation? If so, could you illustrate what you are saying with concrete examples/KPIs/figures?**

Yes, there are cost savings. So that's very clear. An example: in Australia, we have had solar panels installed on our factory and that saves us 3 million dollars a year in reduced energy bills. There are plenty of examples like that. On the other hand, as I said, it's very important for our employees. Every year we do a global engagement survey and we see that values and sustainable development is a very important, quantified factor in the engagement of our talent and therefore it is a benefit in terms of talent retention which is important and increasingly important to recruit talent in a market where there is a shortage of talent. It allows us to differentiate ourselves as an employer. And for our customers, more and more McDonalds, Delhaize, Carrefour, etc. are asking their suppliers (i.e. McCain) to help them achieve their own sustainable development objectives, so what we do in our factories and with our farmers also allows us to value that among our customers.

F. Interview with Thomas Lederer, Mars

Date: 01/05/2020

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Mr. Lederer: I am working for 8 years for Mars and I am Sustainability Reporting and Governance Manager.

3 sections:

1. SDGs integration

I read about Mars and discovered that the company is aligning its strategy with the UN SDGs.

The interest in the study is to understand how the company has integrated SDGs into its strategy. By how, I mean:

- **What are the critical steps to this integration?**

The first thing is that, Mars being a huge company, the strategy of Mars is a multiplicity of things, strategies, people. So when we say that we've integrated SDGs into our strategy, it's true that we've integrated them somewhere, but as with many companies, that doesn't mean that they're at the heart of the company's strategy. This is a preliminary comment.

When the SDGs came out, it quickly became a frame of reference that allows us to talk between different interlocutors, between governments, companies, etc. with a common vocabulary about all the problems in the world that need to be solved. This is the great interest of SDGs, a common vocabulary. And so Mars, like many other companies, has taken a frame of reference. What we did is we looked at the 17 SDGs, which were the ones - working on 17 SDGs is impossible - on which Mars really has an impact, positive or negative, and so we chose a series of SDGs and we chose 5 of them. They were chosen following a materiality study. And it became obvious that the 5 SDGs that Mars should be active on are everything from carbon, water management and water scarcity, land use since it's a food business. It's the environmental aspects. And there is the poverty aspect and the human rights aspect, which in the Mars supply chain are of concern. So these are the five of the 17 SDGs that Mars has decided to work on. So that was the first step, the materiality study that allowed us to select the 5 SDGs out of the 17.

The second step is: for each of these 5 SDGs, we had to understand them, understand what Mars was doing with these 5 SDGs. Companies like Mars have very outsourced supply chains. We don't buy from farmers, we buy from huge companies that buy from smaller companies that buy from farmers. And there are even more steps between Mars and the farmers and Mars has a very poor knowledge of the field.

The third step was to make an assessment of each of these SDGs, an inventory to see where the problems are, where they are the most critical.

The fourth step was to develop plans to try to solve these problems, to improve things in the most critical areas of these 5 SDGs. If you want to solve the problems of poverty or water scarcity, you first have to understand the most critical places that others are and Mars doesn't put the resources to work on all the problems at the same time all over the world and we chose the most critical ones and that's where we develop plans.

So there's a prioritization.

Yes, indeed.

- **To ensure the integration of the SDGs and their integration in operations, what is implemented (Question of corporate culture and vision, ambassadors, board, team management, ...)?**

There are a few of all these examples. There are a lot of things that are being done. Mars has changed its strategic slogan. There is a document that defines the Mars strategy every 5 years and Mars has reviewed that document and has incorporated everything that is sustainability pretty strongly into it. There is also a lot of communication done by the management, by the family (the company is a family, the shareholders are a family and they also talk a lot about it). There are also ambassador programs. All these things help to talk about it. But it doesn't really integrate the objectives into the operations. Integrating something into operations requires integration into processes, into traffic, ... and that's something that for me is still insufficiently implemented. There is a certain disconnection between what people who work on sustainability plans to do and the ways of doing business that are very little questioned. We have created a sustainability department next to the business and we can see that it is not working very well. And when we gave certain sustainability responsibilities to the Purchasing department, which is the department that is most in the front line on these issues, what we saw is that they continue to prioritize their business objectives, i.e. to buy at the lowest cost, and sustainability priorities

are things that they manage on the side to try to change things. So at this level it's very light. It's complicated to move forward. If we listen to the communication, we will have the impression that Mars does thousands of things very well, but if we look at what has concretely changed in business practices, it is much more difficult to see the changes.

- **So currently there is a lack of alignment between sustainable strategy and operations?**

Yes, exactly.

- **How do you track the progress made on the sustainable objectives?**

The first way is that we put an indicator on each of the 5 SDGs. For example, for carbon, we did a two-year analysis of everything we do, not just Mars but the entire upstream supply chain. As soon as a grain of corn grows until it is used by the final consumer. We have calculated everything and established the carbon footprint of Mars and its entire supply chain, so we use this as an indicator, and we have set the objective of drastically reducing it. We measure this every year. Most of the carbon emissions in our supply chain come from the agricultural resources that we buy to make our products, and we're going to look at every tonne of product that we buy where it comes from and then we're going to multiply that by an impact factor. We try to reduce the carbon footprint as much as possible, and that is an indicator.

It is fairly easy to put a figure on environmental indicators. But on indicators such as human rights and poverty, it is much more complicated and this is where it becomes interesting because the choice of indicator becomes a political choice between those who will try to measure as closely as possible the reality of what we want to measure and others who push for an indicator that is easier to measure and easier to make progress. This is what I have observed in all my years in sustainability. There are two types of people working on these issues: those who want to solve problems and those who want to improve the company's reputation. Depending on who is making the decisions, we will have different choices on the indicators. To give you an example: on the problem of poverty, we chose an indicator that is not very relevant, namely counting the number of people we help to improve their living conditions. Each time we implement a program that helps people, we will count the number of people helped (for example, 20,000) and add them to the indicator, which has a target of one million. The problem is that we are going to deploy programs that will be very light and that will reach a maximum number of people. In Africa, for example, we have implemented a program to teach people how to manage their budget. People will come to the villages and give a course

on budget management because we think they will be better able to improve their living conditions. It's a type of programme based on a very western assumption that if Africans are poor it's because they don't know how to manage their money very well, even though it's much more complex than that. So we are creating a program that will send people to the villages and it is easy to reach 10,000 or 20,000 people, so it is this type of programme that we are going to set up and that will allow us to improve the indicator. This is an example of the tension between the choice of an indicator that can be easily improved or an indicator that will really measure people's living conditions, which is much more complex and that is why we often lose these battles over the choice of indicators. Indicators on human rights or poverty are very complex to put in place.

Five indicators out of the five SDGs were put in place as a matter of urgency. Then, in parallel, in-depth work was carried out to work on the second generation of indicators that will be more relevant and will make it possible to better measure the reality of things, and this is work that is still in progress and that requires very thorough studies. It is work that is being done in depth and that is taking longer to mature.

2. Circular Business Models

I discovered in the Sustainability Report that Mars aims at driving down waste and therefore put in place circular business models. For instance, I read that Mars was trying to better use waste and that there is a commitment to limit waste going to landfill. Some food waste are used for feeding animals or transformed into energy.

- **Could you describe/explain me what has been put in place in the company in this regard? How are this/these specific business model(s) circular?**

These circular models mainly concern our factories. Our factories are all food factories and there's a whole range of waste. So there has been a commitment to "zero waste to landfill" and so it's about finding ways to reuse waste and the factories have done a good job of that. I know they have achieved the goal. Everything that comes out of the plant is used in one way or another.

- **How does the circular business model put in place contribute, in the end, to sustainability (does it reduce energy/resources/inputs needed, waste management, ...)?**

The fact that waste is no longer thrown away and is reused in another way, the reused part avoids the use of other resources if it had been thrown away. But this is still a rather small part of Mars' activities. At Mars, what comes out of the factories accounts for 7% of the carbon emissions of the entire Mars supply chain. So when we reuse waste, we have an impact of a few percent of that 7%. It's not something that's very big in terms of overall impact.

On the renewable energy side, Mars has invested massively in wind farms. Since we have put an indicator on carbon emissions, one of the components of Mars' carbon emissions is the electricity we use, so by switching to green energy, it is already a whole part of our emissions that we can remove, so Mars has invested. Every year or two years we open a new wind farm to cover Mars' energy needs in the area. The long-term objective is to cover all of Mars' needs with wind farms.

- **How do you track progress made through the implementation of CBMs ?**

The indicators in the SDGs are used, but there are components in the indicators. For example, for zero waste to landfill, a separate indicator has been created. But it still appears in the Mars Sustainability Reports.

- **What are potential challenges/obstacles you face with regard to circularity ?**

At the plant level, not so much as they have reached their goal of zero waste to landfill. On the other hand, at the level of the entire value chain, there is a huge obstacle, which is that the circular model is the contradiction of the model in which Mars and its competitors are. The model of Mars and this whole industry is to use agricultural resources, process them in a factory, wrap them in plastic or whatever and then sell them and sell as much of them as possible. This model is the opposite of the circular model and if you want to go to a circular model it requires the company to change completely and it's very complicated. One of the fundamental things about Mars is that the products are standardized products. For example, M&Ms are the same no matter what country. The factories are made to work with standard raw materials and therefore the raw materials we buy have specific criteria. For example, the peanuts in the M&Ms we want to have between 5 and 8 mm sides. In the end, we want to have products of a constant level of quality, all year round and all over the world. These quality requirements imply the use of raw materials from highly controlled crops and therefore monoculture sizes. And groups like Mars are so huge that they are looking for economies of scale and so they use factories that produce millions of tonnes and so this model can only use materials from monocultures, which use chemical fertilizers to obtain standardized products.

So there is a general contradiction between the business model of Mars and industry in general and the business model based on local, circular, more diversified production, ...

Another obstacle is the time horizon. In companies like Mars, people change companies every two or three years to build their careers. And so people have to show that they've made results over two or three years. But when it comes to sustainability, you don't get results in a short period of time. You have to understand and put in place plans that will have an impact ten years later. So that contradicts the Mars business model. People are embarking on plans that are less ambitious but have an impact quickly. And so over the years, we accumulate plans like this that are just meant to quickly claim to have an outcome. To have a real impact in sustainability requires consistency of a program over 10 or 15 years.

Another problem is the size of the challenge. For example for human rights or poverty, we are too far from being able to reach a good situation and therefore it would require a huge effort to really solve all these problems and therefore it results in a slow progress. There are so many problems in the supply chain that, in order not to have to manage everything at the same time, we are going to dig in little by little. It's also something that keeps us very slow in the progress.

Another obstacle is that most of the workers at Mars don't realize how bad the situation is. And so everyone continues to work normally and in ignorance of the immense problems. So there is a lack of awareness. For example, in order for buyers to change their practices, you first have to be able to convince them and make them realize that at the end of their purchasing practices, there are people who die from their intransigence and it's very difficult to get this kind of message across. There are only 1 or 2% of the workers at Mars who are aware of all the problems in the supply chain. It's a common thing in all the big companies.

A very important obstacle is that today, companies the size of Mars can only be controlled by indicators. When there are 100,000 people, we are obliged to put in place indicators that will make it possible to remunerate people and motivate them. The problem is that financial indicators are very easy to set up, measure and control, but sustainability indicators are much more complex. There is a trade-off between the relevance of the indicator and its ease of use. So we find ourselves in this tension every time. Either there will be a relevant sustainability indicator, but it will only be relevant locally. An indicator in India is not going to be the same as in France and therefore to consolidate them in a global way, we necessarily need lighter and less relevant indicators. So we don't know how to "incentivate", to link people's remuneration to indicators, which is what we do with financial indicators and bonuses. It is not possible to

establish sustainable indicators because it is more complex. When we try to do it, we have undesirable effects linked to the fact that we have indicators that are not relevant to sustainability. To motivate people to change, we need to define indicators on which we will evaluate their performance and determine their bonuses, but today we do not have a good enough knowledge of our supply chain and the problems within it because people are not encouraged to dig into it. As a result, we don't have good indicators to encourage and motivate them.

- **So far I have listed five main obstacles. Beside these obstacles, are there drivers to this transition?**

The fact that the family is a shareholder is a driver. As the company bears the family name, the family doesn't like the name to be tarnished, so they are very careful about reputation, probably more so than if they were shareholders who could sell their shares overnight. As a result, the family is a driver for allocating resources to the sustainability plan.

The drivers come from several directions:

- The driver of the family that pushes to protect its reputation and thus promote sustainability actions, so this is a driver that comes from above.

- There's a driver that comes from underneath. More and more, the employees realize that there are problems and therefore there is a demand from the employees and especially from the younger generations who are more aware of these problems than the old ones and therefore when they arrive in the company and are aware of all this.

- A third driver, which comes from outside: everything that comes from the media, from NGOs. For example, one day in New Zealand there were Greenpeace activists who chained themselves to the gates of a factory in Mars and called journalists. The activists explained that they were campaigning against this factory, which is a factory that catches fish from suppliers who do not respect human rights at all and employs slaves, so it went around the world and Mars had to put millions to solve this problem, a problem that we would not have heard about if the activists had not done this. So there is also external pressure as a driver, who through reputation via the media, make plans about this.

At Mars, it's not a problem of shareholders, at Mars it's the layer of management that's below, that is, all the senior leadership, who are people between 40 and 65 years old who were not educated to this during their studies and who were taught that managing a company was about

optimization. They are very reluctant to take into account sustainability criteria. It is normal for them to work to make a profit for a company whose goal is to make a profit. The rest is not their problem and therefore it is this layer that is difficult to change, that the shareholders themselves.

- **Today, would you consider that Anonymous is going to further develop towards circularity ?**

Mars will evolve towards more circularity, but it will be extremely slow and not commensurate with the challenge. I think that fundamentally this kind of business is not made for circular models and their foundations are opposed to what we are trying to do in terms of sustainability. There will be a shift towards more sustainability and circularity, but it will be very light compared to what these companies are doing.

3. Value creation and competitive advantage

What I would like to understand now is the value created by (i) the integration of SDGs into the company's strategy and (ii) the implementation of CBM.

- **First of all, could you explain me what is value for your company? Is value considered only financial? Or is value also considered when it is non-financial?**

The new tool used to measure progress on corporate strategy, known as a "compass", has four dials: financial performance, long-term strategic positioning (in the markets), sustainable development objectives and the fourth on reputation. These are the four dimensions that Mars aims to measure for its strategy. These are the dimensions of what is considered value for Mars.

Value and competitive advantage regarding SDGs:

- **Following the integration of SDGs within the company, have you observed any particular value creation? If so, could you illustrate what you are saying with concrete examples/KPIs/figures?**

That's a very complicated question to answer. What we have done is we have listed all the potential sources of value in order to internally convince people to make money available for this. So we made a long list, but for the most part, we haven't been able to prove it yet, because these are long-term impacts. There is a request from management to show what this could bring, so we have made estimates. There are four dimensions in which it can pay off:

- Talent boost (human resources):

- This can increase employee retention.
- It can also reduce wages. This is the opposite reasoning of the cigarette industry, for example. At Philip Morris, for example, they have to pay 20 to 30% more than in other companies to compensate for the fact that they have a bad reputation. So we thought that if our company has a good reputation, we could do the opposite.
- There are also recruitment costs that can go down because if you have a good reputation, it's people who come to you.
- It's an additional motivation for employees and also potentially a better quality of the people we hire because if there are more people who come to us, there is more choice and therefore better quality.

So we've made some estimates on that, but they're very difficult to verify after the fact.

- The second potential source of value is in cost savings:

- Cost savings related to the efficiency of operations: we have cost savings in the factories because by trying to reduce the carbon footprint, we will try to improve the efficiency of the processes to reduce for example the energy demand and we will then save on the electricity bill, ...
- Potential savings in raw material procurement costs. For example, by getting rid of intermediaries. Fewer intermediaries means less opacity and therefore less impact on human rights for example. And so if to solve these human rights problems, we get rid of intermediaries and so we have a shorter chain and we can make savings.
- If, for example, we want a more ecological agriculture, we will use less pesticides and therefore the cost of these pesticides becomes a saving.
- The cost of capital: there are banks that, for some companies, have linked the interest rate of the loan (this was done for Danone) to an indicator on their sustainability performance. If the company, for example, makes energy savings, the interest rate on the loan decreases, but if this is not achieved, the interest rate increases. So we know that the financial markets have understood that more sustainable companies are therefore stronger and offer easier borrowing opportunities.

- Growth:

For example, if you have chocolate that is certified, potentially this can help the sale of that chocolate. We haven't yet had any proof of this, especially since the certification of chocolates, all companies have done it at the same time. Growth can also come from customers. The

customers of Mars are not the consumers, they are the retailers (Carrefour, Delhaize, ...). So they too are attentive to sustainability and can allocate more or less space on the shelves depending on the sustainability performance of the companies. We had a case where a retailer told us that as long as there was palm oil in our products, he didn't want to list any more Mars products and banned all new products in his stores. This is an example that shows that things are moving and that if we have better environmental performance, we will be able to have more leverage with retailers and therefore more growth.

- Risk reduction: Risk reduction is defined as:

- The risks of business interruption. So the business that has to stop all of a sudden. This would be the case, for example, if the European Union says that tomorrow we can no longer bring uncertified cocoa into Europe. Today, Mars certifies about 60% of its cocoa, but if this scenario happens tomorrow, it means that 40% of Mars' cocoa cannot enter Europe and therefore the factories would be running at minus 40%. This is what we call a risk of business interruption. And so this has been quantified. This risk depends on the work of the companies. The more companies play the game and have sustainability plans, the more the authorities will be tempted to put in place binding rules. On the other hand, if they do not play the game, there is the risk of constraint and this could cost companies a lot.
- Damage to brand reputation: this is similar to the example of human rights in New Zealand. We know that the brand concerned has suffered in Australia and New Zealand has suffered from this media exposure. This is a risk to which one exposes oneself when one does not have sustainability plans.
- The risk of carbon tax: there are countries in the world that have implemented offensive carbon taxes that will weigh on companies that do not make an effort on their carbon emissions. This is a risk because if tomorrow, Europe or the USA implement this, if we have not worked on CO2 emissions, we will be facing a bigger tax than if we had already reduced emissions. We are therefore assessing the risk and, with this type of risk, we will very quickly arrive at huge amounts. If we multiply all the CO2 emissions of a company such as Mars by a factor, we end up with hundreds of millions of euros.
- A fourth type of risk is to avoid future supply costs. This would be a risk that we would incur because there are several types of raw materials where there are sustainability problems and if these problems are not resolved, sourcing these raw materials will become increasingly expensive in the future. This may be for different reasons.

- The fifth type of risk that could be avoided is volatility in the price of raw materials. Commodity prices are very volatile, sometimes in a positive direction for Mars but sometimes not. Through sustainability programs, one should gain better control over supply sources and in principle, if one has better control over what happens in the supply chain, volatility will be less.

When making dollar estimates, the largest component is the risk dimension. Business interruption risks cost billions. Damage to brand image is also very important because it takes years to repair.

- **Do you think that the integration of SDGs can bring a form of competitive advantage to the company?**

There would be a competitive advantage if everything I've talked about was materialized in the company. Today, I know it's difficult. The management is asking for it, they have been investing millions in sustainability for years, they ask us to show results but the problem is that the results take a very long time to come. Today, we cannot say that Mars is a sustainable company, even if we have already invested millions in the programs. So today, for Mars, this is not yet a competitive advantage, but I am convinced that it will become one. For Mars, it will depend on whether or not we can do it, but in the business world in general, it's very likely to become a competitive advantage. For example, in terms of talent retention, we know that companies like Danone or Unilever, which have been very strong either in their actions or in communication, now have a small advantage in terms of brand image to attract talent, compared to brands in the same industry that have done much less. So yes, it is very clear that this is becoming a competitive advantage.

Value and competitive advantage regarding CBMs:

- **On the subject of CBMs: following the implementation of the CBM that you described to me, have you observed any value creation for the company? Could you please again illustrate your words?**

I think it exists, through the communication that we can make of it. For example, there is a value that is the pride of the people who have worked in these plants and who are proud, in just a few years, to have succeeded in reducing to zero the waste that goes to the landfill. So that is a form of value creation. The other form of value creation is the communication that can be done about it because, especially in these plants, it is something that is given a lot of

prominence. So there is a positive impact on the company's reputation. The value comes more from that than from the financial interest.

- **If having waste costs money, can circularity still reduce costs at Mars?**

Yes, we do have to pay when we put waste in the landfill, so there is a saving, but I don't know enough about this program to be able to say that what we have put in place to reduce waste is compensated by the reduction in cost. It is possible that there may be a positive impact, but I am not aware of it.

- **In the framework of this thesis, I need to think beyond this subject and look at what could be studied as further research. In the context of Mars, what could help the company or what does the company need in terms of new research in the context of SDGs and circularity?**

I would look into the obstacles I mentioned. So there is clearly a research track, which is known, but, on all indicators. On sustainability indicators, how to resolve the tension between the local relevance of an indicator - because the more local it is, the more relevant an indicator is - and the need to have indicators that are easy to consolidate for companies the size of Mars. There is a real tension for me. As soon as you take indicators that are easy to use, you lose relevance to real local ecosystems. So that for me is an interesting research question.

There's another one around the creation of the case for change while waiting for these indicators. Once we have fairly robust indicators, we will be able to link people's compensation to these indicators and people will naturally have an interest in working to improve the situation. The problem is that until we have these relevant indicators, how do we motivate people to work on this when they tell us that at the end of the year they are evaluated on growth, profit and cash indicators? We cannot put in place things that go against these indicators. It is more a question of how we can motivate people to change when we do not yet have the indicators to do so. This applies especially to buyers. For example, they are asked to buy rice or cocoa, they can buy them from all over the world and they have all the prices on their computer and today, at the end of the year, they are evaluated on their ability to buy as cheaply as possible. Tomorrow, we would like them to take into consideration the sustainability dimension when they buy products, but today we do not have the indicators that will allow us to give this order.

- **If the indicators become more robust, this would help to motivate people and in the end this would allow the sustainability strategy to be better translated into operations?**

Yes, it is.

A third research question: I told you that the pressure on sustainability could come from the family, i.e. from the shareholders, and from the bottom of the pyramid, i.e. all new employees, but the problem is the middle layer, i.e. all employees between 40 and 65 years old. For me, there is a big research question, which is how to raise awareness among this part of the population that was educated in business school 20 or 30 years ago, where there was no talk of sustainability at all. How do we get them to accept to see things differently?

Even today, unless we take the sustainability option, as you did, where we are very exposed to it, if we take the finance or supply option, for example, we are not sufficiently exposed to it.

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