

# **Organizational change towards corporate sustainability;**

**The role of the change agent and GRI indicators on individual  
behavior change and collaborations in the supply chain**

Action research at Synerlogic



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# Preface

With great pleasure, I hereby represent my master's thesis about organizational change towards corporate sustainability. This action research is a case study, conducted at Synerlogic. My personal goal was to conduct research in the direction of what I want to do after graduation. I want to help organizations with the integration of sustainability into their existing business models. Creating multiple types of values and positive impact, using business as a force for good. Synerlogic gave me the chance to do research in their organization, for which I am very grateful. The organization has been very open and welcoming to me, making me feel at ease very soon.

Due to the fact that I have been working on this research full-time and spent a lot of time working together with many people at Synerlogic, the last seven months have been incredibly valuable to me. I learned a lot from interesting conversations with intelligent people, from finding my own way and role in the organization, and from setting up this research totally from scratch. Many of these lessons I will carry with me for the rest of my life. I want to thank all the people at Synerlogic that I met over the last few months. Special thanks to my supervisor at Synerlogic, Michiel Aalbers, who has been of great support during the development of the research and above all is a great person. We developed a great bond of which I am thankful. I wish you all the best and hopefully we will stay in touch with each other.

Furthermore, I want to thank my supervisor from Radboud University, Mark Wiering, for his support and help. Due to the interesting conversations and constructive feedback sessions, the quality of the research has increased. Finally, I would like to thank my family and friends for their support during all these months. The little chats and discussions we have had helped me lift the research to a higher level.

# Summary

Increasing scientific evidence shows that human activities are affecting the earth system functioning to a degree that threatens its resilience and its ability to persist in the Holocene state while facing increasing human pressures and shocks. In this light, environmental and social scientists more and more develop frameworks aimed at the relation between the environment and society. Also among businesses the impact of their activities on the environment is increasingly under investigation, searching for a balance between social, environmental and economic value creation; corporate sustainability. Like many other businesses, Synerlogic is struggling with the integration of sustainability into their organization. Hereby, this research contributes by finding ways to approach this wicked problem of integrating sustainability into an organization. Other companies can learn and change from the outcomes to increase sustainable development. Furthermore, many practical recommendations are presented as a result of the outcomes of this research. These recommendations specifically relate to Synerlogic, which is the main societal relevance of this research. Furthermore, by using unique approaches regarding individual behavior (TTM) in relation to internal organizational change in combination with the Integrated Network Approach, this research contributes to the world of sciences. The TTM originates from social sciences regarding addictions. By expanding research on the TTM on Synerlogic, this research contributes to existing knowledge by applying TTM in a new environment.

The goal of this research is to address corporate sustainability within the context of Synerlogic's internal and external organizational change and to scholarly disseminate the findings derived during addressing these concerns.

Several sub-questions and a central research question have been composed that will help to reach the goal of this research:

1. *What kind of GRI indicators are the most important to Synerlogic according to the materiality analysis?*
2. *What is Synerlogic's current performance (t1) regarding the number one most material indicator?*
3. *What is the potential effect of applying GRI indicators by an active change agent on the internal organizational change of Synerlogic according to the TTM of behavior change?*
4. *What is the potential effect of applying GRI indicators by an active change agent on Synerlogic's external relation to Royal FrieslandCampina?*

Central research question:

*What is the potential effect of the application of GRI indicators by an active change agent on the corporate sustainability performance of Synerlogic, considering the internal and external organizational change?*

## Theory

The integration of sustainability into an organization strongly relates to internal and external organizational change, leading to a new way of thinking and working that increases corporate sustainability. This research looks at individual behavior change (TTM) of Synerlogic's employees in relation to the internal organizational change. In terms of external organizational change, this research applies the Integrated Network Approach (INA) and dyadic relations in the supply chain to increase collaboration on sustainability between Synerlogic and FrieslandCampina (the next link in the supply chain). The drivers for these two types of organizational change are a sustainability reporting method, the Global Reporting Initiative (GRI) and the active change agent. Worldwide, the GRI is the most used method for reporting on sustainability by corporations. It provides 37 indicators from the social, environmental and economic dimension that can be applied to businesses. The change agent is represented by the researcher, acting like a participant observer, in line with the chosen method regarding action research. Also, this research answers the call for further research on stakeholder dialogue in relation to corporate sustainability by including FrieslandCampina as the next link in the supply chain, searching for dialogue and collaborations towards sustainable development. The intended internal and external organizational change is supposed to provide a way to describe the current situation and the desired situation. By using diagnosis, strategies can be developed to continue the change towards, potentially towards maintained individual behavior change and green alliances with other stakeholders in the supply chain.

## Methodology

This research is a qualitative case study in which data is collected following action research methods. Action research is done by the researcher who acts like a participant observer and represents the change agent. Data is collected using focus group discussions, observations, semi-structured interviews, questionnaires and dialogues. Managers and employees of Synerlogic, FrieslandCampina's global sustainability manager supply chain and sustainability experts from the European Commission Expert Group: High Level Roundtable on the implementation of the Chemicals Strategy for Sustainability were involved during the data collection phase. The conducted data was transcribed and coded using Atlas.Ti. Furthermore, data has been analysed using materiality analysis and following the stages of behavioral change and the theoretical concepts regarding dyadic relations.

## Results

The materiality analysis gave insights on Synerlogic's most important GRI indicator, which is the CO<sub>2</sub>-footprint. This indicator was further analysed, resulting in an overview of Synerlogic's current performance on CO<sub>2</sub>-footprint. 72,3% of the footprint is caused by Synerlogic's trucks. Therefore, Synerlogic can achieve the biggest impact on CO<sub>2</sub>-reduction by focussing on transportation. Both the GRI indicators and the change agent influenced the outcomes. The change agent made the selection of indicators and applied the method to the organization, while the GRI provided a methodological approach that guided the process.

The internal organizational change can be described as movement through mainly the precontemplation, contemplation and preparation stages of the TTM. Due to the active role of the change agent and responses from participants in this active role, it is very likely that

the change agent had more influence on the individual behavior changes that have been observed than the application of GRI indicators. Nevertheless, the GRI did function as a guiding line and a tool that has been used by the change agent in order to shape its active role.

The GRI indicators were of greater influence in the external organizational change because mainly due to the materiality analysis, a very specific match on CO<sub>2</sub>-footprint could be created between Synerlogic and FrieslandCampina. The change agent also influenced the outcome between Synerlogic and FrieslandCampina because he organized the dialogue between the two organizations. Furthermore, the change agent helped Synerlogic during the run-up to the dialogue and fulfilled a facilitating role while the dialogue was taking place.

Outcomes that did come forward during the research that were not expected in advance were the influence of nudging and leadership. Nudging appeared to be a useful method that influences behaviors and leadership seemed to be important for the embedding of sustainability in the organization, in relation to both individual change and strategic sustainable integration.

## Recommendations

In the end, this research provides practical recommendations to Synerlogic that describe ways to enhance organizational change towards sustainable development. By focusing on structures, the recommendation builds on this research in which the focus was more on the agency approach. Both episodic and systemic power provide the ability to build institutional change. A combination of paradigmatic and institutional change would secure sustainability in the structures of the company. Furthermore, recommendations on continuing dialogue with stakeholders in the supply chain and processes that can be applied to guide developments through the stages of behavior change are provided.

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# CHAPTER 1: Introduction

## The call for sustainable development

The universe is 13.7 billion years old, the earth is about 4.5 billion years old and the modern man who made cave drawings made its entrance on this planet about 50.000/30.000 years ago (Dijkgraaf, 2012). Beside the fact that these numbers are hard to imagine, it is remarkable how big the influence of mankind on the earth has been in such a relatively short time. Also, the only state of the earth system that we know for certain can support contemporary human societies is the relatively stable, 11.700 year old Holocene (Steffen et al., 2015). Increasing scientific evidence shows that human activities are affecting the earth system functioning to a degree that threatens its resilience and its ability to persist in the Holocene state while facing increasing human pressures and shocks (Persson et al., 2013). In this light, environmental and social scientists more and more develop frameworks aimed at the relation between the environment and society. One of those scientific concepts, known as 'the donut' defined a 'safe space for humanity' in which the social needs of humanity are met, without crossing the planetary boundaries (figure 1) (Raworth, 2012). The donut is intended to function as a precondition for sustainable development. Hereby this model combines natural and social sciences, which also describes the research philosophy related to this research as will be explained in the methodology chapter.

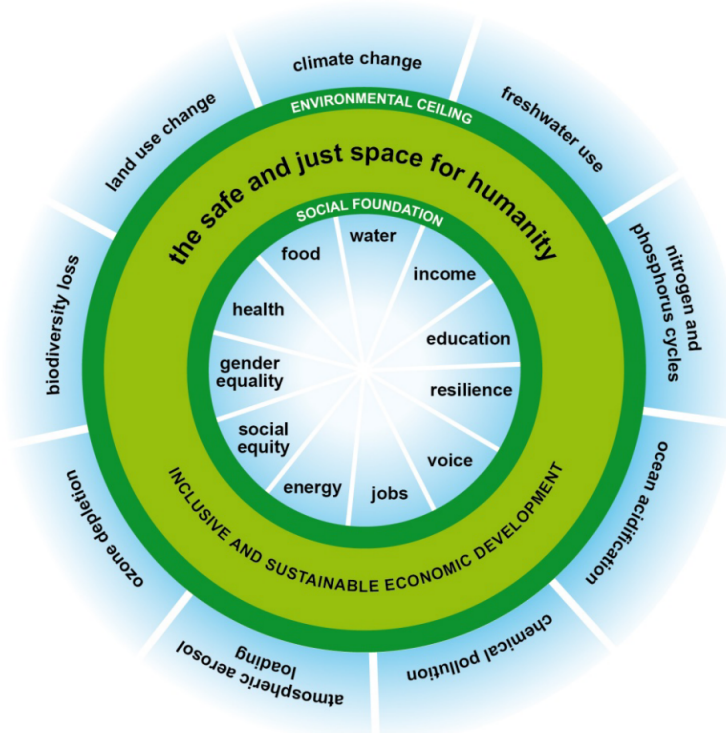


Figure 1: A safe and just space for humanity to thrive in. Source: Kate Raworth, 2012.

One of the criticisms related to the donut is that the economic dimension, which is part of the overall accepted meaning of sustainable development (people, planet, profit), is less represented by the donut theory. Therefore, the donut model does not include specific models related to markets or human behavior (Nugent, 2021). It is especially this combination of social, economic and environmental issues that creates a complex and

interconnected challenge. Therefore, Pryshlakivsky and Searcy (2013) define sustainable development as a 'wicked problem'. Many businesses struggle in sustaining their businesses because it is related to many fundamental characteristics of their organization like e.g. individual behavior, awareness, impact management, collaborations within supply chains and the balance between long and short-term investments. In response to this ongoing struggle, the Global Reporting Initiative (GRI) developed a tool to help companies report on their sustainability performance. The GRI represents the three dimensions of sustainability in a list of indicators that is used to assess the specific sustainability-related priorities of an organization.

## Problem statement

One of the companies that wants to incorporate sustainability into its business, but is struggling to realise it, is Synerlogic. Synerlogic is a company that has been developing, producing and distributing ingredients, (livestock) feed additives, chemicals, cleaning agents and disinfectants for over 120 years. This research uses the GRI indicators to see what the potential effect is of the application of these indicators on two elements of organizational change: 1) individual behavior change and 2) collaboration in the supply chain. The GRI indicators are applied by an active researcher. This researcher acts like a change participating in the organization and is therefore the second variable influencing the potential effect on the two forms of organizational change. The transtheoretical model of behavior change (TTM), originated from social sciences, is used to explore the potential changes in individual behavior. The dyadic relations (committed relationships between two organizations) that are part of the integrated network approach (INA) are used to investigate the potential changes in collaborations in the supply chain. These theoretical concepts will be briefly explained during the theory section. This approach is meant to help Synerlogic with the integration of sustainability within their organization.

## Societal relevance

Due to the wickedness of the implementation of corporate sustainability, managers face multiple difficulties along the way. Numerous constraints can be formulated in this perspective. For example, social, economic and environmental dimensions have to be balanced. According to (Epstein, 2008) it is difficult to evaluate the trade-offs between sustainability and financial performance when excellence in both is expected. Furthermore, many business leaders consider sustainability contradictory to conventional business models aimed for making profit in exclusively monetary forms. Also, the correct organizational culture is essential for making sustainability work as it affects the success of the sustainability performance (Epstein, 2008). Therefore, a corporate culture that encourages sustainability and influences the employees' way of working in a positive way is essential (Linnenluecke & Griffith, 2009). Another challenge corporations face is to create unity on the meaning of sustainability to them as an individual and to the company as a whole. Thereafter, a sustainability strategy can be formulated. Thereafter, the overall strategy needs to be transformed into concrete actions and indicators, which is also one of the struggles companies are dealing with. This is mainly caused by the fact that organizations don't know where to start; due to the tremendous amount of work that needs to be done, causing a setback resulting in nothing (Engert et al., 2015).

All together, the implementation of sustainability into a business comes with many challenges. Fact is that, no matter how bumpy the ride might be, there is no choice but to take the road to sustainability. Scientific evidence is clear, action has to be taken now in order to prevent further increase in pressure on the Earth system and to prevent related consequences for humanity (Steffen et al., 2015). This research contributes to this major societal challenge by gaining knowledge on the potential effect of the application of GRI indicators by an action researcher on the internal and external organizational changes of a company.

By focussing on both, the internal and external organizational change, this research also considers the supply chain of Synerlogic. Impacts on human rights and environmental protections in supply chains are not always visible to the consumer. In 2020, the European Union announced an initiative called 'corporate due diligence' to tackle this 'blind spot' by requiring companies to ensure that human rights and environmental goals are respected by their suppliers and partners (Reynders, 2020). Countries have already started implementing these European guidelines in their legal frameworks. For example, France introduced the Duty of Vigilance Law, the first of its kind, which requires large French companies to elaborate and implement a plan to prevent human rights abuses and environmental harm in their supply chains and includes a civil liability regime (Jędrzejowska-Schiffauer & Schiffauer, 2020). These developments are in line with a study done by the European Commission which revealed that not many businesses are undertaking due diligence and, among those that do, many don't assess all their social and environmental impacts, nor do they consider their full supply chain (Smit et al., 2020). This research helps companies to prepare for the upcoming legislation.

Beside the fact that legislation is expected to put pressure on businesses taking action on social and environmental impacts, resilient supply chains can help businesses to become more future proof (Green Alliance blog, 2020). Limited visibility of risks within the operation is one of the main reasons why businesses underinvest in nature- and climate-friendly solutions (Green Alliance, 2017). Failure to address those risks can lead to substantial costs, including from disruption, reputational damage and regulatory changes. Making risks more evident and addressing costs associated with supply chains will minimise exposure to future shocks and improve consumer confidence in products. Synerlogic in particular is a company that has the potential to strongly benefit from strengthening its business by becoming less vulnerable and more resilient from both internal and external factors. Furthermore, high priority in conducting this research is to avoid greenwashing or window dressing. CSR reports are gaining more and more popularity among businesses. According to a study by Pucker (2021) that examined more than 40.000 CSR reports, less than 5% of reporting companies made any mention of the ecological limits constraining ecological growth. Even fewer (less than 1% ) stated that when developing their products, they integrated environmental goals that align with experts' understanding of planetary boundaries (Pucker, 2021). Instead, most companies set goals based on their capabilities or aspirations. Science-based targets, along with corporate emissions allocations in keeping with the same, have become more common since that study was done, but at this stage they remain aspirational. With this in mind, this research contributes to both society and science by bridging this gap between science and practice by aligning sustainability implementations with science-based targets.

## Scientific relevance

Beside bridging the gap between science and practice, this research also contributes to the world of science by diving into the effect on both the internal and external organizational change. According to Grewatsch and Kleindienst (2015) sustainability activities represent a key determinant of a firm's strategy, emphasizing the internal and external environment of a firm. They propose the inclusion of theories from the broader field of strategic management to cover the internal and external dimensions of this theme. The choice for involving strategic management in corporate sustainability is also justified by Huang & Lee (2012) mentioning the fact that strategic management has evolved to be the dominant theme in Corporate Social Responsibility (CSR) thinking. Furthermore, strategic management appreciates the complex and interdisciplinary nature of CS (Engert et al., 2015). This research therefore follows the suggestion to conduct further research on the relationship between strategic management and corporate sustainability. By applying strategic management models to the *internal* sustainability performance of Synerlogic, this research fills this scientific need. Furthermore, regarding the *external* sustainability performance of Synerlogic, earlier research has shown that strategic networks are "gatekeepers" for the success of corporate sustainability (Grewatsch & Kleindienst, 2015). This research builds on that notion. Furthermore, research on the influence of sustainability reporting on organizational change conducted by Ceulemans et al. (2015) was aimed exclusively at internal organizational change but classified the lack of external stakeholder engagement and dialogue as one of the factors impeding the change process. Therefore they suggest that "*further research on the influence of sustainability reporting on organizational change should focus on the use of an external stakeholder dialogue*" (Ceulemans et al., 2015, p. 17). This research responds to this suggestion by including FrieslandCampina as the external stakeholder dialogue.

In recent years, many organizations have started to utilize collaborative action methods as a way to green their portfolios. E.g., businesses cooperate with non-governmental organizations for operationalizing their corporate sustainability agenda in which the focus is more on building political leverage and power, rather than creating new knowledge and possibilities together (Senge et al., 2007). By applying the INA approach, this research also contributes to the world of science by further developing this collective action perspective, to foster organizational learning and to promote change for sustainability.

By conducting information about the effect of GRI monitoring on organizational change, this research responds to the call to conduct further research (e.g. through case studies) to obtain responses from individuals occupying different roles and levels to check if there are differences of opinion about organizational changes. The causes of change in the system elements should also be explored, as well as the links between them (Lozano & Garcia, 2020). Also, this research follows the recommendation of Prochaska's (2000) to further investigate the organizational applications of TTM in multiple environments.

Finally, the combination of chemistry and sustainability might seem contradictory to the fact that many harmful substances and liquids are being used in Synerlogic's day to day business. This contradiction makes this research even more interesting and indicates there are gains to be made in this specific industry.

## Research aim

The aim of this research is: *to address corporate sustainability within the context of Synerlogic's internal and external organizational change and to scholarly disseminate the findings derived during addressing these concerns.*

The findings will focus on the influence of GRI indicators and a change agent on organizational change towards sustainable development. By conducting this research, the secondary goal is to achieve practical results (e.g. creating a support base and awareness on sustainability, to organize collaboration within the supply chain (FrieslandCampina) and to provide tools to develop a sustainability strategy. In that sense, this research functions as a baseline on which the company could build *a business case for change*. Furthermore, this research could function as a guiding line for other companies in search for methods to develop corporate sustainability within or between organizations. Thereby, this research aims to contribute to both the environment and society by developing sustainability among businesses, contributing to a better world for both current and future generations.

## Research framework

In order to meet the goal of this research, a couple of scientific tools will be used that all together function as a framework that guides the process. One of those tools is the formulation of research questions. The central question of this research is:

*What is the potential effect of the application of GRI indicators by an active change agent on the corporate sustainability performance of Synerlogic, considering the internal and external organizational change?*

This main research question is supported by the following sub-questions that all represent some part of the overall research:

5. *What kind of GRI indicators are the most important to Synerlogic according to the materiality analysis?*
6. *What is Synerlogic's current performance (t1) regarding the number one most material indicator?*
7. *What is the potential effect of applying GRI indicators by an active change agent on the internal organizational change of Synerlogic according to the TTM of behavior change?*
8. *What is the potential effect of applying GRI indicators by an active change agent on Synerlogic's external relation to Royal FrieslandCampina?*

In the end, this package of research questions contribute to answering the central research question. In line with that, this approach ensures that the aim of this research will be achieved; *to address corporate sustainability within the context of Synerlogic's internal and external organizational change and to scholarly disseminate the findings derived during addressing these concerns.*

Many choices have been made, based on the specific context in which this research takes place. In order to follow the line of thoughts behind this research it is essential to have a good idea of this context. Therefore, the choice has been made to first dive deeper into Synerlogic during the following chapter.

## CHAPTER 2: Context

This chapter provides a complete overview of the context in which this research takes place. Synerlogic's history, business activities, business relations and the sustainability initiatives accomplished so far will be elaborated. This chapter is essential in order to understand the specific choices made in designing this research, e.g. this chapter substantiates the choice to focus on the dyadic relation with FrieslandCampina.

### The birth of Synerlogic

Synerlogic is a company that has been developing, producing and distributing ingredients, (livestock) feed additives, chemicals, cleaning agents and disinfectants for over 120 years. The company is owned by the Kwakman family and is located at an industrial area in Duiven, Gelderland, the Netherlands, next to highway A12. Originally, Synerlogic was part of the Dutch General Dairy Federation (FNZ) that was founded in 1900. The FNZ guided the development of the dairy cooperative in the Netherlands as a representative in national and international affairs. The FNZ also acted as a service provider to the associated cooperative companies in the context of economic, legal, technical and business matters. In 1950 the indication 'Royal' was granted and the name was changed to Koninklijke Nederlandse Zuivelbond (Nationaal Archief, n.d.). In 1975, 87% of the dutch milk supplies were processed by companies that were part of the KNZ, 11% was processed by private dairy companies and 2% was processed by companies that were not part of the FNZ (Nationaal Archief, n.d.). The private dairy industry was organized in the 'Vereniging voor Zuivelindustrie en Melkhygiëne' (VZM) which was in close collaboration with the FNZ in terms of advocacy. Due to developments and upscaling in dairy fabrics during the 1990's, most regional unions of cooperative dairy fabrics were dissolved and companies directly joined the FNZ. In 1993, the FNZ was dissolved and the task as a representative was taken over by the Nederlandse Zuivelorganisatie.

Synerlogic was founded in 1905 as the central trading house for the FNZ (CA FNZ). During this period of time, the CA FNZ purchased resources and excipients for the total dairy industry of the Netherlands. In 1983, the CA FNZ became an independent organization under the name Synerlogic. Most of its business was related to chemicals and food ingredients. Over the years, Synerlogic has evolved into an international organization with approximately 200 employees, performing many more activities. Today, the company develops, produces and distributes ingredients, (livestock) feed additives, chemicals, cleaning agents and disinfectants for the food and beverage market, the agricultural sector and the chemical sector.

### Synerlogic's unique position within the supply chain

Due to its rich history, the current business activities and business relations still build on the original organizational market structures. Many of Synerlogic's business relations originally used to be members of the FNZ. Therefore, many business relations have a long history in working together. For example, collaborations between Synerlogic and FrieslandCampina already took place more than 100 years ago, taking into account the multiple fusions of different organizations that eventually led to the current organization under the name Royal FrieslandCampina. Related to the goal of this research, the focus is on both Synerlogic's internal and external organizational change. In relation to the external organizational change, the choice has been made to focus on FrieslandCampina. This choice is based on several arguments.

First of all, Synerlogic and FrieslandCampina have a long shared history. For years and years, high economic values have been created in collaboration with FrieslandCampina. This makes FrieslandCampina one of the most, if not the most, important business relations for Synerlogic. The importance of FrieslandCampina to Synerlogic as a business relation creates a high support base and a feeling of sense-making among key figures within Synerlogic. Secondly, due to the fact that this research introduces a concept (GRI) that is new to Synerlogic, it is important to achieve successful experiences in the first phase of the concept. This will encourage the organization to continue using the GRI and to apply it on other cases and other companies within the supply chain. This way, the supply chain will improve its sustainability performance bit by bit and the GRI will spread like wildfire throughout the supply chain. Thirdly, the choice for FrieslandCampina creates multiple opportunities for collaborative sustainability projects due to the high volumes and amount of products sold. By using the sustainability perspective as a business opportunity, different parts of the organization can be included in the project (sales, marketing, product development, transport, etc.). This increases the support base as more and more people within Synerlogic recognize the benefit they receive by supporting the sustainability initiative. The fourth and final reason to include FrieslandCampina is that this company performed a materiality analysis, which makes the company suitable for further comparison during this research.

As mentioned before, Synerlogic has a unique position within the supply chain because transport, production and storage can all be found under one roof.

*Transport:* Synerlogic has its own fleet of trucks, delivering in Germany, Belgium, Luxemburg and the Netherlands. Products distributed to other countries across Europe and the rest of the globe are transported by the buyers of these products or by an external transportation company.

*Storage and transshipment:* Synerlogic has its own warehouse to store its chemicals and ingredients. Stockroom is also rented out to third parties.

*Trading and production:* In addition to the development of our own products in our fabric, Synerlogic buys and sells chemicals and ingredients. Subsequently, the order can be treated in three different ways:

- 1) Products are only bought and sold. These products don't see the fabric and only have a trading purpose. This is where the original character of Synerlogic as a trading house is still visible.
- 2) Products are repacked into smaller quantities. The repackaging is done in the fabric. Thereafter the products are sold again.
- 3) Different products are combined to form a new product to be sold again.

Examples of products that Synerlogic sells to FrieslandCampina are:

- |                    |                                   |
|--------------------|-----------------------------------|
| - Caustic soda     | - Nitric acid                     |
| - Chlorine bleach  | - Hydrochloric acid               |
| - Potassium        | - Sodium hydroxide                |
| - Calcium chloride | - SynQ (Synerlogic private label) |
| - Citric acid      | - Phosphoric acid                 |

Products can be sold in different volumes, e.g. in a can (1L -25L), drum (60L), barrel (220L), varibox (1000 L), intermediate bulk containers (IBC) (1000 L) or a tank (30.000 L).

**Synerlogic and sustainability**

At this moment in time, Synerlogic is not a pioneer in sustainability within the supply chain. Nevertheless, this does not mean the organization does not undertake any initiatives to develop a more sustainable business. Especially during the last few years, more and more initiatives aimed at sustainable developments have been taking place. For example, Synerlogic achieved level 3 in the 'CO2 Prestatieladder'. This is an instrument that is designed to help organizations reduce their CO2 emissions and costs within the company, regarding projects and supply chain practices. In search for sustainable development, it is important to build on existing initiatives (Sustainable Development Solutions Network (SDSN), n.d.). Thereby, the organization has received a certification for having quantitative targets related to its scope 1 (direct emissions from owned or controlled sources) and scope 2 (indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed) CO2 emissions. Synerlogic also facilitates structural communication on its footprint and actively participates in at least one sector and supply chain initiative regarding CO2 reduction (van Dijk, 2017). One of the requirements to enter stage 4 of the CO2 prestatieladder is to expand to scope 3 (CO2 emissions throughout the whole lifecycle of a product). This research contributes to meet parts of the requirements for entering stage 4 of the CO2 prestatieladder by providing a part of the supply chain analysis regarding FrieslandCampina.

Furthermore, Synerlogic takes care of the reconditioning of used packaging, renewable energy sources from windmills and city heat from the municipality of Duiven are used to facilitate energy needs. Synerlogic supports 'Groene Allianties de Liemers' by donating 250 euros each year and the company has the 'responsible care' certification, audited by KIWA. Regarding the social dimension, Synerlogic introduced the 'great place to work' initiative. This is the only recognition based entirely on what employees report about their workplace experience. Specifically on how consistently they experience a high-trust workplace. All together, Synerlogic has introduced some sustainability initiatives over the last few years. There is no sustainability strategy in which these initiatives are embedded.

## Future Proof Project

Searching for future direction on a strategic level, Synerlogic asked for consultancy in the year 2020/2021 by Future Proof, a company that guided Synerlogic through a process in search for her mission, vision and ambition for the years to come. The outcome of this project is the formulation of a new vision for the organization, plotted in five different directions, referred to as the five pillars or the five C's:

- **Caring**: keep surprising customers in a positive way. A transition from products to excellent service.
- **Competent**: high performing and engaged team. Every day a little bit better and a little bit more fun.
- **Chain**: a better and more sustainable supply chain. Sustainable collaboration within the supply chain.
- **Continuous**: solid and profitable growth. Continuous growth by spreaded customers and repetitive revenue streams.
- **(C)Lean**: basics in order. Unified standards in provided services and automated data.

The five pillars shown above are the result of inquiry done by the consulting company which entailed a combination of market research and intrinsic interests and motivations. One of the

pillars on which the future proof strategy was built is the chain pillar. Now that Synerlogic has more knowledge on its future proof strategy, it is time to develop the content of the five pillars. The potential of this research is that it can be used as a kickstart and an example to set up the sustainability strategy the company needs. Not only does this research incorporate the supply chain, it also gives specific concrete options for content that can be used to shape the sustainability strategy. For example, the top five material indicators that result from the materiality analysis could guide as a direction. Also, the methods used to perform supply chain analysis regarding FrieslandCampina can be used as an example to apply on collaborations with other actors within the supply chain as well. Therefore, this research could function as a kickstart for Synerlogic to develop a sustainability strategy and to make the switch from talking to concrete actions, positive impacts and measurable results.

All together, Synerlogic is a good fit for this research due to several of the company's characteristics. The long history of the company ensures an existing organizational culture and individual behaviors that have been shaped over a long period of time. In relation to organizational change this is a good fit. If Synerlogic were a startup, there would be a case of shaping a new organizational culture instead of changing an existing one. Also, during introductory conversations the company appeared to be an organization open to sustainability. This could be deduced from previous initiatives related to sustainability and the outcomes of the Future Proof project in which sustainability in the supply chain was identified as one of the five strategic pillars. The aspiration to aim for sustainability in the supply chain made Synerlogic particularly a good fit for this research. The external organizational change represents an important part of this research and relates very well to Synerlogic's aim for a sustainable supply chain. Additionally, Synerlogic is not familiar with the GRI and the company currently does not have employees that can be described as the sustainable frontrunners within the organization. In relation to this research, this is convenient because it makes it easier to conclude causal relationships of the effect of GRI and the change agent on the organization.

Now that the context of the research is clear and the first two chapters of this research have been completed, many theoretical elements have already been passing by. These elements require detailed explanations on their functioning and the way they are applied to this case study. Therefore, the next chapter will briefly explain the theoretical background of this research.

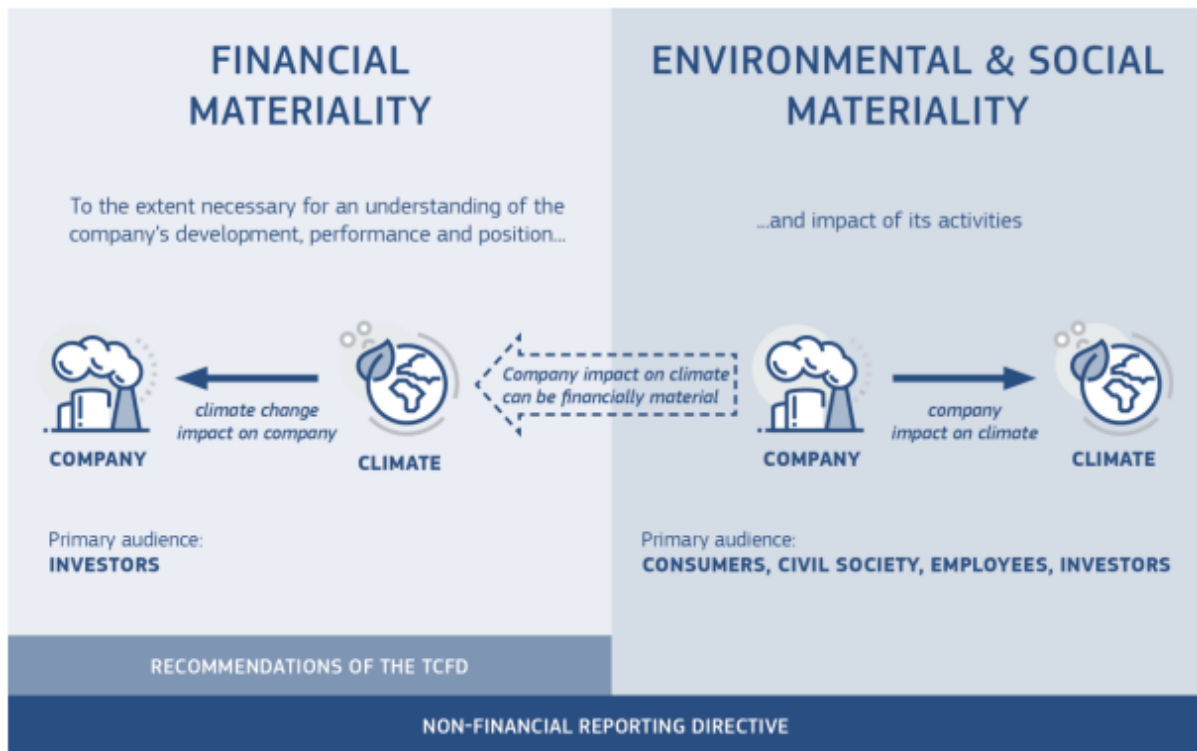
## CHAPTER 3: Theoretical background

In this chapter the theory that is used in this research will be discussed. First, general theory on the two main topics of this research will be explained: 1) sustainability reporting and 2) organizational change. Thereafter, the relationship between those two concepts will be elaborated by reviewing existing literature on the effect of sustainability reporting on organizational change. From there on, the more specific elements regarding the two main theoretical topics will be elaborated. For sustainability reporting this means: the concept of GRI, the GRI Standards and materiality analysis. For organizational change the more specific theoretical elements are: the transtheoretical model (TTM) of behavior change and the concept of collaborations in networks.

### Sustainability reporting, an (in)formal business practice

Today, almost all of the largest global corporations have included sustainability reporting (SR) in their business activities (Larringa & Bebbington, 2021). The fact that SR is practiced at such a high level has led Cho et al., (2015) to suggest that SR has become institutionalized. This would mean that SR is now a standard business practice for large companies. This is in line with the perception that, despite the fact that SR has often been voluntary for companies, it is in practice an obligation for businesses due to the fact that companies not reporting on their sustainability activities are under significant pressure to start doing so by its stakeholders (KPMG, 2011).

In 2014 the European Union introduced the Non-Financial Reporting Directive (NFRD). This law came in practice in 2018 and requires certain large companies to disclose information on the way they operate and manage social and environmental challenges (Landén et al., 2021). This legislation aims to stimulate transparency, responsibility and evaluation on non-financial performances. The NFRD applies to large companies, defined as public-interest entities (e.g. listed companies, banks, insurance companies) with more than 500 employees. This means that in Europe only 11.000 companies are covered by the NFRD (Bancilhon, 2021). The NFRD introduced the (non-binding) concept of double materiality back in 2019, representing two different perspectives. First, financial materiality; looking at how issues are affecting the value of the company in terms of development, performance and position. Second, social and environmental materiality; looking at how the company's activities have an impact on the environment and society that the company operates in. These two perspectives are very much interlinked due to the fact that a company's external impacts can translate into financial impacts on the company's value. For example, if a company is causing damage to the environment, this can have detrimental impacts on the environment, regulations can be put into place or extreme weather events can have an impact on the company's value. This also relates to the concept of dynamic materiality, introduced in a white paper by the World Economic Forum (2020) whereby change in the level of importance of the issues can take place but also in the way that the importance occurs. A visual representation of the concept of double materiality can be seen in figure 2.



\* Financial materiality is used here in the broad sense of affecting the value of the company, not just in the sense of affecting financial measures recognised in the financial statements.

Figure 2: The double materiality perspective of the Non-Financial Reporting Directive in the context of reporting climate-related information. Source: European Commission; Guidelines on reporting climate-related information.

The concept of double materiality is part of a non-binding communication supplement to the guidelines on Non-Financial Reporting. Therefore the inclusion of double materiality in non-financial reporting is not (yet) obligatory. As will become clear later in this section, the double materiality concept will be obligatory to certain companies in the near future.

In April 2021, the European Union adopted the Corporate Sustainability Reporting Directive (CSRD) as an expansion to the NFRD. The CSRD broadens the scope of companies that are obligated to report to all listed companies and companies that meet 2 of the following 3 criteria (Bancilhon, 2021):

- 250 employees or more
- More than EUR€ 40 million in net turnover
- More than EUR€ 20 million on the balance sheet

This means that the CSRD will apply to approximately 50.000 companies in Europe. At this moment Synerlogic has around 200 employees, a net turnover of approximately EUR€ 80 million and more than EUR€ 20 million on the balance sheet. This means that Synerlogic meets 2 out of 3 criteria and therefore in the current situation would be classified as a large company. The expectation is that the company's turnover will decline dramatically in the near future. Therefore it is uncertain if Synerlogic still meets 2 of 3 criteria by 2024. However, despite this uncertainty, there is high probability that CSRD applies to Synerlogic in the future. Either by 2024, classified as a large company, or by 2026 when classified as a SME.

Not only does the CSRD broaden its scope, it also expands the reporting requirements. The exact format and criteria for reporting are still in development but the reports will have to meet the following aspects (Bancilhon, 2021):

- Information based on the double materiality principle: 1) what material sustainability developments lead to possible business risks and 2) what material impacts does the company have on the environment and society.
- Information on long term sustainability goals and progress regarding those goals.
- Besides objective numbers and figures regarding environment, also information on intangibles like social capital.
- Companies will need to report according to new EU sustainability reporting standards. The standards will take into account global standard-setting initiatives such as GRI and SASB, but they will also need to meet other EU legislation and initiatives.
- The sustainability information needs to be evaluated by a third-party.

Large companies will likely be obligated to start reporting along the CSRD by 2024, based on FY2023 information. SME's are likely to face a reporting obligation by 2026 (EFRAG, 2021). Different reporting methods have been developed over the last years to help companies to report on their sustainability performance. As will be elaborated further in coming sections, this research uses the Global Reporting Initiative (GRI) as the guiding reporting method. The EU aims to align the content of the CSRD as much as possible with existing sustainability reporting initiatives like GRI, SASB and CDSB (EFRAG, 2021). For example, in the first recommendation providing a sneak peek on what the reporting standards of the CSRD will look like, almost all GRI Standards are included. The fact that sustainability reporting will be mandatory for Synerlogic in the long run and the fact that the GRI Standards will be guiding the content of the CSRD makes this research even more relevant to the company. This research primarily looks at the relationship between sustainability reporting and organizational change. Before diving into this relationship, overarching theory regarding organizational change that relates to this research will be discussed in the next section.

## Change and learn

The well known Brundtland report (1987) recognizes that the transition towards sustainability requires change in our concepts of production, consumption and business success in general. The ability to change is key to sustainable development. Change in relation to corporations small and big and change in human behavior. Unfortunately, the skill to change and adapt is one of the hardest things to teach. The importance of change is also underpinned by one of the most important historians and futurologists of this time; Yuval Noah Harari, who states that nobody is in charge and nobody knows what the future will look like. For example the job market. Nobody knows what the job market will look like in 2050. The problem is that in some areas one can wait 30 years, see what happens and then react. But in some areas, e.g. education, waiting is not a realistic option. When deciding what to teach kids in school today, one needs to think about what they will actually need in 20 or 30 years. It's not an option to wait and see, go back in time and then change the curriculum. Because we don't know what the job market will look like, focussing on any particular skill could be a bad bet. Therefore, the best bet is to focus on the ability to *learn* and to *change*

and to reinvent yourself again and again throughout your life. Harari states that this is something people will need, but the problem is that it is much more difficult to teach people how to keep an open mind than to teach people the dates of some data in history or an equation in physics (Harari, 2020). Just like education, climate change and sustainable development are areas in which it is not an option to wait another 30 years, then see what happens and undo the harm caused in the past. Therefore, the thinking behind this thesis follows Harari's reasoning to be able to change and learn. From this perspective, related to corporate sustainability, organizational change is essential to the development of sustainability.

Cambridge Dictionary (a) (n.d.) defines organizational change as "a process in which a large company or organization changes its working methods or aims, for example in order to develop and deal with new situations or markets". Organizational change aims to move from the current state to a more desirable state (Ragsdell, 2000), ranging from minor to radical changes (Dawson, 1994). If a company fails to organize change, it is less likely to respond to opportunities, economic losses, technologies, etc. Therefore, a company that is not able to change, runs the risk of being side-lined by external events e.g. changes in government regulations, technologies, products and competition (Collins & Porras, 1994). This is also in line with the growing acknowledgement of the competitive advantage located in adapting and changing organizations to better meet the needs of the modern world, match or exceed the accomplishment of competitors (Gersick, 1991), and generally keep pace in today's environment (Beer et al. 1990). Organizations that can manage these complex changes and adaptations effectively will not only survive, but thrive (Brown, 2009). Managing organizational change can be done in many different ways. Depending on the context of the situation, different strategies can be adapted to get to the desired state. As described in the context chapter, Synerlogic currently faces economic uncertainties regarding two of their three main customers ending their long historical business relationship. The current situation can be described as a crisis in which survival is the highest goal. Therefore, this research applies organizational change strategies that use this economic crisis as a window of opportunity.

## Planned change and the role of change agents

According to Dawson (1996) it is important to understand that "organizational change is a process that can be facilitated by perceptive and insightful planning and analysis and well crafted, sensitive implementation phases, while acknowledging that it can never be fully isolated from the effects of serendipity, uncertainty and chance" (Dawson, 1999, p.121). Deriving from Dawson's statement, two different types of organizational change can be distinguished; planned change and emergent change. Planned change, also described as episodic change, is led by an intervention that contains conscious activities aiming to enhance the overall performance of an organization. The planned change is often led by a change agent that is the prime mover who creates change and builds coordination and commitment. In most cases the intervention is project oriented and geared to address a current problem (Benford and Snow, 2000). Emergent change is a continuous organizational change, unconsciously, constantly evolving, unintended and unstructured. Many actors are involved and the change agent acts like a sense maker who redirects change.

In contrast to Darwin's well known paradigm on biological change as a slow stream of small mutations, gradually shaped by environmental selection into novel forms, Eldredge and Gould (1972) described the change process from a natural historians perspective as lineages that exist in essentially static form (equilibrium) over most of their theories and new species arise suddenly through revolutionary 'punctuations' of rapid change (figure 3).

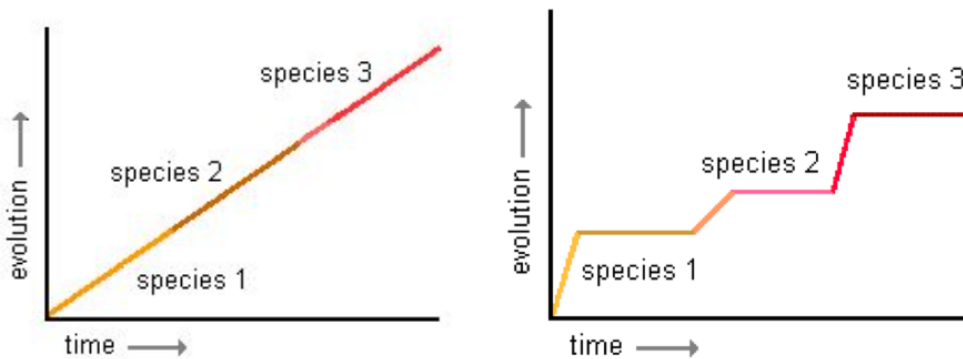


Figure 3: Darwin on evolution (left) versus Eldredge and Gould on punctuated equilibrium (right).

With this in mind, it is interesting to zoom in on the moment in which evolution (change) takes place and the graph shows an ascending line. In organizational change literature this process can be described as diagnosing and prognosing change (S. Heusinkveld, lecture, September 14th, 2021). Diagnosing is a core element of organizational change and can be described as "to recognize and name the exact character of a disease or a problem, by examining it" (Cambridge Dictionary (b), n.d.). Prognosing is "a judgment of the likely or expected development of a problem, or a statement of what the likely future situation is" (Cambridge Dictionary (c), n.d.) Diagnosing and prognosing are about what is happening that causes the current situation to be different from the expected situation, what are the possible actions that can be undertaken and what are the potential consequences of those actions (S. Heusinkveld, lecture, September 14th, 2021). This is in line with Benford and Snow (2000) and Campbell (2005) stating that decisions and actions require a matching between a problem and a solution, which they describe as a combination between diagnosing (assessment of the problem) and prognosing (assessment of the solution).

As can be seen in figure 4, applied to this research, diagnosing and prognosing refer to describing the current situation regarding Synerlogic's sustainability performance (0). The desired state (1) is the point on the horizon, the goal that is set by the organization regarding its sustainability performance. The line in the graph represents the strategy, the plan or the actions that have to be taken in order to get from the current situation to the desired situation. This is how this research strives to contribute to organizational change towards sustainable development.

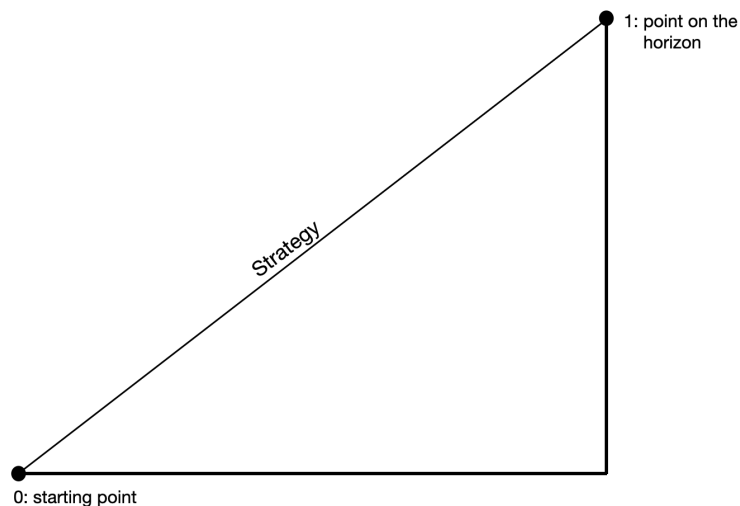


Figure 4: visual representation of diagnosing and prognosing applied to this research.

This way of thinking about change as a punctuated equilibrium has had serious implications for organizational practice and theory on how and why changes occur. Also, different tools are suitable for managing these kinds of change. As discussed in the previous section, this research follows the episodic approach. According to Weick and Quinn (1999), episodic change is most closely associated with planned, intentional change because it requires both equilibrium breaking and transitioning to a newly created equilibrium. This form of intentional change occurs when a change agent deliberately and consciously sets out to establish conditions and circumstances that are different from what they are now and then accomplishes that through actions and interventions (Ford & Ford 1995). This is where the role of the change agent comes into play. In this research, the change agent functions as someone that intentionally activates consciousness, is focused and works in a structured and well-thought out way. The goal of the change agent by taking this position is to convince people within the organization of the meaning and interpretation of corporate sustainability. The role of the change agent therefore represents episodic power. As discussed before, episodic power is essential in the first step towards institutional change. The role of the researcher as a driver is not the only factor representing the drivers for change. As the conceptual model in the end of this chapter shows, many other factors are influencing the organization. Examples of these factors are government regulations, societal pressure and stakeholder involvement.

The internal organizational change in this research is paying attention to individual behavior change, while the external organizational change is aimed at the supply chain of Synerlogic. The specific theoretical methods that will be used to approach the internal and external organizational change will be discussed later in this chapter. The following section dives into the existing literature on the relationship between sustainability reporting and organizational change.

## The effect of sustainability reporting on organizational change

Lozano (2013) defines leadership and business case as the most important internal drivers and reputation, customer demands and expectations, regulation and legislation as the most important external drivers. Here, sustainability reporting is not mentioned as an important driver for corporate sustainability. A few years later, Lozano et al. (2016) state that sustainability reporting and organizational change management for sustainability have reciprocal reinforcing relationships, where sustainability reporting provides a starting point for planning organizational change for sustainability and organizational change for sustainability improves the reporting process. Additionally, previous research on the relation between sustainability reporting and organizational change, conducted by Ceulemans et al. (2015), identified the sustainability reporting process as one of the drivers to change for sustainable development in corporations. Hereby, the process was driven by internal motivations, mostly directed from top-down. The process led to an increase in awareness of sustainability and improvements in communication with internal stakeholders, while factors impeding the change process were described as lack of external stakeholder engagement, lack of inclusion of material impacts in reports and lack of institutionalization (Ceulemans et al., 2015). Furthermore, sustainability reporting is described as a method to assess where we are and to plan the future direction of change (Lozano, 2012). Furthermore, these statements are confirmed by Sroufe (2017), defining sustainability reporting as one of the internal drivers of change and evolving systems. What can be concluded from this literature review on the relation between sustainability reporting and organizational change towards sustainability, is that where first sustainability reporting was not mentioned as a driver for change at all in 2013, over the last few years an increasing evidence has been built proving that sustainability reporting indeed can be classified as a driver for organizational change towards sustainability.

## Global Reporting Initiative, the driver for change?

One of the first theoretical elements mentioned in the central research question is the Global Reporting Initiative (GRI) monitoring. GRI is an independent, international organization that develops guidelines for sustainability reporting. GRI was founded in Boston in 1997, following public outcry over environmental damage created by an oil spill. Two non-profit organizations (CERES and the Tellus Institute), supported by the UN Environment Programme, convened the GRI. The aim was to create the first accountability mechanism to ensure companies adhere to responsible environmental conduct principles.

GRI's mission is "to enable organizations to be transparent and take responsibility for their impacts, enabled through the world's most widely used standards for sustainability reporting - the GRI Standards" (GRI, GSSB, 2021). The standards cover topics ranging from anti-corruption to water, biodiversity to occupational health and safety, tax to emissions and can therefore all be related to the three dimensions of sustainability; social, ecological and economic:

**Environmental indicators** characterize the level of impact of a company on nature (including the ecosystem, soil, air and water) on utilizing inputs (materials, energies, water) and the character of outputs (e.g. products, emissions, industrial waste waters, wastes) (Kocmanová et al., 2011).

**Economic indicators** – focus on economic effects. Vital and necessary to be published are the aspects concerning materials, power engineering, water, wastes and transport (Kocmanová et al., 2011).

**Social indicators** – they include identification of the business procedures (internationally accepted standards, education rights, corruption), a company's liability for products (labelling of products, quality, consumer protection etc.) (Kocmanová et al., 2011).

GRI developed 37 different indicators, distributed over the three dimensions above. Due to the fact that the GRI Standards function as a guiding principle throughout this research, it is important to provide a complete overview of the different indicators and their definitions. Those will be provided in the next section. To give an example, the indicator regarding water and effluents will be elaborated. This example especially shows how deep the GRI dives into these indicators and how broad the spectrum of the tool is. This example derives directly from the Sustainability Reporting Guidelines (GRI, 2013). All 37 indicators can be found in the annex (p. 90) of this research.

#### *GRI Indicator 303: Water and effluents*

*Access to fresh water is essential for human life and wellbeing, and is recognized by the United Nations (UN) as a human right. The Sustainable Development Goals, adopted by the UN as part of the 2030 Agenda for Sustainable Development, include key targets related to sustainable water management under Goal 6: 'Ensure availability and sustainable management of water and sanitation for all'. These targets aim, for example, to achieve universal access to safe and affordable drinking water, improve water quality, and address water scarcity. The amount of water withdrawn and consumed by an organization and the quality of its discharges, can impact the functioning of the ecosystem in numerous ways.*

*Direct impacts on a catchment can have wider impacts on the quality of life in an area, including social and economic consequences for local communities and indigenous peoples. Since water is a shared resource, and water-related impacts are localized, organizations are increasingly being encouraged to:*

- prioritize action in areas with water stress;*
- understand and respond to local contexts, including local social and environmental impacts;*
- aim to benefit and respect the needs and priorities of all water users in an area;*
- align their approaches and collective actions with other water users and with effective public policy.*

*Through a comprehensive understanding of its water use, an organization can assess the impacts it has on water resources that benefit the ecosystem, other water users, and the organization itself. An organization, particularly a water-intensive one, can use this information for effective water management.*

## Criticism on the GRI

By creating a common language for organizations to report on their sustainability impacts in a consistent and credible way, GRI aims for enhancing global comparability, possibilities for collaborations and enabling organizations to be transparent and accountable. Following a multi-stakeholder process, GRI includes both the internal motivation for sustainable development and the needs of other key stakeholders. Currently, GRI is considered to be the world's most comprehensive and most used sustainability reporting method (KPMG, 2020). Nevertheless, GRI is still in development and faces issues and comments from different perspectives.

For example, critics of the GRI say that because of the fact that the GRI is a reporting system that keeps developing itself over time by a self-replicating multi stakeholder social process to guide the evolution process causes a situation in which the larger vision (the institutionalisation of a discourse, practices, norms and a new language) of the GRI seems to get lost when it is not carried on to the next generation of GRI participants (Brown et al., 2007). Nevertheless, this does not mean that GRI might not play this social role in the future. Even without the full understanding of or sharing of this vision by the key participants, the GRI can lead to a strong shared vision that absorbs inevitable future criticism and thereby adds to the richness of the wider social discourse it engendered (Brown et al., 2007).

Another issue is that of financing. Those who support the GRI see the Guidelines as a public good and want them to be freely available to any organization that wishes to measure and report its contribution to sustainable development. But the coordination of the multi-stakeholder processes is a big and expensive job. Three ideas can be put forward to tackle this financing issue: intensify fundraising, rely on support from large companies and banks and the marketing of the GRI brand and its products. But fundraising puts GRI in competition with civil society organizations, the reliance on the corporate and financial sector opens questions on power relations and objectivity and brand marketing works against inclusiveness, diversity and egalitarianism. Therefore, the latest idea to tackle the financing issue by making GRI reporting mandatory via legislation has gained much support (Wachira et al., 2020). This is also in line with the latest developments of the European Commission who adopted a proposal for a Corporate Sustainability Reporting Directive (CSRD), which would extend the scope of mandatory sustainability reporting to large and medium enterprises and introduce more detailed reporting requirements (European Commission, 2021). GRI supports the mandatory EU reporting on sustainability impacts (GRI, 2021).

Previous research on the application of GRI has shown that for many companies the main reason for use of the GRI guidelines is an expectation for increasing credibility of the CSR, but also that it provides a template for how to design a report. Furthermore, corporations could use GRI to learn about themselves and to see what has actually been done in the organization, regarding the triple bottom line (triple P) (Hedberg & Malmberg, 2002).

Furthermore, Perez-Batres et al. (2012) have shown in their research that firms adopt the GRI guidelines as a response to stakeholder pressure. In addition, Brown et al. (2009) mention reputation management as the reason for companies to join the GRI. Next to the fact that companies find different motivations to initiate sustainability reporting, previous research by Yang et al. (2019) has shown that GRI reporting significantly increases firm

profitability. Also, Hedberg and Malmberg (2002) state that due to the introduction of GRI reporting the internal communication between the different business areas improves. Unknown interactions between departments, events, individuals and outside actors are discovered and used to serve a purpose internally as well as externally, which leads towards integrating all issues in operational management (Hedberg & Malmberg, 2002).

As mentioned in the introduction of this research, the GRI complements the donut by Related to Raworth's doughnut theory and its critiques, mentioned in the introduction of this research, the GRI standards can mainly be scaled under the social foundations and ecological ceilings. The economic indicators are less represented by the doughnut theory, which is also one of the main critiques by researchers stating that the doughnut model does not include specific models related to markets or human behavior (Nugent, 2021). By using the GRI indicators, the economic dimension is represented more and by considering the potential effect of GRI monitoring on TTM of behavior change, this research also aims to search for the link to human behavior mentioned by Nugent (2021).

## Materiality analysis

GRI has the potential to help Synerlogic in directing towards concrete sustainability themes that are relevant to the organization. To start working on the relevant GRI indicators for Synerlogic, this research includes a materiality analysis. SASB (2013) defines materiality as a long-term focus on issues that make a major difference to both an organisation's performance and the information needed to make sound judgements. GRI G4 (2013) offers a methodological structure on how to perform the materiality analysis. First, indicators relating to the triple bottom line should be identified. Thereafter, the concepts of materiality and stakeholder inclusiveness are applied to prioritize the indicators. Then, the output is validated in terms of scope, boundaries and time, ensuring the report provides reasonable and balanced triple bottom line impacts.

Not for every single company all these 37 indicators are equally important. Not every company has the same impact on every single indicator and the emphasis within a report is expected to reflect their relative priority. For example, a company in the transportation sector has much more impact on the emissions of CO<sub>2</sub> than a company active in the services industry. This concept in sustainability reporting is called; materiality. Materiality determines which relevant topics are sufficiently important that it is essential to report on them.

A combination of internal and external factors can be considered when assessing whether a topic is material. These include the organization's overall mission and competitive strategy, and the concerns expressed directly by stakeholders. Materiality can also be determined by broader societal expectations, and by the organization's influence on upstream entities, such as suppliers, or downstream entities, such as customers. This research will determine the material topics by examining the mission, vision and strategy of Synerlogic. Furthermore, key stakeholders will have the possibility to show their prioritization on the different indicators. Among key stakeholders this research understands internal (shareholders, managers, employees) and external (companies that are part of the supply chain upstream (suppliers) and downstream (customers)) stakeholders.

Various methodologies can be used to assess the significance of impacts. In general, 'significant impacts' are those that are a subject of established concern for expert communities, or that have been identified using established tools, such as impact assessment methodologies or life cycle assessments. This research will use the judgement of expert communities in order to determine the significance of economic, environmental and social impacts that Synerlogic has. Impacts that are considered important enough to require active management or engagement by the organization are likely to be considered significant.

Figure 5 shows an example of a materiality matrix. This matrix will also be applied to this research, reflecting on the amount of economic / environmental / social impact the different indicators have (x-axis) and the prioritized topics by key stakeholders (y-axis).

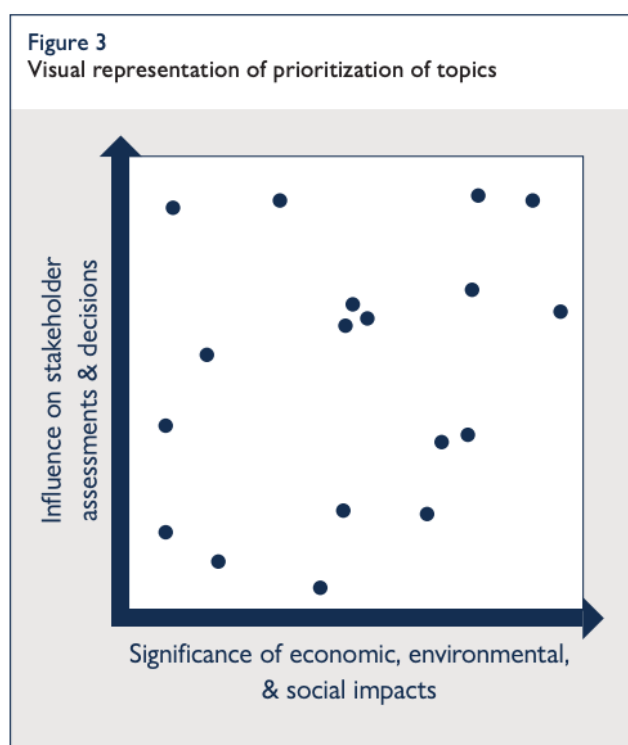


Figure 5: Example of materiality matrix. Source: GRI, GSSB (2020).

## Internal organizational change

In his research on organizational change, Phillips (2004) elaborates on the importance of change at the individual level. He argues that employees are the building blocks for change efforts, that organizational change is altered in actions made singly by each employee and that without changes in behavior at the individual level, true organizational change will not occur (Phillips, 2004). This research responds to the call from Phillips (2004) to emphasize individual behavior change by including Prochaska and Diclemente's Transtheoretical Model (TTM) of behavioural change.

## Transtheoretical model of behavioural change (TTM)

The TTM originates from the field of social sciences and has been primarily used in developing interventions for individuals attempting to make health related changes in behavior patterns (e.g. quitting smoking) ( Prochaska & DiClemente, 1984; Phillips, 2004). TTM is the consolidation of multiple different models of individual behavior change into one single framework regarding intentional change (Phillips, 2004). The thinking behind TTM is that change is a process that individuals go through in distinct changes (Prochaska & DiClemente, 1984). Figure 6 presents the TTM, including the five different stages that represent the temporal, motivational, and developmental aspects of the process of change (DiClemente & Scott, 1997).

1. The process begins with the precontemplation stage in which individuals are too unwilling, unable or unknown to acknowledge the problem to seriously change their behaviour (Prochaska & DiClemente, 1984).
2. When individuals begin to consider their behavior and their contribution to the problem, they enter the contemplation stage. In this stage they consider the pros and cons of their behavior and may decide that there is no problem; that there is a problem but they cannot or will not take action; or that there is a problem and they need to do something (DiClemente & Scott, 1997).
3. In the preparation stage individuals increase commitment, make the decision to take action and make a plan to modify their behavior (DiClemente & Scott, 1997). The preparation stage initiates the action stage of the process.
4. In the action phase the desired behavior is being practiced. Entering the action stage does not guarantee long-term success. Therefore, movement from precontemplation through contemplation and preparation is required (DiClemente & Scott, 1997). In other words, the desired behavior needs to be practiced on a continuous basis in order to slide into the next stage.
5. The next stage is maintenance, in which the long-term success can be measured and in which successful behavior change can be achieved.

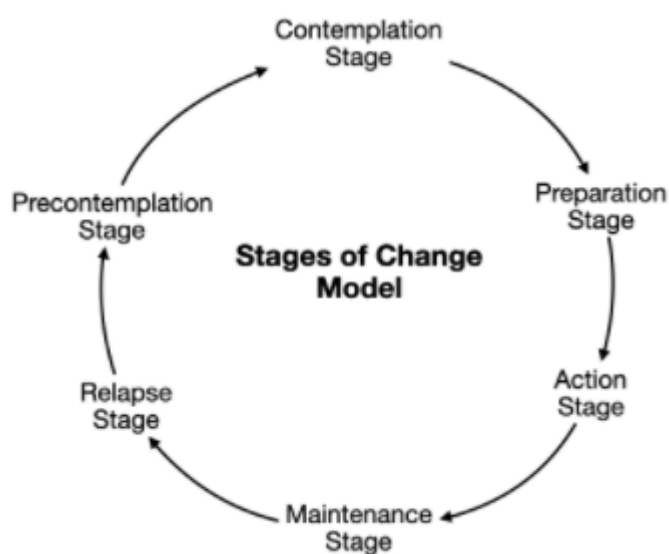


Figure 6: The stages of behaviour change. Source: Bolanos, 2014.

For most people the path to change is not a straight line, but circular. Naturally, relapse and recycling through the stages helps individuals to learn that certain goals are unrealistic, certain strategies are ineffective, or certain environments are not conducive to successful change. In most cases, individuals need several revolutions through the stages of change to achieve successful behavioral change. Individuals move through the stages of change in a cyclical pattern over a long period of time. A single “treatment” might not create maintained, successful change, but the goal is to promote and accelerate movement through the stages and contribute to the overall process of change in a positive and constructive manner.

Another important aspect mentioned by Diclemente and Scott (1997) is the readiness for change. Lack of engagement and very early dropouts are most likely related to the early-stage of the process of changes. Denial or lack of engagement are concepts that support this contention. Different strategies and approaches are described by DiClemente and Scott (1997) that help to address the challenges related to these concepts. Likewise, for every single stage in the process of change different strategies and approaches are proposed to overcome barriers and to promote and accelerate movement through the stages, aiming for successful behavior change. Depending on the outcomes of this research, the recommendation chapter might return to the different strategies and approaches proposed by Diclemente & Scott (1997).

## External organizational change

There is a growing recognition that conventional approaches to solving “wicked” problems (Rittel & Webber, 1973) are not sufficient. Therefore, Hart and Bell (2013) call for collaborative action among different disciplines in science (environmentalists, economists, socialists, etc.) and also among organizations in practice. Senge et al. (2007) state that large-scale systemic change can not occur in isolation but is more a collaborative endeavor where individuals, groups and organizations live and act differently. This is in line with Ryan et al. (2012), explaining that through collective action, companies involved seek to build organizational capabilities to meet the sustainability challenge. Although the discourse on collaborative action increases and contributes to a broadening of management scholarship, these efforts are often tied to the general “hub-and-spoke model”, where stakeholders are distinct and mutually exclusive (Bhattacharya & Korschun, 2008). This model focuses more on creating political leverage and power, rather than knowledge and information (Senge et al., 2007). To get out of the firm-centric approach, this research applies the Interaction and Networks Approach as an alternative perspective that leads to collaborative action.

## Integrated Network Approach (INA)

The INA approach was developed by the IMP Group in the mid 1970's as a project on industrial marketing and purchasing. The first idea was to focus on single dyadic relationships. After developing their work, IMP Group moved this perspective to the network within which these dyadic relationships are embedded (Ryan et al., 2012). The interaction between organizations provides the ability to both create change and create stability in response to change, both internally and externally generated. This has important implications for how more sustainable organizational forms can be created as it allows for the concept that organizations, relationships and networks are changeable by the actions of

the parties involved. From this perspective, the network should be viewed as a source of value creation. Also, this allows us to understand how firms “know more than they do”, by learning from others (Ryan et al., 2012). The INA Approach encapsulates these foundational concepts within its approach to allow change for sustainability by incorporating the system. Due to the scope of this research, the main focus will be regarding the dyadic relationship within the network. Thereby, this research follows the findings by Crane (1998) on the importance of “Green Alliances” in supply chains.

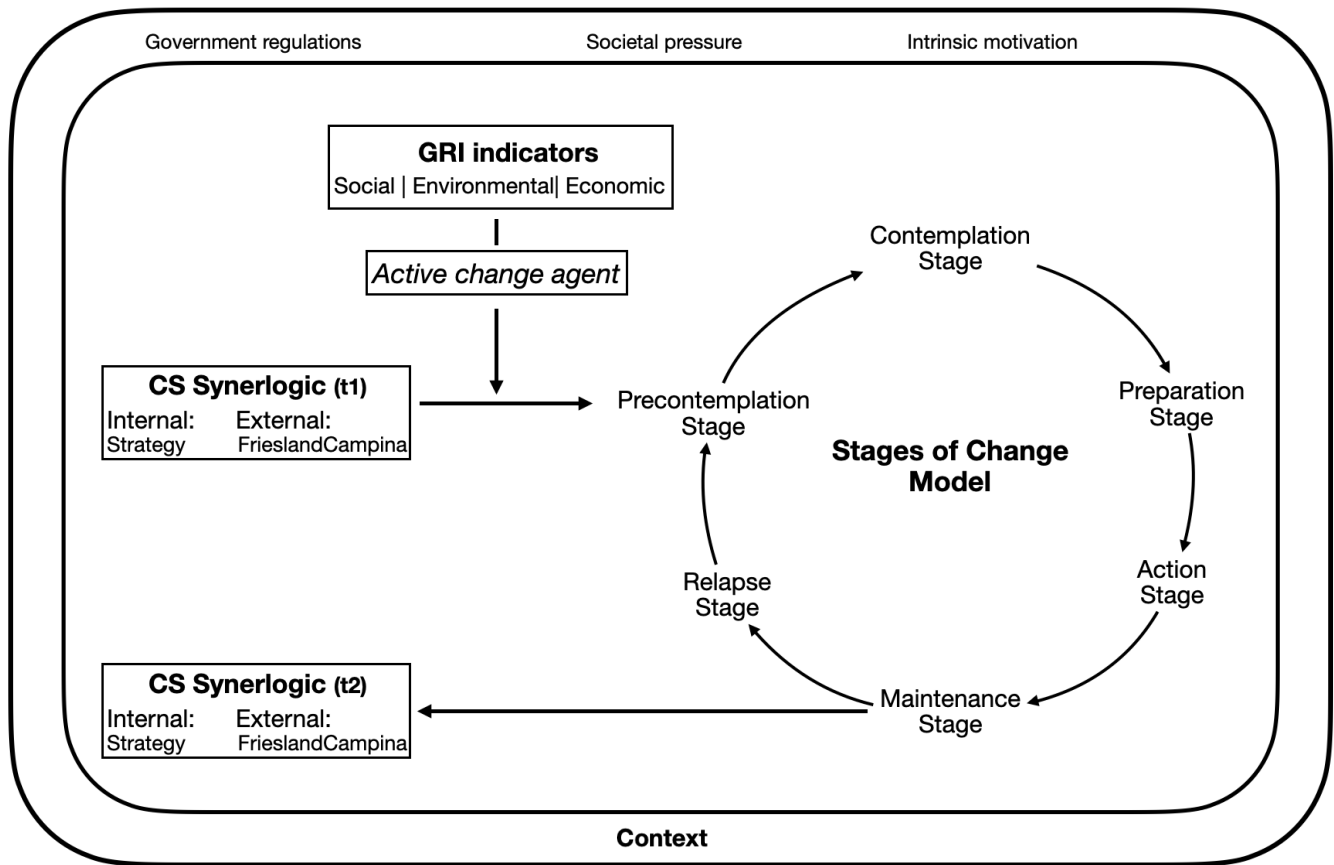
## Dyadic relations and the co-creation of knowledge

By focussing on dyadic relationships, INA moves beyond the instrumental view of engaging stakeholders to facilitate the achievement of firm-level goals. Stakeholders are not chosen for what they can offer the firm, but for what the firm and stakeholder can achieve, collaboratively, for the overall health of the system (Ryan et al., 2012). For relationships between diverse parties to succeed, a dialogic approach is required (Tsoukas, 2009). By creating a good interaction between stakeholders, organizations are able to reach out creatively beyond physical and mental boundaries in the process of learning, development and evolution (Capra, 1983, p.289). By learning generated through interaction, actors are able to co-create knowledge. Where ecological sustainability becomes part of the interactive dialogue between the organization and its stakeholders, ecological value can be created.

In terms of sustainable development, the donut, climate change, etc. it is of most importance to be able to encourage others to join in taking action. These actions sometimes involve radical solutions to problems posed by environmental degradation. Therefore, trust, respect and understanding are required. According to Doz & Hamel (1998), the sharing of information is crucial in developing trust between parties. In turn, trust establishes an environment in which further possibilities can be realized. Therefore, the sharing of information is not only important for facilitating effective and efficient interaction, but also a necessary condition for the creation of knowledge and necessary in the shift towards sustainable organizational forms.

In this research the dyadic relationship will be represented by the relationship: Synerlogic - Frieslandcampina. Frieslandcampina is one of the biggest business relations to Synerlogic. Also, due to the critical economic situation in which Synerlogic currently is, there is an increase in urgency to invest in current relationships. This might contribute to the support base for investing in a sustainable collaboration with Frieslandcampina. Related to the “what’s in it for me-question”, the commercial and therefore economic dimension of the sustainable development definition is interesting for Synerlogic in this sense. Furthermore, Frieslandcampina is an interesting actor in terms of co-creation as the company has been focusing on sustainability for years already. Therefore, knowledge related to sustainability, reporting, ambitions and strategies is likely to be in development already. Frieslandcampina could be a “big brother” to Synerlogic in setting examples and sharing knowledge on sustainability. Furthermore, Synerlogic has knowledge on chemicals, distribution, etc. which could be of value for Frieslandcampina in improving sustainability aspects in this spectrum. Both parties are able to share relevant knowledge for the co-creation of sustainable developments.

## Conceptual model



### Explanation conceptual model:

CS Synerlogic (t1) represents the current corporate sustainability performance of Synerlogic. The performance is measured in internal and external terms. The internal corporate sustainability is illustrated by describing the internal sustainability strategy of the organization. The external corporate sustainability is illustrated by describing the relationship with an organization representing the next link in the supply chain; Royal FrieslandCampina. The hypothesis is that the current situation will be influenced by an episodic change agent (the action researcher) that applies the GRI indicators to Synerlogic. This is seen as an external driver that triggers the stages of change model that represents the individual behavioral change of people, part of the organization of Synerlogic. The hypothesis is that this change in TTM results in a new situation (CS Synerlogic (t2)) in which the corporate sustainability of Synerlogic, illustrated again in the internal and external performances, changes to its new (more desirable) state. Next to the GRI and the change agent there are other factors influencing the organizational change towards sustainable development. These factors (e.g. compliances and stakeholder pressure) are not included in this research. Nevertheless, it is important to mention these factors when putting this research in perspective. Therefore, the outside box in the model represents the context in which all other influencing factors can be placed.

## CHAPTER 4: Methodology

In this chapter the methodology that is used in this research will be discussed. The research philosophy, strategy, data collection and data analysis will be elaborated. Additionally, the train of thoughts that have led to the choices for those specific methods will pass by.

### Research philosophy

The research paradigm that reflects the worldview on epistemology (what is known to be true) versus doxology (what is believed to be true) behind this research is constructivism. Constructivism is based on the idea that knowledge is socially constructed by interacting individuals, seeking understanding of the world in which they live (Creswell, 2007). Meaning is subjective, varied and multiple, leading the researcher to look for the complexity of views rather than narrow these meanings into a few categories or ideas (Creswell, 2007). During this research, participants are part of the diagnosis of the sustainability performance of Synerlogic. Furthermore, the researcher has an important role in interpreting and contributing to this process. These elements in which knowledge is socially constructed and interpreted are in line with the worldview of social constructivism. In addition, this research seeks to bring about change towards sustainable development, involving an active researcher that stimulates and guides the change process. A powerful, “most promising” approach to transformation, learning and change is action research (Armstrong, 2019; Yager, 1991, p. 53). Action research originates from the field of cultural anthropology and is described as “an approach in which the action researcher and members of a social setting collaborate in the diagnosis of a problem and the development of a solution based on the diagnosis.” (Bryman, 2008, p. 380). The process of constructing meaning is a key element in both constructivism and action research, which is why Trunk Širca and Shapiro (2007) consider these two approaches as one side of the same coin.

In relation to this research, the researcher, employees of Synerlogic and employees of FrieslandCampina are collaboratively diagnosing the problem and are co-creating solutions towards sustainable development by using their different perspectives. Relating to the previous theory chapter, the action researcher represents the change agent during the process. The subjectivity accompanied with the characteristics of social constructivism is one of the main critiques toward this paradigm. A critical component of action research is the need for reflection, which is described as a way of thinking about a problem that needs to be tackled (Bryman, 2008). According to Fullan (1999), reflection is why participants are able to investigate reality in order to change it. Reflectivity provides the ability for participants and the researcher to take a step back and reflect on what they do in a more objective and analytical manner (Bruman, 2008). Hereby, the main critique regarding objectivism and the role of the researcher have been taken into account.

## Research strategy

The paradigms of constructivism and action research provide the ability to develop a research approach in which different perspectives from different spheres are connected to create a kind of potpourri, interpreted by the researcher and participants through reflection. This potpourri is meant to guide change towards new ideas and solutions on corporate sustainability. This line of thought follows Schumpeter's "Neuer Kombinationen" and Leibniz's ars-combinatoria. *"Everything we want to know in the world and all the progress we want to achieve does not come from following the rules, roads and routes prepared for us"* (Ten Bos, 2018; 34:50). We develop by progression by trying something new (Ariew & Garber, 1989). This concept has been very important in management education and therefore also fits this research. Michel Serres builds on this line of thought in his philosophy to reverse the distinction between alpha and gamma sciences (Latour, 1987). He states that a balanced, well functioning world is one that connects alpha and gamma, social and natural sciences, instead of taking them apart. In the 1960's he described this as the Northwest Passage. The Northwest Passage is a route from the Atlantic to the Pacific through Canada's polar archipelago. This is a very difficult passage, which Serres uses as a metaphor to talk about the connection between alpha and gamma science. The ecological challenges involved in this research are seen as creating a pressing need to bridge this "Northwest Passage" between natural and social sciences (Ten Bos, 2018). The combination of GRI indicators, a materiality analysis and the TTM of behavior change builds this bridge in which the influence of human behavior on the natural environment is under investigation.

This research uses a mixed methods approach, in line with the action research paradigm and the described school of thought of Schumpeter, Leibniz and Serres. The combination of qualitative and quantitative data is best suitable for this research because this method permits a more complete and synergistic utilization of data than separate quantitative and qualitative data collection and analysis (Wisdom & Creswell, 2013). Thereby, the mixed method strategy fits the multidisciplinary character of this research.

The chosen approach to the mixed methods strategy is an exploratory design. Exploratory mixed methods use a two-step style in which the results of the first method (qualitative) help develop the second method (quantitative) (Greene et al., 1989). This approach is particularly useful when a researcher needs to identify important variables to study qualitatively when the variables are unknown (Creswell, 2013; Creswell et al., 2006). In relation to this research, the exploratory design helps at first by providing the ability to determine the indicators relevant for Synerlogic by qualitative research methods. Thereafter, the most material indicator is tested using both quantitative and qualitative data. As can be seen in figure 7, the design starts with qualitative data, to explore a phenomenon, and then builds to a second, quantitative phase. Because the design begins qualitatively, a greater emphasis is often placed on the qualitative data (Creswell et al., 2006).

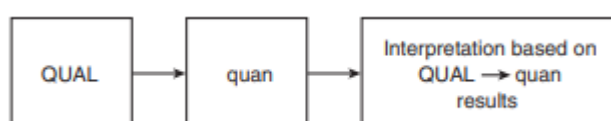


Figure 7: Exploratory design Source: Creswell et al., 2006.

Creswell et al. (2006) distinguish two different types of exploratory research design; the instrument development model and the taxonomy development model. The instrument development model is used to first qualitatively explore the research topic and then uses these findings to guide the development of items and scales used for a quantitative survey instrument (Creswell et al., 2006). The taxonomy development model is used to identify important variables in the initial qualitative phase. The secondary, quantitative phase tests or studies these results in more detail (Morgan, 1998; Tashakkori & Teddlie, 1998). In this model, the first phase develops specific categories which are then used to direct the research questions and data collection in the second phase. The taxonomy development model is most appropriate to this research. During the initial phase, qualitative data is conducted in order to identify the specific GRI indicators that are relevant to Synerlogic. Thereafter, the most material indicator is studied during the secondary quantitative phase.

This research applies the taxonomy development model to a case study design. Creswell describes a case study as “a qualitative approach in which the investigator explores a bounded system or multiple bounded systems over time, through detailed, in-depth data collection involving multiple sources of information, and reports a case description and case-based themes” (Creswell, 2013, p. 245). The mixed methods approach integrates well with a case study design, both providing tools to gain more in-depth information on the relevant GRI indicators for Synerlogic, the current status regarding the most material indicator and the potential effect of the application of GRI monitoring on internal and external organizational change. Synerlogic is used as a case, representing a company in the chemical and transportation industry.

The next two paragraphs will show that the procedures of data collection and analysis are in line with the phenomenological approach that is used for this research. Hereby, methodological congruence is ensured.

## Data collection

The data for this research is gathered through semi-structured interviews, observations, surveys by questionnaires, focus group discussion and desk research. Using mixed methods strengthens the validity of this research.

In the initial phase, desk research is conducted regarding potential relevant GRI indicators for Synerlogic. Sources were comparable organizations in the chemical industry (Essenscia sustainability report, 2019) and comparable reporting methods (SASB). Furthermore, exploratory conversations are held with a total of 26 internal stakeholders inside Synerlogic.

Based on this data, an initial list of potential relevant GRI indicators is set up. This initial list, together with interactive participation on the meaning of sustainability on a personal - and business level and additional background information on corporate sustainability and GRI reporting are used to guide a focus group discussion. Wong (2008) describes the focus group discussion as a research methodology in which a small group of participants gather to discuss a specific topic or an issue to generate data. The most important aspects of a focus group discussion are the interaction between the moderator and the group and the interaction between group members. The objective is to give the researcher an

understanding of the participants' perspective on the topic in discussion (Wong, 2008). This method therefore is particularly suitable for this research because it helps to determine the stage of the TTM of behavior change in which Synerlogic currently is.

Thereafter, a materiality analysis is conducted among key members of the management team of Synerlogic and key stakeholders of the company. Key stakeholders were considered to be Synerlogic's most important suppliers and customers. Among the relevant internal and external stakeholders, a questionnaire is conducted in which respondents prioritize GRI indicators related to the chemical and transportation industry. Furthermore, semi-structured interviews help to prioritize the indicators using a qualitative method. After the prioritization of indicators by internal and external stakeholders, the indicators are ranked by external experts with knowledge on both sustainability and chemicals. The external experts prioritize the indicators by assessing the amount of impact Synerlogic has on each of the indicators. All this data together provides the ability to develop a materiality matrix. The materiality matrix helps to present an overview of the indicators that are prioritized by on the one hand key stakeholders (internal and external) and on the other hand external experts. What follows is an overview in which a top five most important (a.k.a. most material) indicators are presented. The indicator with the highest mutual priority is the most material indicator and is used to build the rest of this research.

To gain insights on the state of affairs regarding the most material indicator, a project group is organized. People from different departments within the organization are represented, which creates an integrative approach. According to Boukherroub et al. (2015) an integrated way of working contributes to optimized economic, environmental and social performances. The researcher facilitates the project group by organizing meetings for collaborative information gathering on what the current state of affairs is. Also, the group is used to observe how the application of GRI indicators affects the behavioral change of the related participants. Also, this specific project group will be used to examine the external organizational change related to Royal FrieslandCampina as the next step in the supply chain. People from Synerlogic and Royal FrieslandCampina are represented in this project group. Among others, the influence of collaboration, dialogue and the forming of a "green alliance" on change to enhance corporate sustainability will be taken into account. All together, these methods will help to gather the information needed to answer the central research question.

## Data analysis

In the third phase of this research, the collected data is analysed. The questionnaires and available data on the most material indicator are analysed using SPSS. SPSS is a software package used for statistical analysis, originally introduced for social sciences like sociology, psychology and political sciences. By using SPSS, the data can be transformed into a materiality analysis by making a scatter plot.

Furthermore, this research uses Atlas.Ti for the analysis of data gathered by interviews, focus group discussions. Atlas.Ti is a computer programme that is specifically suitable for analysing qualitative data and large pieces of text (Smit, 2002). The main aspect of Atlas.ti that will contribute to the analysis of this research is the ability to assign codes to specific

pieces of text. Coding is a process originating from grounded theory and focuses on the essence of pieces of texts and relates them to specific categories. The assigning of codes is a process in which the researchers own interpretation on lived experiences is involved. It is hard to implement bracketing or epoche - the concept in which investigators set aside their experience, as much as possible, to take a fresh perspective toward the phenomenon under examination (Creswell, 2013) in an interpretive approach. Therefore, Creswell (2013) suggests a new definition of epoche or bracketing, such as “suspending our understandings in a reflective move that cultivates curiosity” (LeVasseur, 2003). In this sense the researcher decides in what way his or her personal understanding will be introduced in the study, which is also the case in this research regarding the interpretation of the stages of behavior change. In this study the researcher is aware of his role as an interpreter of the data and the influence this interpretation has on the analysis.

The main themes of codes that come out of the analysis will function as the framework in which the data analysis will be reported.

# CHAPTER 5: Materiality analysis and current performance on CO2-footprint (t1)

In this chapter, the first two research questions will be answered. First, a materiality analysis will be performed on Synerlogic. The outcome of the analysis will be presented in a materiality map. The outcome will be used in order to answer the second research question regarding Synerlogic's current performance (t1) on their number one, most material indicator.

## 5.1 Materiality Analysis Synerlogic

### Defining relevant stakeholders

To be able to perform a materiality analysis, relevant stakeholders and sustainability experts have been determined. The relevant stakeholders represent both internal and external key actors that all together provide input on the indicators that they find most important and relevant to Synerlogic. The internal stakeholders included in the analysis are a total of 26 employees of Synerlogic. The external stakeholders included in the analysis are represented by customers and suppliers of Synerlogic. A list of responding internal and external stakeholders can be found in the extended annex.

Sustainability experts are included in this analysis to give their judgement on which GRI indicators Synerlogic actually has an impact on. The sustainability experts are represented by members of the European Commission Expert Group: High Level Roundtable on the implementation of the Chemicals Strategy for Sustainability. The mission of the expert group is to realise the objectives of the Chemicals Strategy for Sustainability and to monitor its implementation in dialogue with the stakeholders concerned (European Commission: Directorate-General for Environment, 2021). The expert group assists the Commission in relation to the implementation of existing Union legislation, programmes and policies. As can be derived from the title of the expert group, members of this round table can be labeled as experts representing both sustainability and chemical knowledge. It is exactly this combination that makes members of this expert group suitable for this research. A list of the experts that responded to the questionnaire can be found in the extended annex.

### Determination process of the chosen GRI indicators

Materiality analysis helps to map out the most material indicators that apply to Synerlogic. The outcomes of this analysis determine the content on which the rest of the research will be built. All respondents were asked to rank a list of 16 indicators. The indicators are derived from the list of 37 GRI Standards. First, a selection on these GRI indicators had to be made. This is where the action researcher has had its main influence on the outcome of this analysis. The selection of 16 indicators was done by reviewing the sustainability reports of other companies in the chemical industry: Essenscia. Essenscia is the Belgian sector federation of the chemical industry and life sciences and represents the specific interests of companies active in the chemical industry. The indicators they used in their materiality matrix can be found in the extended appendix. Also, one of Synerlogic's customers within its supply chain; Royal FrieslandCampina, performed a materiality analysis in their sustainability report 2020. The information it contains is also used as a consideration for determining relevant

GRI indicators to Synerlogic. The materiality matrix of Royal FrieslandCampina can be seen in figure 8.

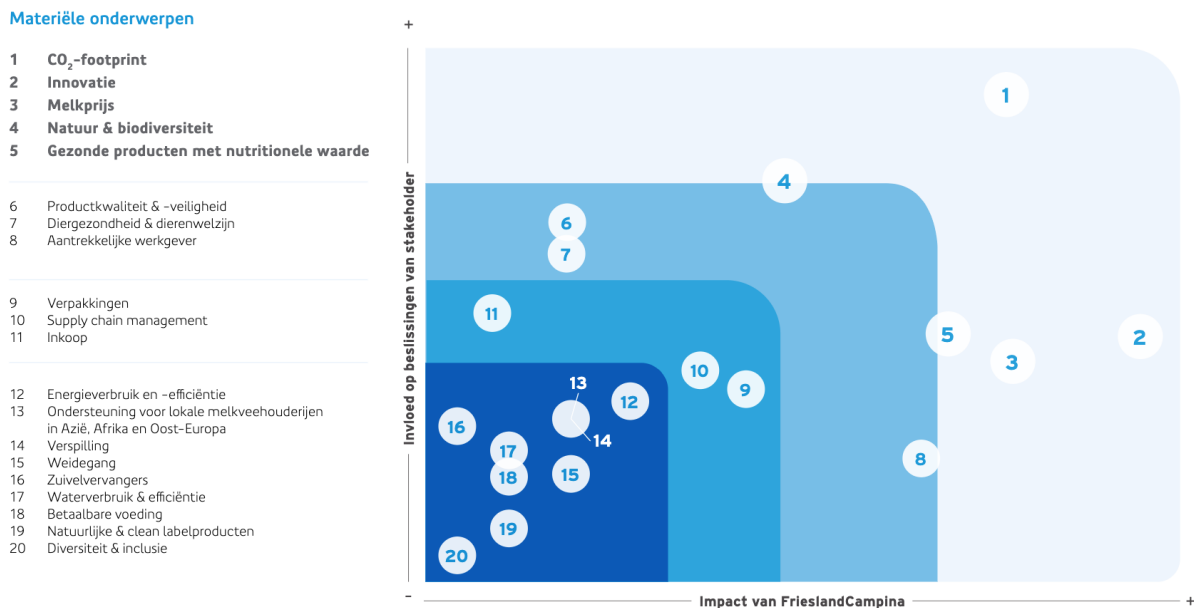


Figure 8: Materiality matrix Royal FrieslandCampina. Source: Royal FrieslandCampina (2020).

What stands out from the materiality matrix of FrieslandCampina is that CO<sub>2</sub>-footprint, innovation, product price, nature and biodiversity and healthy products with nutritional value seem to be the material indicators. Another source of input consulted to compose the indicators for Synerlogic was the materiality map of the Sustainability Accounting Standards Board (SASB). SASB defines indicators linked to specific industries. Applied to Synerlogic, the relevant industries are road transportation and the chemical industry. According to SASB, the relevant indicators to these two industries are: GHG emission, air quality, product design and lifecycle management, materials sourcing and efficiency (SASB, 2018). All of this information, together with conversations with internal stakeholders of Synerlogic, regarding their most important indicators, their values and beliefs, resulted in a list containing 24 GRI indicators:

1	CO <sub>2</sub> -footprint	13	Diversity and inclusion
2	Innovation	14	<b>Image</b>
3	Nature & biodiversity	15	<b>Human rights</b>
4	Energy & water efficiency	16	Competitiveness
5	Attractive employer	17	<b>Transition skills</b>
6	Supply chain management	18	Compliances
7	<b>Local neighbourhood involvement</b>	19	Risk management
8	Good product price	20	<b>Circularity</b>
9	Product quality	21	<b>Transparency</b>
10	Purchase	22	<b>Involved employees</b>
11	Packaging	23	Financial health
12	Waste management	24	<b>Partnerships / dialogue</b>

To reflect on the character of the indicators, it can be noticed that some indicators describe impacts and other indicators illustrate specific conditions for business operations. This is one of the critiques on the integration of GRI indicators by Fonseca (2009), followed by the

argument that this is one of the reasons why the GRI is multi-applicable. This has consequences for the objectivity of the qualitative method and therefore remains a topic on which GRI searches for further improvements.

After testing the ranking of the indicators from high to low priority, it could be concluded that the list above was too long. Therefore, the choice has been made to further shorten the list by eliminating the bold indicators from the ranking. Also, some indicators were partly covering each other and some were eliminated due to the fact that others were considered to be more relevant. All together, this resulted in a list of 16 remaining indicators that were ranked from number 1 (highest priority or biggest impact) to number 16 (lowest priority or least impact).

## Performing the materiality analysis

The internal and external stakeholders were asked to rank the 16 indicators from number 1 (highest priority) to number 16 (lowest priority). The outcomes of the ranking by Synerlogic's internal and external stakeholders can respectively be found in figure 9 and 10. The experts were asked to rank the exact same list of indicators but they had to assess the amount of impact Synerlogic as a company has on these indicators. The ranking by sustainability experts is presented in figure 11.

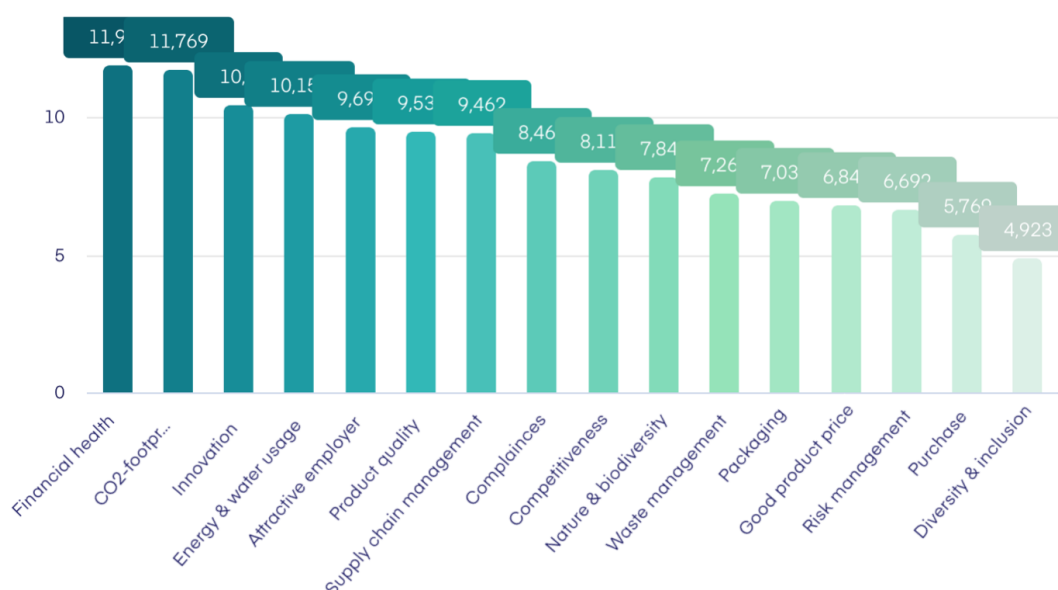


Figure 9 : 16 GRI indicators ranked by Synerlogic's internal stakeholders (Synerlogic employees).

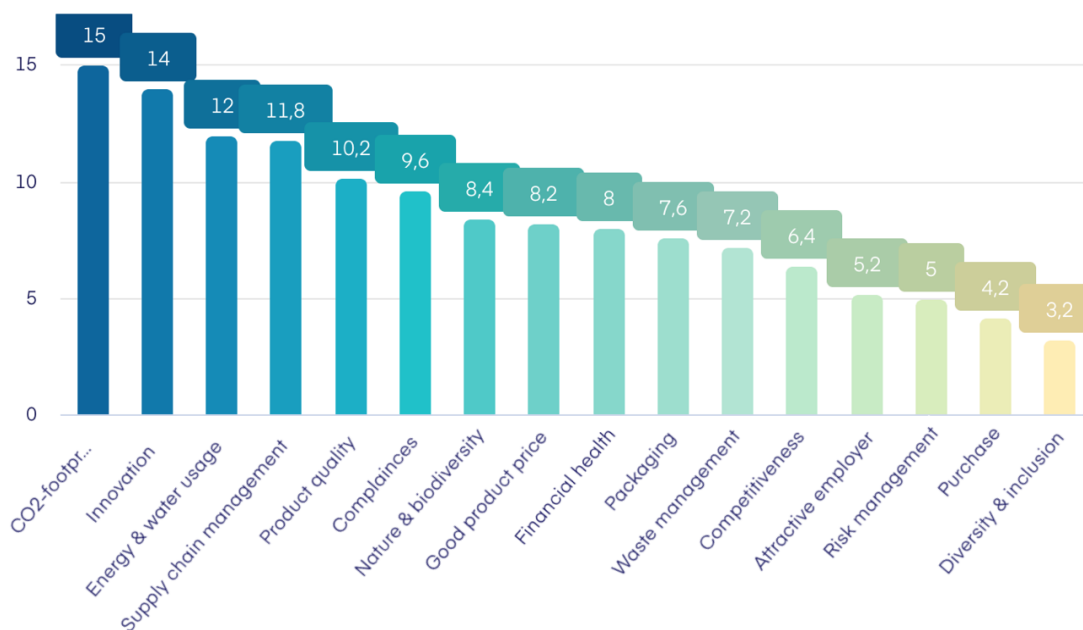


Figure 10: 16 GRI indicators ranked by Synerlogic's external stakeholders (customers & suppliers).

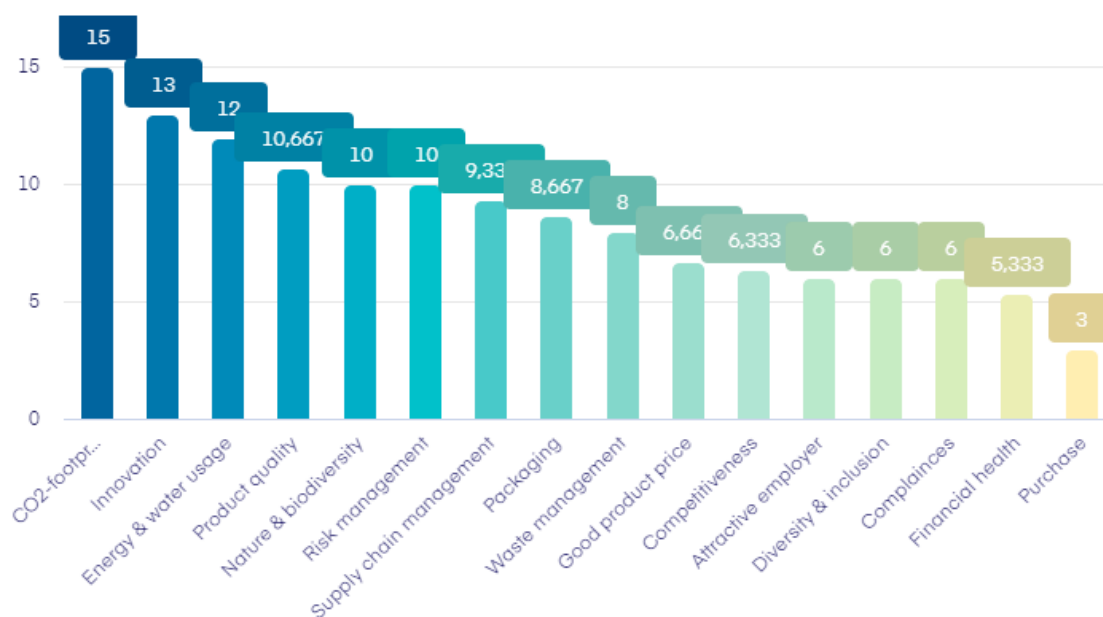


Figure 11: 16 GRI indicators ranked by sustainability experts.

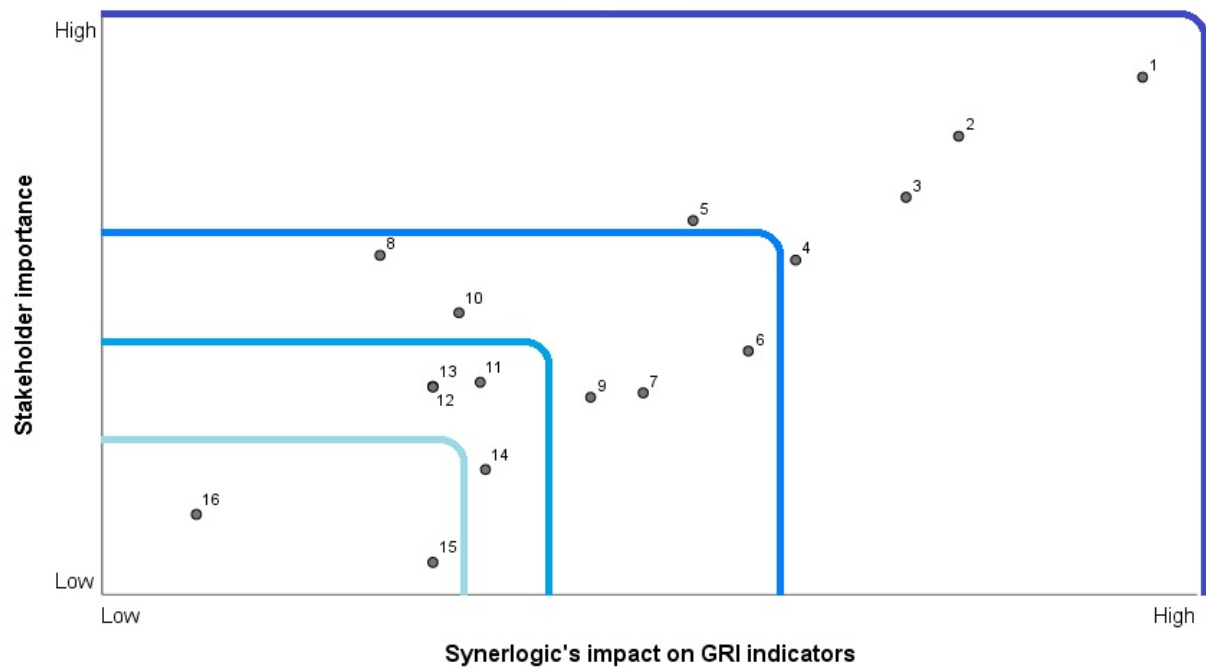
When comparing the differences between the outcomes of the questionnaires, it can be seen that the various groups all recognize innovation as a crucial indicator for Synerlogic to keep developing and to survive in the long run. Also, they agree on the importance of the CO2-footprint. Arguments behind their answers show that awareness on this indicator comes from climate scientists, the public debate and government regulations on emissions. The importance of energy and water management is highly ranked by almost all respondents as well.

The biggest differences in ranking between internal stakeholders and the other two groups can be explained by the fact that many respondents from the internal stakeholder group

prioritize the financial health of the company. For example, one respondent mentions that in terms of sustainability the biggest “revenue” can be achieved on packaging and waste because these topics can be put into commercial perspectives as well. Also, multiple respondents state that in order to have a positive impact on the environment or society, the company has to be financially healthy. The other stakeholder groups ranked the financial health of Synerlogic lower and barely mentioned this indicator in their argumentation. Regarding supply chain management, external stakeholders define this indicator as more important than internal stakeholders. Not many respondents from the internal stakeholder group mention the supply chain indicator while this is often mentioned by external stakeholders. This could be explained by the fact that external stakeholders see the supply chain management more as an indicator that also includes their role in the situation. Therefore, this indicator might be more top of mind among external stakeholders.

Sustainability experts specifically assessed what indicators Synerlogic has an impact on. The biggest gap between the rankings can be found between the outcomes from the internal stakeholders and the sustainability experts. Mainly the indicators financial health, nature and biodiversity, attractive employer and risk management differ from each other. This gap can be explained due to the fact that sustainability experts base their argumentation more on scientific knowledge. Therefore, they choose to put the indicators that are related to environmental, health or social issues higher than indicators that are more related to Synerlogic’s business. Internal stakeholders argue the other way around and place indicators directly related to the business of Synerlogic higher and state that these have the highest priority because the other indicators will follow once the company is, for example financially healthy.

The input from these three groups of respondents presented in the rankings provide the information needed to do the materiality analysis. The input from the internal and external stakeholders are put together. The means of these rankings is put on the y-axis of the materiality matrix. The input given by the sustainability experts is presented on the x-axis of the materiality matrix. Both axis show the amount of impact or importance from low to high. This results in a situation on the top right of the matrix, where indicators are placed that are both highly prioritized by the stakeholders and indicated as high impacts by the sustainability experts. These indicators are the ones with the highest materiality for Synerlogic, the indicators Synerlogic should focus on. The materiality analysis of Synerlogic is done using a scatter plot in SPSS and can be seen in figure 12. Also, a calculation regarding all the specific indicators and corresponding means per response group can be found in the extended appendix.



### Material indicators

Number	Indicator
1	CO2-footprint
2	Innovation
3	Energy & water efficiency
4	Product quality
5	Supply chain management
6	Nature & biodiversity
7	Packaging
8	Financial health
9	Waste management
10	Competitiveness
11	Good product price
12	Attractive employer
13	Compliance
14	Risk management
15	Diversity & inclusion
16	Purchase

Figure 12: Materiality matrix Synerlogic: plotting GRI indicators with numbers and corresponding description in the legend.

As can be seen in the materiality matrix, the indicators that scored the highest overall rankings are: CO2-footprint, innovation, energy & water efficiency, product quality and supply chain management. The material impact of CO2-footprint (GRI indicator 305), innovation (GRI indicator 203) and energy & water efficiency (GRI indicator 302 & 303) is quite straightforward. The material impact of product quality refers to GRI indicator 416, related to customer health and safety. The health and safety of a product across its lifecycle is part of the organization's systemic efforts. When for example heavy chemicals or their packaging doesn't meet the required quality or safety standard, this has consequences for adherence to customer health and safety. The material impact of supply chain management refers to GRI indicator 308, related to the impacts an organization might have through its own activities or as a result of its business relationships with other parties. Due diligence is expected of an organization in order to prevent and mitigate negative environmental impacts in the supply chain.

These indicators are the ones that have the highest materiality to Synerlogic. This means that in case the organization wishes to report on its sustainability performance, these are the topics that are most important to include in the report and to manage for improvement. Also, this materiality analysis functions as a baseline during this research. Due to limits in time and resources, the focus in this research will be on only one indicator. To give this research the highest relevance the choice is made to continue on the number 1 indicator: CO2-footprint. This indicator has the highest materiality for Synerlogic. Also, due to European and national targets regarding GHG reduction and corresponding compliances, the CO2-footprint has a high priority for the organization now and in the future.

All together, the materiality analysis has shown five top indicators with the highest materiality for Synerlogic. The outcome was partly influenced by the change agent who selected the indicators as described. The most part of the analysis is related to the GRI and its related indicators and materiality analysis. The number one indicator "CO2-footprint" will be used in the continuing of this research. In order to describe the developments regarding this indicator, it is important to describe the current state of affairs. Therefore, the following research question will dig deeper into this by describing the current performance on CO2-footprint for Synerlogic. The idea is to develop a starting point. From there on, the organization will be able to set its goal and a point on the horizon that it tries to reach in the future. Thereafter, a strategy can be formulated that helps to reach this goal. Schematically this looks like what is displayed in figure 13:

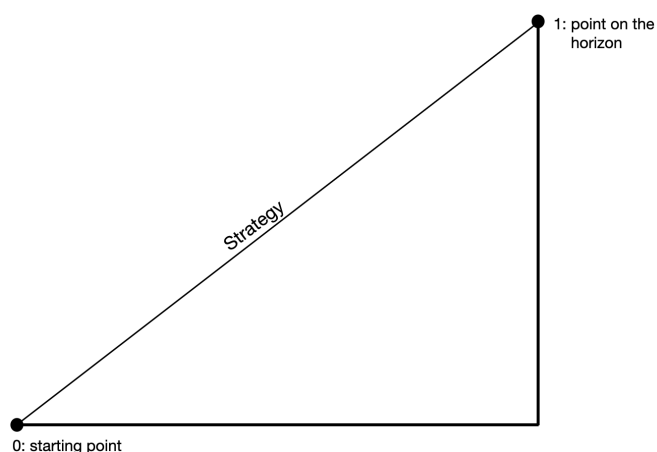


Figure 13: graphic strategic overview describing the relation between the current situation, the wanted situation and how to get there.

In organizational change literature the method presented above is described as “diagnosing”. Diagnosing is “the process of understanding how the organization is currently functioning and providing the information necessary to design change interventions” (Cummings and Worley, 2009: 87). By describing Synerlogic’s current performance on CO2-footprint and defining the point on the horizon the organization wants to reach, the difference between the current situation and the desired situation can be described. Thereafter, the diagnosis of this gap can lead to actions that are part of the strategy to get to the desired situation. In relation to the TTM of behavioral change, the process of diagnosing might have an impact as well due to the fact that gaining this insight might increase the awareness of individuals. Awareness is one of the key elements related to movement in the first stages, from precontemplation to contemplation. To be able to make a diagnosis, it is important to define the starting point (“0”). Therefore, the following sub question describes Synerlogic’s current performance on the indicator with the highest materiality: CO2-footprint.

## 5.2 Synerlogic’s current CO2-footprint

As mentioned in the context chapter, Synerlogic manages its CO2-footprint using the ‘CO2 Prestatieladder’. This is an instrument that is designed to help organizations reduce their CO2 emissions and costs within the company, regarding projects and supply chain practices. In search of sustainable development, it is important to build on existing initiatives (Sustainable Development Solutions Network, n.d.). Therefore, this research uses the information on CO2 emissions conducted by Synerlogic in previous years. CO2 emissions can be distinguished in scope 1, 2 and 3 emissions.

Scope 1 emissions are emissions directly related to the organization. Scope 1 applied to Synerlogic includes:

- Emissions from transportation (9 trucks)
- Emissions from district heating (Synerlogic does not make use of gasses)
- Emissions from car leasing

Scope 2 emissions are emissions from directly purchased energy, business air miles and business kilometers with private cars. Applied to Synerlogic, scope 2 emissions include:

- Emissions from the use of electricity
- Emissions from commuter traffic
- Emissions from water use

Scope 3 emissions focus on indirect upstream and downstream emissions from the company's value chain. Synerlogic has not yet defined its scope 3 emissions yet due to the fact that the organization currently performs along level 3 of the CO2-Prestatieladder. If the organization decides to aim for level 4 of the CO2-Prestatieladder, upscaling to scope 3 will be necessary. Helpful methods in relation to value chain emissions would be chain analysis, Life Cycle Assessments and stakeholder analysis.

This research question is about Synerlogic’s current performance on CO2-footprint. Synerlogic has good insights on their scope 1 and scope 2 emissions. Figure 14 shows an overview on Synerlogic’s CO2-footprint regarding scope 1 and scope 2.

	Source	Total use	CO2 emission factor *	Unity	CO2 (kg)
Scope 1	Transportation	223.105 liter	3,2 **	kg CO2 / liter	713.936
	Car leasing gasoline Euro 95	12.431 liter	2,74	kg CO2 / liter	34.060
	Car leasing diesel	11.700 liter	3,2	kg CO2 / liter	37.440
	City heat	5.854 Gj	26,49	kg CO2 / Gj	155.072
	Total scope 1:				940.509

	Source	Total use	CO2 emission factor *	Unity	CO2 (kg)
Scope 2	Electricity	990.037 kWh	0 ***	kg CO2 (kWh)	0
	Commuter traffic	15.081 liter	2,74	kg CO2 / liter	41.323
	Water use	18.379 m3	0,33	kg CO2 / m3	6.065
	Total scope 2:				47.388

Total scope 1 + scope 2:					987.898
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\* Emission factor data retrieved from: <https://www.co2emissiefactoren.nl/lijsst-emissiefactoren/>

\*\* Synerlogic's trucks run on Euro-6 diesel

\*\*\* Synerlogic's electricity comes from windmills, green energy

## CO2 emissions per scope

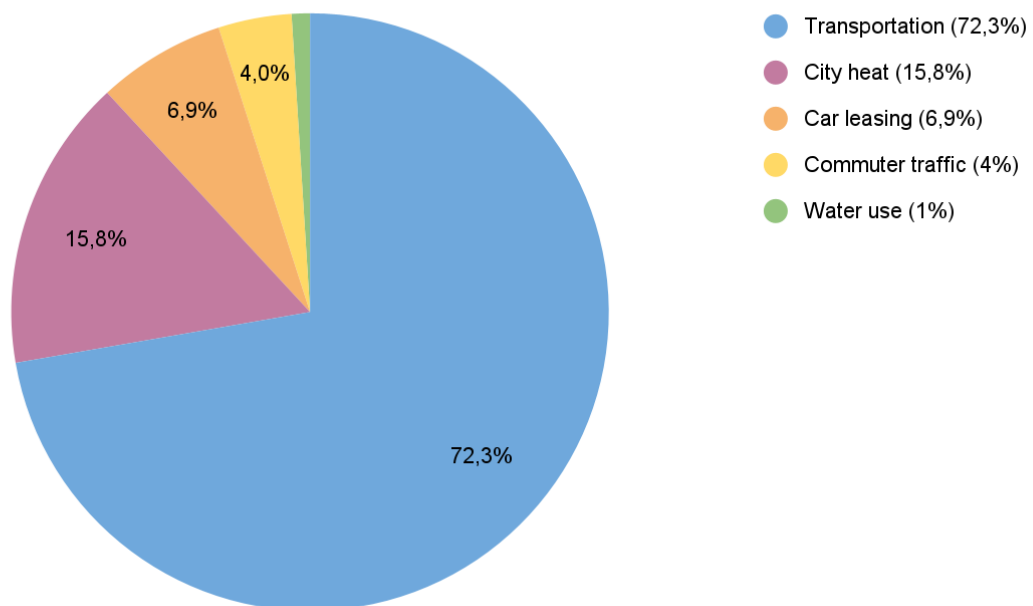


Figure 14 : Overview of Synerlogic's scope 1 and scope 2 emissions. Source: Synerlogic database.

From this data it can be concluded that currently Synerlogic's CO<sub>2</sub>-footprint, considering scope 1 and 2, is mainly caused by Synerlogic's transportation activities (72,3%). Synerlogic recently invested in the more sustainable Euro-6 diesel (which is compliant with the European Union regulation on emission standards) for new trucks but still, transportation is the main contributor to the overall CO<sub>2</sub>-footprint of the organization.

The second largest cause of CO<sub>2</sub> emissions comes from the use of city heat. Synerlogic uses heat from the municipality of Duiven to provide for its heating system and warm water. By using city heat, Synerlogic has chosen a more sustainable alternative to separate central heating boilers running on natural gas. The choice for city heat covers 15,8% of Synerlogic's scope 1 and 2 CO<sub>2</sub>-footprints. Nevertheless, this option produces 57% less CO<sub>2</sub> emissions compared to natural gas (Vattenfall, n.d.).

Thirdly, car leasing produces 6,9% of Synerlogic's scope 1 and 2 footprint. Synerlogic offers different cars to some of its employees. Some of these cars are electric, some run on gasoline and some on diesel. Three years ago, Synerlogic decided to offer leased cars exclusively to employees that need a car for work-related traveling (e.g. sales staff). Despite that fact, employees that were offered a leased car in the past, still make use of it. This results in 6,9% of Synerlogic's CO<sub>2</sub>-footprint. Part of these emissions is also commuter traffic.

Commuter traffic causes 4% of Synerlogic's scope 1 and 2 CO<sub>2</sub>-footprint. These emissions are produced by 96 employees, living at an averaged 4,78km distance from their work. Since the introduction of a bicycle lease plan, some CO<sub>2</sub> reduction has been realised. In their internal communication platform (Synsight), Synerlogic stated that the "bicycle plan resulted in a reduction of CO<sub>2</sub> emissions of 15%". For several reasons, this statement is not correct. First of all, this statement suggests a reduction of 15% on the overall CO<sub>2</sub> footprint, while in fact this specific reduction concerns only the CO<sub>2</sub> produced by commuter traffic which represents 4% of the total footprint. Secondly, the 15% number is not correct. Referring to calculation on CO<sub>2</sub> reduction, the maximal potential reduction is 10,9%. This calculation is based on the best possible situation in which users of the bicycle lease plan make use of their bike for 230 days a year. What can be stated is that this 10,9% is a maximal potential CO<sub>2</sub> reduction on commuter traffic of Synerlogic as a result of the bicycle plan. Subsequently, this commuter traffic represents 4% of the total CO<sub>2</sub> footprint.

## **Fietsen, helemaal zo gek nog niet**

Sinds de invoering van onze nieuwe fietsplan en fietslease per 1 juli 2020, gebruiken steeds meer collega's de fiets om naar het werk te fietsen. Supergoed nieuws. Niet alleen omdat we blij zijn dat jullie van de regeling gebruik maken ook omdat er een Co<sub>2</sub> uitstoot reductie van maar liefst 15% is gerealiseerd!

Figure 15: Synerlogic's internal statement on CO<sub>2</sub> reduction as a result from the bicycle plan. Source: Synsight, October 2021.

The production processes within Synerlogic make use of water, which is also a source of CO<sub>2</sub> emissions. In total Synerlogic used 18.379 m<sup>3</sup> of water in 2020, which equals a CO<sub>2</sub> emission of 6.065 Kg. This amount represents 1% of Synerlogic's scope 1 and 2 footprint. Water efficiency is a topic that is considered by the organization when choices regarding production processes are discussed. For example, recently one of the mixing tanks has been replaced for a new one that needs way less water to be rinsed. This saves approximately 1800 liters of water each time the tank needs to be cleaned.

Synerlogic purchases green energy coming from windmills to provide for its electricity. This means that the total electricity of 990.037 kWh that the organization needed in 2020 produced zero CO<sub>2</sub> emissions. This is an optimal result and no more reduction can be realised in this scope.

What can be concluded is that regarding scope 1 and 2, Synerlogic produces the most CO<sub>2</sub> emissions by its transportation activities and by the use of city heat. These parts of scope 1 and 2 should be on top of mind in relation to CO<sub>2</sub> reduction. Reduction in transportation CO<sub>2</sub> emissions can be achieved by using alternative means or driving less. Concepts like smart logistics, supply chain analysis and telemetry can help to reduce transportation movements. These should be the focus as transportation is where the biggest impact can be achieved in terms of CO<sub>2</sub> reduction. Regarding city heat, it can be concluded that this is Synerlogic's second largest source of CO<sub>2</sub> emission. By using city heat, Synerlogic already opted for a more sustainable energy source. This heat is a residual of a fabric's production process that would most likely be a wasted source of energy if it would not be used as city heat. There are other sustainable alternatives for city heat like for example a heat pump. If Synerlogic would choose to purchase a heat pump to provide for the heat needed, this would mean that 5.854 GJ would have to be produced by the heat pump. 5.854 GJ in terms of kWh is:  $5.854 / 3,6 * 1000 = 1.626.111$  kWh. This means that Synerlogic would need to purchase 3 times as much green energy as it does currently if it chooses to switch to a heat pump. Furthermore, it can be discussed if the option for a heat pump is more sustainable than city heat coming from production processes of fabrics nearby that would be wasted if not used as city heat. To conclude, by using city heat, Synerlogic uses energy that would be wasted otherwise and thereby opted for a sustainable resource. If this train of thoughts is taken a little step further, Synerlogic could consider saving production heat that emerges from e.g. its own sodium hydroxide dilution processes. During summers, this production heat would have to be stored to be used during winters in addition to city heat. For example, Wageningen University in the Netherlands uses heat cold storage via a heat exchanger in a water-carrying sand package 90 meters deep under the ground (Wageningen University & Research, n.d.). This example might not be realistic to Synerlogic but the principle of capturing heat coming from the production processes of sodium hydroxide could be food for thought.

All together, in scope 1 and 2 the biggest impact on CO<sub>2</sub> reduction can be achieved by focussing on transportation. Transportation is very much about supply chain and the chain is part of scope 3. Upstream and downstream CO<sub>2</sub> emissions can also relate to transportation movements. If a company downstream for example demands fresh supplies every day, this would affect a company upstream to organize the needed transportation. Also, scope 3 will gain more and more attention to big companies downstream due to upcoming legislations demanding stricter logistic movements. From this perspective it could be that in the near

future FrieslandCampina demands from Synerlogic to reduce its CO<sub>2</sub> footprint because Synerlogic is part of FrieslandCampina's scope 3 emissions. This means that legislation for big organizations would also stimulate smaller organizations to adapt to stringent norms. In such a situation it is Synerlogic's choice to reduce its emissions so FrieslandCampina decides to do business with Synerlogic. Synerlogic could also choose not to comply with these norms and adhere to the minimal legislation that applies to Synerlogic as a smaller company, risking the fact that FrieslandCampina will do business with other companies that do comply with the legislation FrieslandCampina has to meet. Legislation can be an important factor when bigger companies are obligated to do business with organizations that meet these legislative requirements. Furthermore, legislation can also have a far reaching effect regarding the supply chain. Hertwich and Wood (2018) state that according to the organization environmental footprint guidelines of the European Commission, the inclusion of upstream emissions is mandatory while the inclusion of downstream emissions is optional. From this point of view, FrieslandCampina would be obliged to include Synerlogic's emissions.

Synerlogic's ambition regarding CO<sub>2</sub> reduction becomes relevant because it possibly determines whether other companies decide to do business with them. This is a strategic decision that has to be made by the organization and is strongly related to drivers like intrinsic motivation and behaviours, stakeholder pressure and compliances. In this research the focus on the internal organization is on the relation between behaviour change and sustainability. The research question in the next chapter will dig deeper into the stages of behaviour change in which people within Synerlogic are acting and if and how GRI indicators introduced by a change agent affect these developments through the different stages.

The role of the GRI in describing the current performance of Synerlogic's CO<sub>2</sub>-footprint is that as a result of the materiality analysis, the CO<sub>2</sub>-footprint appeared to be the GRI indicator with the highest priority to the organization. Furthermore, the GRI did not have much influence on the description of the current performance. The action researcher influenced the description of the current CO<sub>2</sub>-footprint because the data needed to answer this research question was gathered and interpreted by the researcher. Because the action researcher is very much involved in the participation of this research, more detailed data could be gathered during interviews with Synerlogic's Safety, Health, Environment and Quality manager, observations regarding e.g. the bicycle plan and access to Synerlogic's database.

## Chapter 6: Internal and external organizational change

During this chapter research questions 3 and 4, aimed towards internal and external organizational change, will be answered. Both questions contain a hypothesis that includes the expected relation between GRI indicators, the change agent and the influence on organizational change. In line with action research, the researcher is actively involved during this research, using participant observation. Therefore, the researcher represents the change agent during the following chapters.

### 6.1 Internal organizational change; TTM of behaviour change

The hypothesis linked to this research question is that *if GRI indicators are applied to Synerlogic by an active change agent, then this has an influence on movement between the stages of behavioral change of Synerlogic's employees*. The dependent variable is the behavioural change of Synerlogic's employees. Independent variables are the GRI indicators and the change agent. The hypothesis will be tested by comparing the behaviors of Synerlogic's employees before and after applying GRI indicators by the change agent. The TTM of behavior change is used as an analytic framework that refers to the different stages of individual behavior change. The stages are: precontemplation, contemplation, preparation, action, maintenance and relapse. Observed movements through the stages as a result of the role of the change agent, applying the GRI indicators, are part of this analysis. The stages of change and the movement through the stages are guiding the different sections in this chapter. Data is gathered during focus group discussion, observation and interviews.

#### Precontemplation stage

The precontemplation stage is characterized by individuals that are too unwilling, unable or unknown to acknowledge the problem (DiClemente & Scott, 1997). Precontemplation-related behaviors have been observed during the time of this research. Many of these behaviors were related to individuals being unaware of the meaning of sustainability and how it relates to their business. As mentioned in the introduction and as the GRI also defines sustainability, the concept can be divided into three dimensions (social, economic and ecologic). During the focus group discussion, almost no responses to the question "what does sustainability mean to you and to Synerlogic?" were related to the financial health of the company. This indicates less awareness regarding the economic dimension of sustainability. The social dimension was mentioned but significantly to a lesser extent compared to the environmental dimension. The responses that did come forward were aimed at sustainable employability and the next generation. Also during interviews the economic dimension was very often underexposed in relation to sustainability. By asking further, the continuity of the company was mentioned but almost never in the first instance. This indicates a gap in thinking between conventional business models (based on profit) and new business models (people, planet, profit). Therefore, despite the fact that there is awareness on the importance of sustainability, there is lack of awareness among many participants on how this relates to their business and that their profit minded thinking represents one dimension as well.

Another example of precontemplation on the three dimensions was observed when one of Synerlogic's managers participated in an interview on sustainability, which was organized by one of Synerlogic's customers. During this interview, the customer asked about Synerlogic's developments regarding sustainability. The manager responded by explaining Synerlogic's CO2-footprint very briefly. The customer was very satisfied with this information and the amount of knowledge Synerlogic has on its CO2-footprint but as the interview proceeded, the customer asked about other sustainability developments at Synerlogic. Synerlogic's manager came back to the CO2-footprint multiple times and did not mention other initiatives regarding the economic and social dimensions of sustainability. This is a good sign of precontemplation regarding awareness on the three dimensions of sustainability at this moment in time. Months later, during another interview with this manager, this manager proclaimed a broader definition on sustainability than just the environmental aspects.

*"Sustainability in the broadest sense; sustainable employability of people, the fact that we have to pass on the planet as healthy as possible to the next generation and that we should pay attention to energy, water and waste, while the business also can continue."* (Respondent 1, October 28, 2021)

This could be seen as an example of movement through stages regarding awareness of the three dimensions of sustainability. The movement of this individual from the precontemplation to contemplation stage can be described as the result of this research, in which the action researcher had a bigger influence than the GRI method. This conclusion can be drawn due to the fact that this individual mentioned having checked the GRI reports of FrieslandCampina and Achmea before the start of this research out of personal interest for sustainability. This person is the only person within Synerlogic that was already aware of the GRI and therefore can function as a comparable example to the others. Despite the fact that this individual was aware of the GRI, still movement through the stage was developed. The participant mentioned that *"due to the naturally enthusiastic and inspiring presence of the action researcher, consciously or unconsciously more attention has been paid to sustainability. For example, perhaps the ambition to strive for level 4 of the CO2-prestatieladder will be speeded up because of that."* (Respondent 1, personal communication, October 28, 2021). Later on, the participant mentions that the presence of the action researcher, the change agent, functions as an accelerator.

The influence of the action researcher was also mentioned by another participant who stated that *"Before the start of this research I was not aware of the three dimensions related to sustainability. I thought it was always just about the environmental dimension but now I realise the economic and social dimensions are part of it just as much."* (Respondent 2, personal communication, October 25, 2021). When asking about the cause of this change, the participant mentioned that to him it was very important that the action researcher talked about sustainability with him in a passionate way. This approach triggers him, no matter what the topic of the conversation is *"it can be about football, ice skating or the GRI, because it is told with inspiration and energy, which makes it feel important. I can tell you a boring story and you will easily forget but using this approach, the topic sticks in your mind and you will not forget it easily."* (Respondent 2, personal communication, October 25, 2021). Hereby the importance of the role of the action researcher as a change agent has been emphasized.

Precontemplation also exists about sustainability initiatives that are being done but which are not known by other employees of the company. Therefore, individuals are unaware of the

sustainable actions that are already happening. Among others, the cause of this is that Synerlogic does not have sustainability embedded in a company strategy. For example, one of the managers of Synerlogic has been working on the CO<sub>2</sub> footprint of the organization, to map the emissions and where they come from and to monitor the reduction. This is valuable information, especially regarding other companies in the supply chain that are aiming on reducing their scope 3 emissions. When for example FrieslandCampina wants to reduce scope 3 emissions, they will need insights on the CO<sub>2</sub>-footprint of Synerlogic. The fact that Synerlogic indeed has these insights is valuable. Nevertheless, not all managers appeared to be aware of the fact that Synerlogic has this knowledge. By embedding sustainability in the corporate strategy, it can be more of a shared mission. By not embedding sustainability in an overall strategy, a situation in which employees are unable to be aware of the developments is created, which contributes to precontemplation. Working together on the same goal that is embedded in a corporate strategy helps to involve others and to keep the theme top of mind within the organization.

During the focus group discussion a difference in involvement among the participants could be observed. This does not necessarily mean that those participants are not aware of the problem. Other factors could have had an influence on the particular behaviour of that participant at that time. Nevertheless, also during the following months some members showed less engagement with the topic of sustainability at Synerlogic. DiClemente and Scott (1997) talk about the lack of engagement and participation as well. They state that it is “axiomatic” that participants who are active and engaged in group or individual sessions have better change outcomes than those who do not (DiClemente & Scott, 1997, p. 137). Nevertheless, engagement is not a complete predictor of outcome success unless nonspecific factors are totally responsible for the outcome. For example, involvement can be a marker of the participant’s desire to please but not necessarily to change. Those participants might do anything that is asked, except changing their behavior. All together, lack of engagement is likely to be a predictor for relapse but the assumption is rather large and conclusions based on this observation would be premature.

## Contemplation stage

In the contemplation stage, individuals consider the pros and cons of their behavior and may decide that there is no problem; that there is a problem but they cannot or will not take action; or that there is a problem and they need to do something (DiClemente & Scott, 1997). Contemplation can be considered on different levels as the TTM is a self-repeating model. At the beginning of this research there was already awareness of the importance of sustainability, proven by the fact that Synerlogic launched sustainability initiatives in recent years and the observation that from the beginning of the research there was support towards sustainability and people were willing to participate with sustainability-related projects. Also, during the focus group discussion many participants were aware of the environmental and social dimension of sustainability and the long-term problems related to the state of the planet. At the end of the focus group discussion, more awareness on the economic dimension of sustainability was created. This was done by the action researcher, leading the discussion and explaining about GRI, the three dimensions of sustainability and the function of a materiality analysis. Especially when the materiality analysis of FrieslandCampina was shown on a big screen, the managers realised the commercial value of this method in relation to other stakeholders in the supply chain. This finding was valuable to the action

researcher because it gave insights in how different people are activated or triggered. In order to get people on the same track, it is important to be able to replace yourself with one another and ask the question “what’s in it for me?”. The answer to this question can be different to anyone it is asked. Some people get on board when realising they want to stop climate change, others are triggered by arguing it is about the future of their kids. In relation to corporate sustainability, the conclusion of this moment in the focus group discussion was that the commercial or economic gain is important in searching for an answer to the “what’s in it for me” question. This information is valuable because when managers and employees of Synerlogic believe in the importance of sustainable development by seeing what’s in it for them, it increases the support base and commitment that is important to realise organizational change. A combination of the action researcher and the GRI have led to this outcome. Mainly due to the method accompanied with the GRI (the materiality analysis) helped to discover the importance of this commercial value related to the “what’s in it for me” question.

The topics mentioned above are part of the contemplation stage of the participants. This means that awareness on these topics exists. After acknowledging the existence of a problem, participants can decide to do something about it or not (DiClemente & Scott, 1997). This is an important aspect regarding movement through the stages of change. Someone may enter the preparation stage or fall back into the precontemplation stage. By observing employees of Synerlogic for several months and having numerous conversations with them about sustainability, one of the overall conclusions is that most of the individuals are aware of the importance of sustainability and the problems that are associated with unsustainable business activities. Only a few of them moved towards the preparation stage. Some of the individuals that consciously decided not to change their behavior while being aware of the issue, based their argument on the fact that now is not the right time to invest in sustainability. For example, the CEO stated that although he believes that sustainability touches the core business of Synerlogic, he would find it hard to hire a sustainability manager while at the same time the organization is forced to say goodbye to employees due to lack of business. Others mentioned similar arguments by stating that right now, Synerlogic needs to put its resources on surviving and becoming financially healthy. In other words, the economic dimension weighs very heavily on them, which is why they think this is not the time to give attention to the other dimensions despite the fact that they are aware of the importance of sustainability. These individuals will be staying in the contemplation / precontemplation stage until they decide otherwise. It is good to mention that striving for economic gains does not necessarily have to be a trade off to the other dimensions. Awareness in relation to this strongly relates to the movement between these stages.

## Preparation stage

In the preparation stage individuals increase commitment, make the decision to take action and make a plan to modify their behavior (DiClemente & Scott, 1997). The preparation stage initiates the action stage of the process. During the research, some movement towards the preparation stage was observed. One of Synerlogic’s managers that was involved in the dialogue with FrieslandCampina declared to be willing to travel to Amersfoort in order to meet the sustainability manager of FrieslandCampina. This is an example of one of the participants that shifts through the stages of change from contemplation to preparation. Furthermore, this manager also tried to involve other employees by sending emails

regarding sustainable business developments or inviting them to join online webinars related to sustainability. To stay with this specific individual, who overall seemed to be the one that was advocating for sustainability the most, this person is the one that tries to put sustainability goals on the corporate annual plan for 2022. In order to do this, this individual is working on a proposition in which elements of sustainability are represented. Furthermore, the idea is to invoke a sustainability competent center, which would be a multidisciplinary team from Synerlogic employees that is responsible for developments related to corporate sustainability. These are examples of creating commitment which is one of the characteristics of the preparation stage according to DiClemente and Scott (1997).

This person emphasized that the presence of the action researcher had an influence on her:

*“All the questions you asked and the conversations we had made me think even more consciously, which feels to me like an extra energy in the area of sustainability of which I think, ‘yes we need that, then we can make progress together’.”*

(Respondent 3, personal communication, October 25, 2021).

In addition, this individual mentioned that when the action researcher is leaving Synerlogic again, it will be hard to maintain this energy. Therefore she suggests that it is important to secure the energy in some way before the action researcher leaves. Another manager is preparing action by putting a sustainability goal on the annual agenda for 2022. During an interview, this person mentioned to be working on the CO2-prestatieladder, stage 4 on the agenda.

During the time of the research, one of Synerlogic's managers mentioned the fact that he had a barbeque dinner during the weekend at which he came to talk to a lady about sustainability. The manager described how he told her about Kate Raworth's Donut economy theory. In addition, he mentioned that the change agent of this research introduced 'the donut' to him accompanied with sincere enthusiasm, which inspired and encouraged him to tell others about it as well. This example concerned a lady at a barbeque during the weekend but the manager also shared the donut among employees of Synerlogic. The phenomenon in which people are subtly stimulated to show desired behavior is called *nudging* (Thaler & Sunstein, 2008). According to Thaler and Sunstein (2008), nudging is a good complementation to other tools aimed at behavior change. A nudge can be described as a reminder, a manipulation to change someone else's behavior. It is a way to influence the actions of another person by your actions. Furthermore, a nudge must always fully preserve freedom of choice (Thaler & Sunstein, 2008). By spreading the story of the donut, people are constantly reminded of the influence sustainability has on Synerlogic and vice versa. What can be concluded from this is that the action researcher has had influence on the manager of Synerlogic by inspiring him, telling stories about 'the donut' and to present a new kind of thinking in an enthusiastic, inspiring manner that is contagious. This is one way to get people on board and to change thinking and behavior towards sustainability in an organization. In relation to the stages of change, nudging can be a helpful method in different stages of behavior change. For example, nudging can be helpful as an eye-opener and could contribute to the creation of awareness. Therefore, nudging can lead to a change from the precontemplation stage to the contemplation stage. Also, during this research one of the participants used nudging to inspire others. Thereby, nudging is a method that this person used to create commitment which is part of the preparation stage. The discovery of the presence of nudging and the positive influence it has on behavior change is in line with Mont et al. (2014), who define nudging as a tool for sustainable behaviour related to the

consumer market. They state that knowledge about nudging opens up possibilities to suggest new types of policy tools and to measure what can contribute to sustainable consumption (Mont et al., 2014).

During an interview, one individual mentioned the fact that he wants to have sustainability targets on Synerlogic's annual plan (Respondent 1, personal communication, October 28, 2021). This could be an example of the preparation stage, provided that this individual actually shows preparation for action in deeds. The saying 'actions speak louder than words' also goes for this situation. According to DiClemente and Scott (1997) one should not draw conclusions from individuals saying what they want to do but really should be focussed on what the actual behavior according to this saying is. This research does focus a lot on what participants state, while there is a risk of relapse when the change agent leaves the organization. Therefore, the recommendations chapter of this research provides suggestions on how to secure sustainable development in the organization. Furthermore, hopefully the saying a promise is a promise also applies to this case because the manager stated to be working on a sustainability goal for 2022, related to CO<sub>2</sub>-prestatieladder, stage 4. This would mean that Synerlogic commits itself to map its scope 3 emissions and to do at least two chain analyses. During that same interview, this individual stated that:

*"If it is up to me, Synerlogic should strive for zero emissions in the long term. But I'm not sure if this is also the opinion of the directors of the company, you should ask them."* (Respondent 1, personal communication, October 28, 2021).

This statement shows awareness, ambition and intrinsic motivation to put high sustainability ambitions on the corporate agenda. Also, this statement shows in some way that this individual feels dependent from others (directors) who have the decision-making power according to him. Digging deeper into this and asking others about who is responsible for taking the lead in putting sustainability on the agenda, resulted in a few interesting responses. The CFO responded to the question; *Synerlogic's highest priority is the continuity of the organization. But if the company does want to include sustainability elements in that proposition, then what do you need in order to realise this proposition?* By:

*"We need to put concrete, small sustainability elements in this proposition in order to be realistic about where we can actually have impact. Furthermore, we need Mario (the CEO) to proclaim this and to show that he really wants this. And I think some people related to sustainability have to be brought in order to bring it to the market, to give it executive power. If we have a proposition that includes elements of sustainability, then we need to bring that to the market. We don't have enough experience in bringing it to the market which is why we need help."* (Respondent 4, personal communication, October 29, 2021).

Hereby, the CFO states to be responsible for only the economic dimension. He points directly to the CEO of which he thinks should take the lead on sustainability. During an interview with the CEO, he was asked: *"who are the frontrunners on sustainability at Synerlogic?"*. His response was he assumes that among others the CFO is a frontrunner but he does not speak of his own role in relation to this question. A cautious conclusion on this part of the input is that there is a risk that everybody is seeing others than himself as responsible for leading the sustainable development of the company. The problem is acknowledged but the roles of the individuals in taking care of solving it are not. Therefore, the role of leadership seems to be an important one.

## Action

In the action phase the desired behavior is being practiced. The desired behavior needs to be practiced on a continuous basis in order to slide into the next stage (DiClemente & Scott, 1997). As discussed earlier, Synerlogic does not have a sustainability strategy.

Nevertheless, this does not hold back some individuals to take action for sustainability. For example, one of Synerlogic's managers set up an interview on sustainability with the press and is having conversations about the local production of lactic acid with Nature's Principles (a company in biotechnological solutions). This individual wants to be the driving force behind sustainability within Synerlogic, but also wants to stop talking and start doing; *"I think that the fact our articles were published in 'Ondernemersbelang' is an example of that I really come into action."* (Respondent 3, personal communication, October 25, 2021). Also, this individual was responsible for the fact that this research took place due to advocating for its importance to the direction of Synerlogic. Furthermore, the accountmanager that participated in the dialogue with FrieslandCampina took action by scheduling appointments with FrieslandCampina to follow up the outcomes of the dialogue. This means that concrete ideas for collaboration on sustainability in the supply chain are being discussed in the near future. Finally, one individual who was responsible for the environmental issues related to compliances, mentioned to have done many actions in the past:

*"At Synerlogic I was involved in the reduction of cleaning water, helped thinking about the heat of dilution of caustic soda, and so on."* (Respondent 1, personal communication, October 28, 2021).

Looking at the reason behind these actions, the participants stated that the change agent inspired them to take this extra step. One manager mentioned that she would probably have taken these actions as well when the change agent would not be there. Nevertheless, she stated that she felt supported with inspiration and energy which definitely gave her a boost to take action as well. Regarding the manager responsible for CO<sub>2</sub> monitoring, he mentioned that due to the presence of the change agent more attention has been paid to sustainability. This might have resulted in that the action to strive for level 4 in the CO<sub>2</sub>-prestatieladder has been taken earlier. The change agent was described here as a catalyst. The accountmanager was influenced by the change agent because if it wasn't for the change agent, the accountmanager would not have had this dialogue with FrieslandCampina and there would be no ideas to be followed up.

## Maintenance

In the maintenance stage, long-term success can be measured and successful behavior change can be achieved (DiClemente & Scott, 1997). Successful behavior change is achieved when the desired behavior is practiced for a period of minimal 6 months till multiple years. Due to the limits in time for this research, no signs of maintained behavior have been observed. The period has been too short to draw conclusions on this stage. What can be stated is that due to fact that the changes in behavior were almost always strongly dependent on the presence of the change agent, the expectation is that when the change agent leaves the company and this role will not be taken over by other employees of Synerlogic, there is a big probability that the attention towards sustainability will slowly fade away. This is also in line with one of Synerlogic's managers, stating that:

*"Due to your presence, sustainability stays on top of mind and visible. Thereby there*

*is also a risk that it disappears from the horizon because in order to maintain your energy, we need to change some things. It is therefore important to secure this before you leave by making sustainability an integral part of the business rather than a topic on its own.”* (Respondent 3, personal communication, October 25, 2021).

During the recommendations chapter, this research provides methods useful to help embed sustainability in the organization.

## Relapse

Very recently, Synerlogic appointed a new CEO coming from outside the company. The CEO previously owned a company in the chemical industry that had a totally green proposition in its business model. This meant that every choice they made was a sustainable one and if there was no sustainable choice then there was no other option available. This was illustrated by many examples: green energy from windmills, LED-lighting, solar panels, water recycling in our own production process, ecological products substituting chemical ones that were harmful for humans, animals and the environment, carpets at the office made of recycled fishing nets and a cradle to cradle gold certification. These illustrations were examples of the past of which economic gain was the greatest driver (Respondent 5, personal communication, October 28, 2021). The fact that this individual practiced the desired behaviour in the past could mean that there is a potential for this person to return to this desired behavior. The willingness, awareness and acknowledgement of the importance of sustainability is there. This could also be observed during and after the focus group discussion. The CEO was triggered by the action to put sustainability on top of mind. Also, the CEO committed himself to be responsible for keeping the topic on the agenda. During an interview with the CEO months later, this commitment was part of the conversation. Unfortunately, the CEO could not remember committing himself and said: *“Yes, it is good that you remind me because due to the daily hectic it disappeared out of my system, which I regret because I think it should be on the agenda.”* (Respondent 5, personal communication, October 28, 2021). This is an example of a relapse, back to the precontemplation stage in which an individual is unable or unaware of the problem. In relation to this, the CEO stated that the topic was top of mind for one week and then it subsided. A conclusion that can be drawn from this is that in order to realise changes in behaviors, a continuing driver for change is needed.

Furthermore, during the time of the research, one of the employees who is engaged in sustainability, had good intentions by trying to make other employees aware of their energy use. The employee did this by turning lights and sending emails with pictures about offices in which the lights were turned on after leaving. Despite the good intentions, the effect on other employees was not what was wanted to be reached. The effect was that it caused irritation, discussion and thereby a negative touch to the concept of sustainability. Therefore, the result could be a possible relapse in stages of behavior change. What can be concluded is that the way to approach the topic is very important. The action researcher chose for a positive intention, instead of the more blaming method of the employee. The differences in results are very obvious. This example is a good fit to DiClemente and Scott (1997), stating that *“Individuals may learn that certain goals are unrealistic, certain strategies are ineffective, or certain environments are not conducive to successful change. Therefore, relapse experiences contribute information and feedback that can facilitate or hinder subsequent progression through the stages of change.”* (DiClemente & Scott, 1997, p. 139).

The relapse does not have to be labeled as a failure when the organization is capable of recognizing that the chosen strategy of the employee is not successful and learning from it. The additional knowledge and information needs to be turned into developments that lead to another, more successful strategy. This is in line with de Keyser et al. (2019) on the success and failure of organizational change, who mark failure's emergence and development as a dialectic and state that: *"failure in organizational change is as generative as it is deteriorating, paving the way for both success and failure to continuously remit"* (de Keyser et al., 2019, p. 234).

### Conclusion on this research question:

All together, to some extent there existed awareness and there was acknowledgement of the problem. but digging deeper, searching for higher levels of consciousness, precontemplation could be observed again. For example, as seen in the precontemplation stage, individuals did acknowledge the problem but were not recognizing their own role in solving the problem. Clarification for this is the self-rehearsing character of the TTM. moving through stages barely never stops due to the fact that in terms of sustainable behavior there will always be room for improvement. Furthermore, a repeating outcome in all sources of data was that the change agent had an influence on the individual behavior change of employees at Synerlogic. Due to the chosen approach, that is positivity, inspiration and story-telling, a few employees felt encouraged and triggered to develop their point of view on sustainability. The GRI method was to a much lesser extent responsible for this movement through stages. Some respondents were familiar with the method due to the change agent but did not explicitly mention how this method changed their thinking about sustainability. Furthermore, in addition to results regarding the stages of change, during the research additional factors have been discovered that were influencing movements through the stages, namely: nudging, (lack of) leadership and 'failed' strategies. Nudging had a positive influence on the internal organization as it let the donut 'seep' through the organization. Discovering the importance of (lack of) leadership is valuable because it strongly affects the success of the organizational change as explained by what happens if no one comes into action. Failed strategies are important to discover as the organization can learn from it and do it better the next time in order to come closer to successful organizational change towards corporate sustainability.

To conclude, the hypothesis related to this research question can be answered as follows: Yes, the application of the GRI by an active change agent has had an influence on the movement between the stages of behavioral change of Synerlogic's employees, but with the following sidenotes: 1) Conversations indicate that the change agent has had more influence on this outcome than the GRI method and only employees with which the change agent was actively in contact during the period of researching, showed these behavioral changes. 2) Synerlogic has approximately 200 employees. Only a few of them were intimately involved in this research. Therefore, the developments in behavior change of Synerlogic's employees reflect a part of the organization. Employees that were not involved also did not show any changes in behavior. This strengthens the meaning of the influence of the GRI and the change agent in this research.

## Validation of outcomes

The reflection of the participants on their own role in the organization is important in the outcome of this research question. In order to validate these outcomes, these perceptions are analysed by the researcher. By doing so, a clearer picture on who owns the influencing power to promote internal organizational change will be presented.

During interviews, all participants were asked if they thought themselves to be frontrunners in sustainability within Synerlogic. Two individuals saw themselves as a frontrunner on this theme. Thereafter, they were asked if there were others within the organization they considered to be a frontrunner as well. Both of them considered themselves as the only frontrunners on sustainability in the organization, which is an interesting outcome. From the perspective of the researcher, both individuals can be considered as frontrunners but both fulfill this role in different ways. One is involved in environmental compliances, while the other thinks about the implementation of sustainability from a management perspective and more related to business opportunities. Despite showing parts of the desired sustainable behavior, both individuals are apparently acting too much on their own because both individuals are not aware of each other's frontrunning behavior. Furthermore, only one of the two individuals acknowledges its own influence on the implementation of sustainability within the organization while both persons are part of the management team. This one person states to be preparing business propositions in which elements of sustainability are represented. The other individual does have its own sustainability ambitions related to Synerlogic (zero emissions) but points towards the direction of which he believes has the power to make this decision. As discussed in this research question, the direction (the CEO and the CFO) points towards each other in relation to who is or should be the frontrunner on sustainability. Therefore, if the one manager that acknowledges its influence decides to take a step back and let go of sustainability, there is a chance that the topic will fade away because others are not aware of their influence or are not willing to make use of their influence on this theme at this moment in time due to other priorities. Reflecting on this, also other factors like stakeholder pressure or compliances can have an influence on this. The explained important role of the actors involved strongly relates to an agency approach. As will be explained in the recommendation chapter, underlying structures also are very important in the shaping of an organization. Due to the lack of these structures in terms of securing sustainability in the business strategy, the emphasis is on agents in this chapter. Suggestions on how to create structures are presented in the recommendations chapter; paradigmatic and institutional change.

## 6.2 external organizational change; collaboration with FrieslandCampina

The hypothesis linked to this research question is that *if GRI indicators are applied to Synerlogic by an active change agent, then this has a positive influence on the relationship between Synerlogic and FrieslandCampina*. The dependent variable is the relationship between Synerlogic and FrieslandCampina, representing the external organizational change. Independent variables are the GRI indicators and the change agent. The hypothesis will be tested by comparing the relationship between Synerlogic and FrieslandCampina before and after applying GRI indicators by the change agent. Data is generated during focus group discussion, observation and interviews. Finally, a dialogue was organized by the change agent in which representatives of Synerlogic and FrieslandCampina were asked to engage to talk about sustainability in the supply chain. The hypothesis will be answered by following the steps that have been taken in chronological order: describing the relationship, applying the GRI indicators, preparing for the meeting and concluding on potential changes.

### The original relationship between Synerlogic and FrieslandCampina (t1)

As explained in the context chapter, Synerlogic sells all basic chemicals and more to FrieslandCampina. The main product sold between the two parties is caustic soda. In the year 2020, a total of 35.000 tons of caustic soda was sold and transferred to FrieslandCampina (Database Synerlogic, RFC uitdraai.xlsx). This equals more than 1.000 tank-cars and a monetary value of approximately EUR€ 10 million (Respondent 6, personal communication, June 6, 2021). The fact that Synerlogic's annual turnover in 2020 was about EUR€ 80 million shows that the flow of caustic soda represents  $\frac{1}{8}$  of the total turnover and therefore is very important to Synerlogic. Additionally, many other chemicals are sold to FrieslandCampina, demonstrating that FrieslandCampina is an important customer to Synerlogic. Therefore, it is important for Synerlogic to maintain strong ties to FrieslandCampina.

As it is clear how important FrieslandCampina is to Synerlogic and given the fact that the sales manager at the time of the focus group discussion was responsible for maintaining this relation, the expectation was that Synerlogic is up to date with the latest activities, beliefs, priorities and developments regarding FrieslandCampina. To be able to test this line of thought, the members of the management team of Synerlogic participated in an exercise during a focus group discussion that was organized by the change agent on July 27th 2021. The management team of Synerlogic, consisting of 11 managers, were divided into three groups. One group represented Synerlogic, one group represented Nobian (a company upstream in the supply chain) and one group represented FrieslandCampina (a company downstream in the supply chain). The groups were asked to rank 16 GRI indicators from high to low in terms of priority seen from the specific perspective they represented. The group representing FrieslandCampina (in which also the sales manager responsible for the relation to FrieslandCampina was represented) produced the ranking on the left, in figure 16. This ranking can be compared to the actual ranking done by the original ranking of FrieslandCampina. This original ranking can be seen on the right, in figure 17.

Rank	GRI indicator
1	Good product price
2	Quality and safety
3	Attractive employer
4	Supply chain
5	CO2-footprint
6	Energy efficiency
7	Water efficiency
8	Innovation
9	Nature and biodiversity

Figure 16: Ranking by Synerlogic managers,  
Source: Focus group discussion July 27, 2021.

Rank	GRI indicator
1	CO2-footprint
2	Innovation
3	Product price
4	Nature and biodiversity
5	Quality and safety
6	Attractive employer
7	Supply chain
8	Energy efficiency
9	Water efficiency

Figure 17: ranking by FrieslandCampina,  
Source: Annual report 2020 FrieslandCampina.

From this comparison can be concluded that Synerlogic's managers did not rank any GRI indicator in the right position. Furthermore, the indicators that are placed in the highest positions by FrieslandCampina were ranked as one of the lowest by Synerlogic (e.g. innovation and nature and biodiversity). What this says is that from the sustainability perspective, Synerlogic is not up to date with the latest developments, values and priorities from FrieslandCampina. This does not necessarily mean that the relationship between the two parties is not good, what it does mean is that the sustainability dimension in this relationship does not really play an important role. This conclusion is in line with the purchaser of FrieslandCampina stating that at this moment of time and in the past, sustainability has never been a topic in the discussions or conversations between the two organizations. Also, the purchaser of FrieslandCampina did not know the global sustainability manager supply chain of FrieslandCampina who will be part of the dialogue during this research.

Over the last decades, the relationship between FrieslandCampina and Synerlogic mainly consisted of one or two people from Synerlogic being in contact with one point of contact from FrieslandCampina, which is FrieslandCampina's purchaser in the field of chemicals. The frequency in which the contact is happening is approximately once every month, according to sales employees of Synerlogic. Depending on the number of questions FrieslandCampina has, this frequency increases. This contact mainly regards common goals, arrangements and requests.

All together, it can be stated that the relationship between Synerlogic and FrieslandCampina in terms of sustainability is minimal and Synerlogic is not up to date with the perspective FrieslandCampina has on sustainability. Furthermore, there is a relationship between the two organizations in terms of business agreements, arrangements and services. One contact person within FrieslandCampina (the purchaser) is well known by Synerlogic employees and contact moments are occurring in constant frequencies.

## Introduction of GRI and the change agent

Now that the relationship between Synerlogic and FrieslandCampina (t1) has been elaborated, it is time to discuss the introduction of the intervention methods into the organization. The GRI method was explained for the first time during the focus group discussion to the 11 members of the management team. Two obvious observations derived from this aspect of the focus group discussion. Firstly, the managers realised that sustainability involves three dimensions (social, economic, ecological) while most of the participants mainly were focussing on the ecological and to some extent also the social dimension of sustainability. To illustrate this, the input from the participants on the question “what are the first things that come to mind, relating to sustainability on a personal level and on a business level?” was sorted into the three dimensions of sustainability. The outcome was that 1 economic, 17 ecological and 8 social arguments were given. After the participants gave their input, the GRI method was explained and introduced. The participants were asked to do the ranking on indicators and after that the materiality analysis of FrieslandCampina was presented on a big screen. What was remarkable about this moment was the surprise and the interest this analysis caused to the participants. It was very clear that this analysis opened the eyes of the participants. The reason for this was the commercial value that was associated with this analysis. The participants found the materiality analysis of FrieslandCampina interesting because it gives them the chance to understand what the most important topics of their most important customer are.

## Run-up to dialogue

As explained in research question 1, the outcomes of Synerlogic’s materiality analysis showed a match to the materiality analysis of FrieslandCampina. The matching GRI indicator was CO<sub>2</sub>-footprint. During this research question, the matching GRI indicator will function as the shared goal to organize a dialogue between Synerlogic and FrieslandCampina. The dialogue was organized by the change agent who found FrieslandCampina’s global sustainability manager supply chain willing to participate to discuss sustainability with Synerlogic. Synerlogic was represented by its business development manager and its key accountmanager FrieslandCampina.

Two parties with one shared interest; CO<sub>2</sub>-reduction in the supply chain. The fact that the meeting was arranged successfully does not necessarily mean that the outcome will be successful. Even if two parties with both good intentions try to work things out, this does not always lead to success. This was also put forward by the CFO of Synerlogic, stating the following:

*“It is not evident at all that two parties find each other in terms of a result or expectation. You are acting like a dating site, trying to match two parties together, hoping that those two parties will fall in love with each other. But that is not the language that we speak, we have no intention to fall in love. So, there are two parties sitting together coming from different worlds, one comes from Pluto and the other comes from Mars. The expectation that a result will be reached is only based on hope. If for example this dating site has done this successfully many times before, then you can say yes I think we can bring these two parties together. But there is no such proof. So, maybe the fact that you have been able to organize a dialogue between these two parties is already an achievement because again, one comes from Pluto and the other comes from Mars.”* (Respondent 4, personal communication, October 29, 2021)

What this respondent is saying here is that the fact that two parties are in dialogue does not guarantee a successful result, even if both parties have good intentions. He describes this as the illusion hidden behind the intention. Related to corporate sustainability, almost everybody will say they want to stop climate change and that they want an inclusive world without discrimination. What matters is what is hidden behind this intention. Related to the meeting between FrieslandCampina and Synerlogic, both have the intention to reduce CO2 emissions in the supply chain but there are no conditions to guarantee successful results. The respondent states that the search for these conditions needs to be part of the dialogue between the two parties.

*“If this gentleman from FrieslandCampina has an issue on his desk of which he thinks ‘Damn, I have to fix this. Otherwise I will be in trouble’ (e.g. with my manager or government regulations)’, and he can also indicate the role of Synerlogic in solving this issue, then it has to be possible to find some leads that really dig deeper and get to a result. Is there an illusion behind the intention or is the intention real?”* (Respondent 4, personal communication, October 29, 2021)

To overcome the barrier of the illusion behind the intention as much as possible, the change agent organized gatherings in the run-up to the meeting with FrieslandCampina. During these gatherings, the goals, strategy, and structure were prepared in order to guide the meeting towards a most effective outcome. The goal was to search for mutual points of interest that would be food for thought and reason for further follow-up and to get insights into who else needs to be involved to strengthen the relationship between Synerlogic and FrieslandCampina. The strategy was to track down clear goals and aims of FrieslandCampina and to search for possibilities in which Synerlogic could contribute to reaching those goals. The structure of the meeting was put into an agenda to secure boundaries and directions. The role of the change agent during the meeting between Synerlogic and FrieslandCampina would be very minimal to ensure that the outcomes of the meeting would represent the intrinsic intentions of the two parties involved.

## The dialogue: sustainability goals and strategy FrieslandCampina

By introducing himself, FrieslandCampina’s sustainability manager elaborated the sustainability goals and strategy of the company and his own role as a global sustainability manager supply chain. The sustainability goals are based on the Sustainable Development Goals of the United Nations. The supply chain goals are mainly focussed on energy, water and waste, in which energy is split into energy use and CO2 emissions. Farmers have their own targets aimed at e.g. biodiversity, animal welfare, emission reduction, etc. The target of FrieslandCampina from 2010 to 2020 was to realise climate-neutral growth regarding scope 1 and 2. This target has been met, mainly due to FrieslandCampina’s production locations that have been able to reduce its CO2 emissions. New targets run to 2030 and include joining the Dutch Climate Agreement and the European Green Deal Supply Chain. The meaning of this is that FrieslandCampina wants to realise a 95% reduction in CO2 emissions in scope 1 and 2, compared to 1990 (40% compared to 2015). The target regarding FrieslandCampina’s scope 3 emissions is 30% emission reduction (Respondent 7, Personal Communication, November 10, 2021). In 2020, FrieslandCampina joined the Science Based Target Initiative, including the target ‘well below 2 degrees Celsius’. Meeting this target means that FrieslandCampina has to report a significant part of its scope 3 emissions.

Synerlogic is part of FrieslandCampina's scope 3 emissions but external transportation and business like chemicals is currently not included in FrieslandCampina's reporting. FrieslandCampina wants to include these emissions into their scope 3 reporting within a time frame of 2 years.

FrieslandCampina introduced a reduction roadmap to their production locations, aimed at investments that have to be done in order to reduce CO<sub>2</sub> emissions. FrieslandCampina reduced emissions by investing in e.g. the transformation of concentration processes and supply chain reorganizations, in which activities are combined into one location which means that other production locations can be closed. This has helped FrieslandCampina to reduce its CO<sub>2</sub> emissions over the last few years (Respondent 7, Personal Communication, November 10, 2021). Right now, the CO<sub>2</sub>-footprint of FrieslandCampina is 90% produced by the farm, 8.5% by FrieslandCampina's production locations and 1.5% by transportation.

### The dialogue: outcomes

During the dialogue, Synerlogic responded to the example FrieslandCampina gave of concentrating liquids. Chemicals can also be concentrated to certain levels. The more a chemical is concentrated, the less water it contains and the less volume it takes. But, the higher one wants to concentrate a chemical, the more energy this costs. For example, the production of 100% (powder) caustic soda takes very high temperatures to extract moisture. There is a balance between the concentration that takes least energy to produce while taking the least amount of volume which reduces CO<sub>2</sub> emissions during transportation. During the meeting, Synerlogic mentioned the possibility of delivering the most sustainable concentration to FrieslandCampina's locations to reduce CO<sub>2</sub> emissions during transportation. FrieslandCampina did not respond very positively to this offer because for FrieslandCampina transportation is only 1.5% of their total CO<sub>2</sub>-footprint. Therefore, this option is not at the top of the list and FrieslandCampina urges to focus more on efficiency adaptations at production locations, switching towards new technologies and optimizing them. Nevertheless, as analysed in the second research question on Synerlogic's CO<sub>2</sub> footprint, transportation produces 72.3% of Synerlogic's total CO<sub>2</sub> footprint. This means that reducing CO<sub>2</sub> emissions caused by the transportation of chemicals between Synerlogic and FrieslandCampina would reduce scope 1 emissions of Synerlogic and therefore also scope 3 emissions of FrieslandCampina. This line of thought was not suggested by one of the two parties during the meeting. Furthermore, related to literature on collaborative action, the argumentation by FrieslandCampina is a typical example of the general "hub-and-spoke" model in which stakeholders are distinct and mutually exclusive (Bhattacharya & Korschun, 2008). Instead of focusing on creating knowledge and information, FrieslandCampina excludes Synerlogic by stating that for FrieslandCampina the focus on transportation is not relevant enough. Referring to Ryan et al. (2012), FrieslandCampina does not focus on 'the health of the system' but more on its own footprint.

On the side of FrieslandCampina, opportunities for collaboration towards sustainability in the supply chain are seen in optimizing acid and lye storage at FrieslandCampina production locations. Part of the solution could be telemetry. Telemetry is a technology that can be applied to tanks, barrels, containers, etc. in order to monitor the storage from a distance. This provides the chance to optimize planning, transportation and the refilling of the storage locations.

Furthermore, FrieslandCampina is interested in mapping scope 3 emissions. The production of chemicals can happen in many different ways and therefore will have different CO<sub>2</sub>-footprints. In the future, FrieslandCampina will look further in their supply chain to see what the CO<sub>2</sub>-footprint of Synerlogic is.

*“In the most ideal situation, the CO<sub>2</sub>-footprint will be a factor on which will be decided whether FrieslandCampina wants to do business with Synerlogic or perhaps another company that has a smaller CO<sub>2</sub>-footprint”* (Respondent 7, Personal Communication, November 10, 2021).

It will take some time until this situation is reality but FrieslandCampina does believe the developments will go in that direction, based on what other bigger companies are doing as well. Also, FrieslandCampina indicates that after mapping scope 3 emissions in the supply chain, plans for reduction can be developed. This is an important finding during the dialogue between Synerlogic and FrieslandCampina because it strongly confirms the importance of the topic of CO<sub>2</sub> reduction on the supply chain. Furthermore, due to the fact that Synerlogic puts itself in the spotlight in relation to CO<sub>2</sub>-footprint by organizing this dialogue with FrieslandCampina, this could mean that FrieslandCampina will be asking more critical questions on Synerlogic's CO<sub>2</sub>-footprint performance. Potentially, this could be an unintended consequence of the intended action to organize a dialogue. Balogun and Johnson (2005) refer to this as the impact of change recipient sensemaking. This is a risk that is almost always there when moving towards integrated network collaboration, due to the fact that intentional and unintentional change are inextricably interlinked (Balogun & Johnson, 2005).

Another topic discussed between Synerlogic and FrieslandCampina was waste. FrieslandCampina joined the Ellen MacArthur Foundation to commit itself to reducing packaging material. The strategy FrieslandCampina takes in regarding this topic is to first realise zero landfill in 2023. Secondly, FrieslandCampina wants to reduce the amount of burned waste. Thirdly, the goal is to reduce the total volume of waste by 2025. In relation to this topic, Synerlogic offered to do research on the volumes and different types of packaging that are sold from Synerlogic to FrieslandCampina. Thereafter, the option for reverse logistics could be investigated by which Synerlogic would take back its packaging for recycling. This would directly have an impact on the reduction of waste.

Lastly, FrieslandCampina asked Synerlogic if it looks for ways to recycle chemicals after use. For example, caustic soda and nitric acid remain quite intact within a liquid. Therefore, it could be interesting to extract the chemical out of the liquid to reuse it again. The techniques are there and FrieslandCampina already does experiments on large scales at one specific production location. The reuse of chemicals would not directly relate to the core business of Synerlogic or FrieslandCampina but according to FrieslandCampina, *“in order to come closer to a circular economy, a new way of thinking is necessary”* (Respondent 7, Personal Communication, November 10, 2021).

All together, the meeting between Synerlogic and FrieslandCampina resulted in a couple of topics that could be interesting and meaningful for a follow up: 1) storage of chemicals using telemetry, 2) mapping scope 2 emissions in the supply chain, 3) reduce waste.

Arrangements on when and whom should follow up were made as well. The outcomes of the dialogue have been positive. Nevertheless, it is good to realize the underlying risk of the chosen approach. Synerlogic approaches FrieslandCampina from the sustainability perspective. A result could be that Synerlogic comes under a magnifying glass at FrieslandCampina. When FrieslandCampina decides that Synerlogic does not comply with their norms, this might have negative consequences. None of these negative results have been observed but it is good to be aware of this possible risk.

## Answer to hypothesis

Now that the meeting between Synerlogic and FrieslandCampina and the run-up to it have been described, it is time to come back to the hypothesis mentioned in the beginning of this chapter: *if GRI indicators are applied to Synerlogic by an active change agent, then this has a positive influence on the relationship between Synerlogic and FrieslandCampina.*

As for the application of GRI indicators, the method has helped to create a common ground between two parties that functioned as the basis for dialogue on sustainability in the supply chain. In order to get both parties at the table, the change agent used the outcomes of the materiality analysis to picture a perspective that was interesting enough for both parties to be open for conversation. This perspective was the GRI indicator: CO<sub>2</sub>-footprint.

Also, the GRI method provided a scientific backbone and credibility to the change agent during the process in which both parties had to be asked for their participation. In the end, people participate when they have something to gain. In relation to FrieslandCampina, it could be noticed that FrieslandCampina's sustainability manager was interested in the fact that the change agent used the same scientific methods as FrieslandCampina did.

Besides scientific foundation, this matching GRI approach created a feeling of mutual understanding which was helpful for building a stronger relationship. Another example in which this came forwards was during an interview in which another customer of Synerlogic interviewed Synerlogic managers on sustainability, it could be clearly observed that talking about mutual scientific approaches (which in this case was also the GRI and materiality analysis) creates a mutual understanding and a feeling of recognition, as if people finally talk to each other in the same language. On the one hand this observation can have positive impacts when one can respond to this in the right way. On the other hand, scientific literature also states that in relation to societal debate, scientific 'slang' can complicate the discussion. For example, in a research conducted by the University of Southern California (2021), it was stated that climate change terminology used by scientists confounds the public. Therefore, it is good to be aware of both the positive and negative effects of using scientific language, depending on the audience it is presented to.

The change agent also played an important role in the outcome of this part of the research. Without the change agent there would not have been a conversation between Synerlogic and FrieslandCampina on how to achieve mutual sustainable goals in the supply chain. Furthermore, the change agent organized gatherings among Synerlogic managers in the run-up to the meeting with FrieslandCampina. During the meeting between Synerlogic and FrieslandCampina, the change agent took care of the introduction and summarized the outcomes halfway and at the end of the meeting. Overall, the change agent took an active

role in the process and functioned as a driver or a booster to guide towards the final goal, which was directing towards sustainable development in the supply chain.

Finally, what can be concluded is that the chosen approach including the active role of the change agent and the GRI method, resulted in the fact that Synerlogic and FrieslandCampina made quite specific agreements on follow-up for possible collaboration to search for sustainable development within the supply chain. Also, the meeting resulted in new ideas that would not have arisen otherwise, e.g. looking into reusing chemicals or the fact that FrieslandCampina acknowledged that chemicals are currently a blind spot in the supply chain reporting on CO2 emissions.

*“For me, it would be interesting to take the mapping of scope 3 emissions as a starting point for further developments. I would like to meet with a few of Synerlogic’s people to discuss our perspectives towards scope 3. FrieslandCampina uses quite a lot of chemicals but there is a lack of knowledge and therefore chemicals are a blind spot to us”* (Respondent 7, personal communication, November 10, 2021).

Ryan et al. (2012) talk about the network as a source of value creation which allows organizations, relationships and networks to be changeable by the actions of the parties involved. The quote above shows the discovery of a blind spot for FrieslandCampina and allows us to understand how firms “know more than they do”, by learning from others (Ryan et al., 2012).

Furthermore, the meeting potentially resulted in a stronger relationship between Synerlogic and FrieslandCampina because there is potential for collaboration from the sustainability perspective, which was not part of the relationship before the meeting. Synerlogic strives for key account management regarding FrieslandCampina, meaning that the relationship between those two parties exists in multiple layers in which departments of both organizations are all in contact with each other. By adding the sustainability perspective, the relationship gets more rooted and is guided further towards key account management. In addition, the meeting resulted in better communication between FrieslandCampina’s global category manager (the purchaser) and the global sustainability manager supply chain. Before the meeting took place, the purchaser had never heard of the global sustainability manager supply chain that is his colleague at FrieslandCampina. Also, sustainability was not a topic in the choices the purchaser made in relation to Synerlogic. As one of the outcomes of the meeting was that Synerlogic’s account manager FrieslandCampina, FrieslandCampina’s category manager (purchaser) and FrieslandCampina’s sustainability manager have a follow-up in Q1 2022 regarding mapping scope 3 emissions, it can be concluded that in potential this meeting also had a positive impact on the internal communication between different departments of FrieslandCampina.

## Validation of outcomes

The data presented in this research question is filled with perceptions of participants. Participants all have their own perspective about their own role, their influence and their behavior. In order to validate these perceptions and to get a realistic view on where the influencing power actually is, a distinction between the different perceptions will be made by using the EAR instrument. The EAR instrument consists of three dimensions: (Arts & Verschuren, 1999)

- 1) The ego-perception (E): Views of key players with regard to their own influence (or its lack) on key topics in complex decision-making
- 2) The alter-perception (A): Views of the other key players with regard to the influence (or its lack) of “ego” on key topics in complex decision-making
- 3) The researcher’s analysis (R): validity check of ego- and alter-perceptions by the researcher on the basis of the indicators: goal-achievement, intervention and anticipation.

The three perceptions can support each other and in that case there is no problem in interpretation. If they do not support each other, then the analysis by the researcher is considered to be dominant to the other perceptions. This dominance is explained by the fact that the researcher represents objectivity, whereas the ego- and alter-perceptions are the result of a stimulus-response technique. Participants might have strong, conflicting interests that lead to biased answers. Therefore, the best judge is the researcher using a process analysis. The underscored themes in point three will be used in the process analysis.

Applied to the dialogue between Synerlogic and FrieslandCampina, the first step in the process analysis is to check whether the participants achieved their goal in this meeting. As discussed during the preparations for the meeting, the goal for Synerlogic was to search for mutual points of interest that would be reason for a follow-up and to get insights into who else needs to be involved to strengthen the relationship between Synerlogic and FrieslandCampina. The goal for FrieslandCampina was to search for opportunities in which Synerlogic can help FrieslandCampina to reduce its scope 3 emissions. Reflecting on these goals, it can be stated that Synerlogic did find a specific mutual point of interest, namely the mapping and reduction of FrieslandCampina’s scope 3 emissions. The second goal of Synerlogic was to gain insights into who else needs to be involved in order to meet these goals. The idea behind this goal was to strengthen the relation between Synerlogic and FrieslandCampina. This goal was also met because FrieslandCampina’s sustainability manager emphasized being willing to participate in further conversations on scope 3 emissions in the supply chain. Also, this person mentioned that there are specific teams at FrieslandCampina working on scope 3 reductions and he suggested involving them as well. Furthermore, to the other outcomes of the dialogue, FrieslandCampina’s sustainability manager stated that the right contact at FrieslandCampina was the one that was already known at Synerlogic. On the side of FrieslandCampina, the goal was also met because the conclusion of the meeting was that Synerlogic and FrieslandCampina will continue their conversation on reducing FrieslandCampina’s scope 3 emissions. To conclude, all goals by both parties have been met. Therefore, it seems that the influence of both parties is equal. But the fact is that on the forehand, Synerlogic set up goals that were more in the service of FrieslandCampina. Furthermore, the fact that FrieslandCampina is willing to work on reducing scope 3 emissions with Synerlogic is driven by governmental regulations that make it mandatory for FrieslandCampina to reduce its scope 3 emissions. Therefore, an intervention from the European and the Dutch government has influenced this outcome. The intensity of this intervention is quite high because in relation to the dialogue because without the obligation to reduce emissions in the supply chain, the topic would lose its economic related urgency. Due to the government intervention, the environmental and the economic dimension have been bound together. Without this intervention the economic driver would disappear. As has been concluded in this research so far, the economic dimension is

important in answering the “what’s in it for me” question. Therefore this intervention can be classified as highly intensive.

Taking all of this into consideration, the process analysis comes down to the conclusion that originally, FrieslandCampina has more influencing power than Synerlogic. Nevertheless, due to the intervention by the government on scope 3 regulations, the original situation has been adapted to one in which some degree of mutual dependency is created. Therefore, more influencing power has been handed over to Synerlogic as it influences FrieslandCampina in reaching her goal of reducing scope 3 emissions.

## CHAPTER 7: Conclusion and discussion

The previous chapter provided answers to the sub-questions that were formulated in the introduction chapter. Those answers will make it possible to address the central research question of this research regarding the potential influence of the application of GRI indicators by an active change agent on the internal and external organizational change of Synerlogic.

The first part of the research was aimed at the materiality analysis and the description of Synerlogic's current performance on its CO<sub>2</sub>-footprint. The materiality analysis in which the relevant GRI indicators for Synerlogic have been determined using a scatter plot, resulted in a top 5 of indicators that represented the highest priorities to Synerlogic. Thereafter, the number one indicator was analysed which resulted in an overview of the current performance of Synerlogic on its CO<sub>2</sub>-footprint. The biggest part (72,3%) of the footprint is caused by Synerlogic's trucks. Therefore, Synerlogic can achieve the biggest impact on CO<sub>2</sub>-reduction by focussing on transportation. Now that the starting point has been defined, the point on the horizon is needed to plan a strategy that guides the development to that point on the horizon. Both the GRI indicators and the change agent influenced the outcomes of the first part of the research. The GRI mainly influenced the first part of this research by following its corresponding methodological approaches, e.g. the dimension, indicators and materiality analysis. Furthermore, the change agent influenced the outcomes by making specific choices on selected indicators and applying the method to the organization and people at Synerlogic.

In the second part of this research, related to internal and external organizational change, mainly the change agent had an influence on the individual behavior change that was observed during the time of this research. Due to its active role, the change agent inspired others which caused movement through the stages of TTM. Furthermore, nudging was discovered as a complementary tool in organizing behavior change. The influence of nudging was not predicted in advance, but emerged during the research. A good example of nudging was the story-telling of 'the donut', the one of Kate Raworth that was mentioned in the introduction of this research. 'The donut' became a concept that people at Synerlogic recognized and which they related to sustainability. Beside the fact that the GRI indicators provided guidance to the change agent, the indicators were not of great influence related to this part of the research. The GRI indicators were of greater influence in the external organizational change because mainly due to the materiality analysis, a very specific match on CO<sub>2</sub>-footprint could be created between Synerlogic and FrieslandCampina. The change agent also influenced the outcome between Synerlogic and FrieslandCampina because he organized the dialogue between the two organizations. Furthermore, the change agent helped Synerlogic during the run-up to the dialogue and fulfilled a facilitating role while the dialogue was taking place. The dialogue between the two parties was potentially valuable to both organizations. Synerlogic helped to discover blind spots in FrieslandCampina's scope 3 emissions, while FrieslandCampina is open for increased collaborations that potentially lead to new business opportunities. This is a good example of the learn and change concept, described in the beginning by Yuval Noah Harari.

The answers to the research question made it possible to state that in this case study, the action researcher has had the biggest influence on the internal organizational change

towards corporate sustainability, measured by using the TTM of behavioral change. Related to the external organizational change, aimed at collaborations in the supply chain with FrieslandCampina, it can be concluded that both the application of GRI indicators and the change agent had a big influence on the positive outcomes that resulted from the dialogue between the two organizations. The GRI indicators mainly functioned as a guideline for the change agent. The change agent himself had the biggest influence on the organizational changes.

When comparing these findings with the literature that was discussed in the theory chapter of this research, several conditions that are related to organizational change towards sustainable development can be distinguished.

For example, regarding the internal organizational change, one of the results was the importance of the role of the change agent. As discussed in the theory chapter, the change agent represents episodic power. According to Lawrence et al. (2012), the first step towards institutional change is by episodic power. The results of this research therefore mean that the approach that was chosen by the action researcher has had a positive result in driving internal organizational change towards sustainable development by causing movement through the stages of TTM. This finding is valuable because this successful experience provides one example of a direction into what is needed for Synerlogic to organize internal organizational change on an individual level.

The importance of achieving small successes, step by step, also came up during interviews. An example of a successful result is the awareness on the commercial value related to sustainability during the focus group discussion can be classified as a small success. The experience was that small successes create motivation for further development towards sustainability. Related to the literature, these examples represent the punctuated equilibrium (Elderidge and Gould, 1972) that provides a visual presentation of how changes develop step by step. Having these insights in theory can be valuable but now that theory can be related to results and the development through another stage of TTM, the belief in this approach grows even further. Furthermore, this approach also plays a role in determining the strategy regarding sustainability.

Talking about Synerlogic's sustainability strategy, one of the findings of this research was the fact that sustainability is not embedded within the organization, for example by incorporating it in the overall business strategy. Related to the literature, the lack of embeddedness results in a situation in which no changes will eventually be institutionalized. According to Scott (2008), institutional change is required in order to change the way of working and the way of thinking within an organization. Multiple respondents during interviews expressed the desire to take action, instead of talking or writing another CSR report, institutional change is required. Relating this to the literature that classifies institutional change as a blueprint for action, even more emphasizes the importance of this specific kind of change to Synerlogic.

The results related to the collaboration in the supply chain showed that the GRI method provides a common topic that functions as the start of a dialogue that might be continuing in the long term. Related to the literature on INA by Ryan et al. (2012), the correspondence can be seen in the results on sharing information, finding blind spots and co-creating knowledge

that none of the two parties involved would have been able to create otherwise. These results mean that there is a potential in the collaboration between Synerlogic and FrieslandCampina to work together towards sustainability in the supply chain. Also, for scientific research these results are valuable. The outcome could not have been predicted as it is the result of the dialogue between two parties that have never met each other in relation to this topic before. The successful result contributes to both the social and scientific world.

The findings conducted regarding 'failed' strategies towards sustainable development at Synerlogic, causing a relapse in the TTM of behavior change, can be related to the literature of Collins and Porras (1994) on learning and changing. The ability to learn from failures, to adapt and to develop towards improvements is stated as a crucial element for corporations in order to not be sidelined by e.g. competition or legislation. In order to reach this learning, Synerlogic does need to accept that the strategy of this employee does not work before the organization will be able to learn from it and develop towards a more successful strategy. This result is important to Synerlogic as it addresses the organizational culture of the organization. Take initiative, analyse the result, proceed when successful or change and learn when 'failure'. This mindset is important for the company if it wants to be more resilient and sustainable, also in terms of the economic dimension, in the future. The economic dimension forms a barrier at this moment of time. During the literature review no information on how to overcome this barrier has been discussed. This would be an interesting direction for further research as it is most likely that other companies also face the same issue.

Other interesting directions for further research are related to results that have been conducted during this research but that were not mentioned during the literature review. For example, another interesting direction for further research would be on finding other scientific frameworks related to individual behavior change that might help to assess the internal organizational change. The TTM originates from social sciences and is aimed for treatment of addictions. No other literature on the application of the TTM on organizational change has been found. The choice for the TTM has pros and cons. The pro is that it provides a unique form of analysis in which behaviors are categorized in stages of change. The behaviors of individuals can be explained on the basis of these stages and their specific characteristics. This resulted in results that explain small changes and the meaning of these changes on a detailed level. This provides more insights in what the consequences of specific stimulants are and what they mean. The disadvantage of the TTM approach is that it is very time consuming and requires long-term research due to the fact that maintenance can only be observed after at least 6 months, preferably multiple years. The choice for the TTM resulted in the fact that this research can only draw conclusions on the potential organizational change, based on the findings that were conducted during several months. A suggestion for further research would be to consider another approach to measure the internal, individual organizational change. The idea to examine individual behaviours within the organization then remains while more conclusions can be drawn related to the long-term, maintained organizational changes.

One of the main struggles is that before sustainable development, Synerlogic has a higher priority, which is to financially survive. An idea for future research is to try to find solutions to overcome this huge barrier of the economic dimension.

Also, the role of leadership seemed to be dominant regarding the TTM of behavioral change. During the literature study the role of power that eventually would lead to institutional change, has been discussed but the role of leadership remains underexposed. Searching on the role of leadership in relation to organizational change results in numerous results. Therefore, an interesting direction for further research would be to conduct research on the role of leadership in relation to corporate sustainability, the barriers and ways to overcome them.

Beside these recommendations for scientific studies, a couple of practical recommendations can be provided as a consequence of the results. These practical recommendations will be elaborated, separately from this section, in the next chapter.

# Recommendations

This chapter presents two practical recommendations that can help Synerlogic to improve its sustainability performance. The first recommendation follows the outcomes of research question 2 and 4, regarding mapping CO<sub>2</sub> emissions in the supply chain with FrieslandCampina and food for thought on possible reduction solutions. The tool used to present this recommendation is the life cycle assessment. The second recommendation follows the outcomes of research question 3 regarding the internal organizational change. Ideas on what kind of changes are needed to make sure to embed sustainability in the organization

## Supply chain analysis

The conclusion of research question 2, regarding Synerlogic's CO<sub>2</sub>-footprint, was that the main cause of the company's CO<sub>2</sub> emissions is transport. Therefore, in order to generate the biggest impact, this should be the focus area. Optimization and efficiency approaches can help to reduce these emissions. The product Synerlogic sells and transports in large volumes is caustic soda. Therefore, this research included recommendations on improvements regarding this product. Furthermore, an important outcome of research question 4 was that Synerlogic and FrieslandCampina should cooperate to map and reduce scope 3 emissions in the supply chain. This recommendation uses the life cycle assessment (LCA) as a tool to map emissions in the supply chain. Thereafter, interventions can help to reduce emissions. A kick-off for the LCA on caustic soda is presented in this chapter.

Caustic soda is produced at Nobian, transported by Synerlogic and used by FrieslandCampina, mostly for neutralizing (controlling of pH values) purposes. This part of the LCA includes CO<sub>2</sub> emissions from production until arrival at FrieslandCampina. All the processes are included, i.e. extraction of natural resources, raw material production, energy production and transportation (Nobian, personal communication, October 2021).

Caustic soda is a by-product in the main process of chlorine production. Originally, caustic soda has a concentration of 24 - 30% when it is a residual from the chlorine production. It is concentrated by evaporation to a concentration of 50% during this process. The higher the concentration, the less volume the product occupies. To give an example, the density of 33% caustic soda is 1,35 g/l while the density of 50% caustic soda is 1,52 g/l. Reflecting these densities on storage tanks of 30m<sup>3</sup> shows that the evaporation to 50% contributes significantly to storage efficiencies, especially given the fact that every day about one hundred trucks transport Nobian's caustic soda from the factory to a customer. Figure 18 shows the environmental loads from all the processes in the production of caustic soda cradle to Nobian factory gates, given for 1 metric ton (=1000 kg) of caustic soda solution of 50%.

Emissions	To air	To water
	kg	kg
Carbon dioxide	3.40E+02	
Non Methane VOC	6.38E-02	
Nitrogen dioxide	8.06E-05	
Sulfur dioxide	1.98E-01	
Mercury	3.74E-06	2.22E-05
Chloride		8.86E+00
Sulfate		3.54E-01

Figure 18: most significant emissions to air and water, produced at 1 metric ton caustic soda, 50%  
Source: Nobian, 2021.

In the year 2020, a total amount of 35.674 metric ton caustic soda was part of the supply chain Nobian - Synerlogic - FrieslandCampina. The total amount of CO<sub>2</sub> emitted by Nobian regarding this production equals 12.129.120 kg CO<sub>2</sub>. Synerlogic adds its emissions by transportation and water usage to this.

Nobian only stores caustic soda 50% due to volume efficiencies. Nevertheless, FrieslandCampina buys different concentrations of caustic soda (25%, 33%, 50%), which is why the 50% caustic soda is mixed up with water again to get it to the desired concentrations. A recommendation that would contribute to the reduction of CO<sub>2</sub> in the supply chain is to supply caustic soda 50% to FrieslandCampina as much as possible. To give an example, currently Synerlogic sells 5.790.100 kg of Caustic Soda 33% to one of FrieslandCampina's production locations, which equals 193 rides. Furthermore, Synerlogic sells 5.798.112 kg of Caustic Soda 25% to two other production locations, which equals 193 rides. If both locations of FrieslandCampina would decide to purchase Caustic Soda 50% instead of the lower concentration, this would reduce volumes and eventually save 165 rides. Assuming that the average number of kilometers per ride to these locations is 160 km round trip, this would save:

$$(165 * 160 / 4,40) * 3,2 = 19.200 \text{ kg CO}_2$$

165 = total rides

160 = average number of km per ride

4,40= liters diesel / km

3,2 = CO<sub>2</sub> emission factor

All together, the LCA approach helps to map CO<sub>2</sub> emissions in the supply chain. Thereafter, choices on where to intervene can be made. In this example the intervention took place in transport because Nobian states that changes in their production process are not possible. Changing the delivery for only 3 production locations of FrieslandCampina would reduce almost 3% of Synerlogic's CO<sub>2</sub> emissions emitted by transport in total (713.936 kg). Synerlogic would reduce its scope 1 emissions, which means that FrieslandCampina reduces its scope 3 emissions.

## Need for Paradigmatic and institutional change

One of the outcomes of research question 3 regarding the internal organizational change was that there is a call for leadership in sustainability. The recommendation to Synerlogic would be to include someone from outside the organization to guide this change. The reason for that is that during this research many respondents expressed their need for different perspectives and new ways of thinking on sustainability. One respondent stated during an interview that if he would take this role, he would automatically fall back to his discipline (compliances) too much. Therefore the recommendation is to search for paradigmatic change. Paradigmatic change was originally identified by physicist and philosopher Thomas Kuhn, describing it as a fundamental change in the basic concepts and experimental practices of a scientific discipline (Kuhn, 1962). Kuhn explained that evidence showing the prevailing paradigm is insufficient is being ignored. Over time, more evidence accumulates but unless a crisis occurs, the evidence is still ignored. According to Byrnes (2004), what Kuhn found in science plays out in business every day. A manager seeking to create paradigmatic change will hit a wall of 'the way we do business' that is comparable to Kuhn's paradigm. People in charge do know the things they know. If they are confronted with a situation that is different, they do more on what they know, while this might not be the solution for their problem at all. In such situations there is need for paradigmatic change. By including a sustainability change agent from outside the organization, Synerlogic could create this paradigmatic change. Therefore, this is a practical recommendation to the company.

Another barrier that Synerlogic faces internally regarding sustainable development is the lack of business strategy on this theme. Lack of strategy goes hand in hand with responsibilities, aims, goals and development. A sustainability strategy helps to measure the progress an organization makes. Furthermore, the strategy ensures the embedding of sustainability in the organization. One of the worries expressed by one of the participants was that if the action researcher leaves the organization, the awareness on sustainability would fade away again. In order to prevent this from happening, sustainability needs to be embedded in the organization. Then the next question is how to make sure that sustainability is embedded in the organization.

Scott (2018) states that in order to create organizational change towards sustainable development, the way of working and thinking within the organization has to change into one that supports sustainable development. This means that institutional change is required (Scott, 2018). In practice this means that the actions of organizations are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs and definitions (Suchman, 1995). Furthermore, the role of power in relation to organizational change processes can be distinguished in episodic and systemic power (Lawrence and Robinson, 2007). Episodic power refers to 'relatively discrete strategic acts of mobilization initiated by self-interested actors' (Lawrence et al., 2001, p. 629). For example, the notion of actor A getting actor B to do something actor B otherwise would not have done (Dahl, 1961). Also, in relation to behavior change (TTM) research question 3 has shown evidence of a shift in an actor's behavior or belief that stems from the actions of another. Systemic power is the sort of power that 'works through routine, ongoing practices to advantage particular groups without those groups necessarily establishing or maintaining those practices' (Lawrence, 2008, p. 174). This research followed the assumption by Lawrence et al. (2012)

that the first step to institutional change is by episodic power because episodic power provides the basis for the transformation of ideas into legitimate interpretations and their integration into group activities. First, episodic power is needed to convince people of the new meaning and interpretation of existing concepts. The new thinking needs to become the normal way of doing things through systemic power that builds on the episodic power. Eventually, the new behavior will be institutionalized if changes are embedded in institutional structures. It affects how people behave and act without thinking about it. The institutional change functions as a blueprint for action. The recommendation to Synerlogic is to build further towards institutional change by developing systemic power. Furthermore, the recommendation is to build this systemic power by developing a sustainability strategy that is an integrated part of the overall business strategy. The sustainability strategy could use the materiality matrix to develop concrete points of action. The method used in this research could be an example; take the materiality matrix to define relevant points of action, define the point of departure (current situation) and set goals to define the step on the horizon (process of diagnosing). Thereafter, the strategy to reach this goal can be developed. The strategy represents systemic power and together with episodic power creates the building blocks for institutional change in which sustainability is embedded in the organization of Synerlogic.

## Processes towards progress through stages of behavior change

As concluded from research question 3 regarding the individual stages of change, most of Synerlogic's employees were acting in the precontemplation, contemplation, preparation and action stage. DiClemente and Scott developed different processes that can be applied to guide the development through specific stages. The recommendation to Synerlogic would be to apply the right processes and use these as a tool to accelerate the change process.

Individuals that are in the precontemplation stage can use the following processes:

*consciousness raising (1)*: involves increased awareness about the causes, consequences, and solutions for the unwanted behavior. Interventions that can increase awareness include feedback, confrontations and interpretations (DiClemente & Scott, 1997).

*environmental reevaluation (2)*: combines both affective and cognitive assessments of how the presence or absence of a personal behavior affects one's social environment, such as the impact of one employee's unsustainable behavior on others. It can also include awareness that one can serve as a positive or negative role model for others (DiClemente & Scott, 1997). Individuals that are in the contemplation and preparation stage can use

*self-reevaluation (3)*, which also combines cognitive and affective assessments of one's self-image with and without an unsustainable behavior. Values clarification, sustainable role models, and imagery (e.g. storytelling like 'the donut') are techniques that can move people evaluatively (DiClemente & Scott, 1997). People in the action stage can use *self liberation (4)* to develop further to the maintenance stage. Self liberation is the belief that one can change and the commitment to act on that belief. Expressing good intentions into goals regarding the annual business plan and public testimonies could be interventions that reinforce the process (DiClemente & Scott, 1997).

## Proceed dialogue and collaborations on sustainability

The final practical recommendation to Synerlogic would be to proceed with the dialogue with FrieslandCampina from the sustainability perspective. Opportunities for collaboration in the supply chain have been determined during this research. These opportunities could contribute to the reduction of CO<sub>2</sub> emissions, while simultaneously strengthening the relationship on other levels. As Ryan et al. (2012) state, collaboration in networks helps organizations to co-create knowledge, to learn from each other and to be changeable by the actions of the parties involved. The network is therefore viewed as a source of value creation. Beside proceeding the dialogue with FrieslandCampina, Synerlogic could initiate similar dialogues with other parties in the supply chain as well. From this perspective it is important to achieve small successes that can be extended further in the network.

# Reflection

The concept of learn and change that keeps coming back during this research also applies to the way in which this research can be reflected. Assessing the limits of this research helps to be aware of my own improvements and gives other researchers the chance as well to learn from these limits. This chapter reflects on the theory, methodology and results of this research.

## Theory

Many different theoretical concepts have been included in this research. Organizational change and sustainability are both broad concepts to which many other theories are related. A balance between completeness and manageability had to be found. Still, the conceptual model is extensive. During this research all the elements did play a role in the process and outcomes. Eventually the emphasis has been placed on the (TTM of) behavioral change and the role with FrieslandCampina. Hereby, the internal and external organizational change got their central role in this research. During the analysis of the results, the relapse between stages could be observed. The TTM of behavior change by DiClemente and Scott (1997) describe the relapse stage as the stage between maintenance and precontemplation. However, relapse could happen at any stage of the model besides the precontemplation stage. This is not immediately clear from the visual representation in the conceptual model. Therefore, this could be adapted.

## Methodology

The most important sources of data during this research were the focus group discussion, participant observations and dialogues. In addition to the scientific findings, the focus group resulted in interesting conversations between managers of Synerlogic. Opinions, thoughts and priorities regarding sustainability were shared during this session. The result was that people were more on the same page. Awareness increased and some people were inspired, leading to discussions on how to continue this conversation on sustainability. In search of a sustainable identity, these focus group sessions are valuable to create shared values and beliefs that reflect Synerlogic's perspective towards sustainability.

In relation to the participant observations, the choice for action research has been determining the process and outcomes of this research. On the one hand this method provided the ability to dive into the organisation and to merge science with practice. It is exactly this combination that businesses are struggling with in relation to integrating sustainability. During the introduction of this research this problem statement has been discussed and this research aimed to contribute to the solution of this wicked problem. The active role of the researcher was suitable to support reaching the research goal. As will be discussed in the next section, the role of the researcher also had a decisive role on the outcomes

## Results

As was discussed in chapter 6.1, many respondents stated that the role of the change agent has had more influence on them than the use of the GRI tool. Based on these statements it seems that the change agent has played an important role in the outcomes of the research. As elaborated in the methods and theory sections, the role of the change agent was in line

with action research, participant observation. The choice for this role of the researcher has made it hard to separate the influence of the agent himself from the influence of the tool on the organizational change. The expectation is that the role of the change agent has had a bigger influence on the outcomes, based on observations and responses by participants. If the same research would have taken place in a non-participant observation, the outcome might have been completely different. Nevertheless, due to the fact that it is hard to separate the agent from the GRI, this conclusion can only be expressed as an expected outcome. Also, during this research the change agent was represented by the researcher. The choice for this method comes with the risk of what Kruger and Dunner (2000) refer to as 'inflated Self-Assessment'. Kruger and Dunner received the Nobel Prize for their research on how people tend to hold overly favorable views of their abilities in many social and intellectual domains. The awareness of the risk of inflated Self-Assessment needs to be mentioned in this reflection chapter.

Furthermore, the research has taken place during a period of 6 months. As DiClemente and Scott (1997) mentioned, the change process is a long-term process. In order to measure maintained behavioral change, this behavior needs to be practiced for 6 months and the years after. This research reflects the organization of Synerlogic like a picture in a specific timeframe. Real change needs to be measured overtime, which is why research on longer periods of time is recommended. Also, methods regarding how to keep developing sustainable individual behavior and how to secure sustainability by institutional change have been recommended. These processes that have been started in this research should be continued in order to measure long-term organizational change. In the long run, possible negative outcomes of the chosen methods could also come forward. This research made use of hypotheses in order to develop statements that seek to come as close as possible towards reality.

During this research the outcomes have been quite positive. As mentioned in chapter 6.2, FrieslandCampina responded in a constructive way to Synerlogic. A possible negative outcome in the future could be that a stakeholder in the supply chain puts more attention to Synerlogic in a negative way. By approaching the other stakeholders, Synerlogic puts attention on itself regarding sustainability. This attention could lead to negative outcomes. Until now, no negative results have come forward during this research.

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# Appendix

## 1. GRI Standards overview

### **Economic dimension GRI indicators (200)**

#### 201: Economic performance

Information on the creation and distribution of economic value provides a basic indication of how an organization has created wealth for stakeholders.

#### 202: Market presence

Applies to those organizations in which a substantial portion of their employees are compensated in a manner or scale that is closely linked to laws or regulations on minimum wage. Providing wages above minimum can help contribute to the economic well-being of those workers. Also, distribution of wages is crucial for eliminating inequalities (e.g. wage gap between men and women, nationals and migrants).

#### 203: Indirect economic impacts

Concerns the impact that an organization's infrastructure investments and services supported have on its stakeholders and the economy (e.g. transport links, utilities, community social facilities, health and welfare centers). Along with investment in its own operations, this is one measure of the organization's capital contribution to the economy.

#### 204: Procurement practices

By supporting local suppliers, an organization can indirectly attract additional investment to the local economy. Local sourcing can be a strategy to help ensure supply, support a stable local economy, and maintain community relations.

#### 205: Anti-corruption

This disclosure measures the extent of the risk assessment's implementation across an organization. Risk assessments can help to assess the potential for incidents of corruption within and related to the organization, and help the organization to design policies and procedures to combat corruption.

#### 206: Anti-competitive behaviour

This disclosure pertains to legal actions initiated under national or international laws designed primarily for the purpose of regulating anti-competitive behavior, anti-trust, or monopoly practices. Those practices can affect consumer choice, pricing, and other factors that are essential to efficient markets. Legislation introduced in many countries seeks to control or prevent monopolies, with the underlying assumption that competition between enterprises also promotes economic efficiency and sustainable growth.

#### 207: Tax

An organization's approach to tax defines how the organization balances tax compliance with business activities and ethical, societal, and sustainable development-related expectations.

## **Environmental GRI indicators (300)**

### **301: Materials**

The inputs used to manufacture and package an organization's products and services can be non-renewable materials (e.g. oil, gas, or coal) or renewable materials (e.g. wood or water). Both renewable and non-renewable materials can be composed of virgin or recycled input materials. The type and amount of materials the organization uses can indicate its dependence on natural resources, and the impacts it has on their availability. The organization's contribution to resource conservation can be indicated by its approach to recycling, reusing and reclaiming materials, products, and packaging.

### **302: Energy**

An organization can consume energy in various forms, such as fuel, electricity, heating, cooling or steam. Energy can be self-generated or purchased from external sources and it can come from renewable sources (e.g. wind, hydro or solar) or from non-renewable sources (e.g. coal, petroleum or natural gas). Using energy more efficiently and opting for renewable energy sources is essential for combating climate change and for lowering an organization's overall environmental footprint. Energy consumption can also occur throughout the upstream and downstream activities connected with an organization's operations.

### **303: Water and effluents**

Access to fresh water is essential for human life and wellbeing, and is recognized by the United Nations (UN) as a human right. The Sustainable Development Goals, adopted by the UN as part of the 2030 Agenda for Sustainable Development, include key targets related to sustainable water management under Goal 6: 'Ensure availability and sustainable management of water and sanitation for all'. These targets aim, for example, to achieve universal access to safe and affordable drinking water, improve water quality, and address water scarcity. The amount of water withdrawn and consumed by an organization and the quality of its discharges, can impact the functioning of the ecosystem in numerous ways.

Direct impacts on a catchment can have wider impacts on the quality of life in an area, including social and economic consequences for local communities and indigenous peoples. Since water is a shared resource, and water-related impacts are localized, organizations are increasingly being encouraged to:

- prioritize action in areas with water stress;
- understand and respond to local contexts, including local social and environmental impacts;
- aim to benefit and respect the needs and priorities of all water users in an area;
- align their approaches and collective actions with other water users and with

effective public policy. Through a comprehensive understanding of its water use, an organization can assess the impacts it has on water resources that benefit the ecosystem, other water users, and the organization itself. An organization, particularly a water-intensive one, can use this information for effective water management.

### **304: Biodiversity**

Protecting biological diversity is important for ensuring the survival of plant and animal species, genetic diversity, and natural ecosystems. In addition, natural ecosystems provide

clean water and air, and contribute to food security and human health. Biodiversity also contributes directly to local livelihoods, making it essential for achieving poverty reduction, and thus sustainable development.

### 305: Emissions

GRI 305 addresses emissions into air, which are the discharge of substances from a source into the atmosphere. Types of emissions include: greenhouse gas (GHG), ozone-depleting substances (ODS), and nitrogen oxides (NOX) and sulfur oxides (SOX), among other significant air emissions. GHG emissions are a major contributor to climate change and are governed by the United Nations (UN) 'Framework Convention on Climate Change' and the subsequent UN 'Kyoto Protocol'.

This Standard covers the following GHGs:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF<sub>6</sub>)
- Nitrogen trifluoride (NF<sub>3</sub>)

Some GHGs, including methane, are also air pollutants that have significant adverse impacts on ecosystems, air quality, agriculture, and human and animal health. As a result, different national and international regulations and incentive systems, such as emissions trading, aim to control the volume and reward the reduction of GHG emissions.

The reporting requirements for GHG emissions in this Standard are based on the requirements of the 'GHG Protocol Corporate Accounting and Reporting Standard' ('GHG Protocol Corporate Standard') and the 'GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard' ('GHG Protocol Corporate Value Chain Standard'). These two standards are part of the GHG Protocol developed by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD).

The GHG Protocol has established a classification of GHG emissions called 'Scope': Scope 1, Scope 2 and Scope 3. The GHG emissions standard published by the International Organization for Standardization (ISO), 'ISO 14064', represents these classifications of Scope with the following terms:

- Direct GHG emissions = Scope 1
- Energy indirect GHG emissions = Scope 2
- Other indirect GHG emissions = Scope 3

In this Standard, these terms are combined in the following way, as defined in the Glossary section:

- Direct (Scope 1) GHG emissions
- Energy indirect (Scope 2) GHG emissions
- Other indirect (Scope 3) GHG emissions

### Ozone-depleting substances (ODS)

The ozone layer filters out most of the sun's biologically harmful ultraviolet (UV-B) radiation. Observed and projected ozone depletion due to ODS generates worldwide concern. The UN Environment Programme (UNEP) 'Montreal Protocol on Substances that Deplete the Ozone Layer' ('Montreal Protocol') regulates the phase-out of ODS internationally.

### Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions

Pollutants such as NOX and SOX have adverse effects on climate, ecosystems, air quality, habitats, agriculture, and human and animal health. Deterioration of air quality, acidification, forest degradation and public health concerns have led to local and international regulations to control emissions of these pollutants. Reductions in the emission of regulated pollutants lead to improved health conditions for workers and local communities and can enhance relations with affected stakeholders. In regions with emission caps, the volume of emissions also has direct cost implications. Other significant air emissions include, for example, persistent organic pollutants or particulate matter, as well as air emissions that are regulated under international conventions and/or national laws or regulations, including those listed on an organization's environmental permits.

### 306: Waste

Waste can be generated in the organization's own activities, for example, during the production of its products and delivery of services. It can also be generated by entities upstream and downstream in the organization's value chain, for example, when suppliers process materials that are later used or procured by the organization, or when consumers use the services or discard the products that the organization sells to them. Waste can have significant negative impacts on the environment and human health when inadequately managed. These impacts often extend beyond locations where waste is generated and discarded. The resources and materials contained in waste that is incinerated or landfilled are lost to future use, which accelerates their depletion. The United Nations recognizes the role of responsible consumption and production in achieving the Sustainable Development Goals<sup>1</sup>. The targets under Goal 12, in particular, call on organizations to implement environmentally sound waste management and prevent and reduce waste through reuse and recycling. The disclosures in this Standard are designed to help an organization better understand and communicate its waste-related impacts, and how it manages these impacts. The disclosures require information on how the organization prevents waste generation and how it manages waste that cannot be prevented, in its own activities and upstream and downstream in its value chain.

### 307: Environmental compliance

GRI 307 addresses the topic of environmental compliance, covering an organization's compliance with environmental laws and/or regulations. This includes compliance with international declarations, conventions and treaties, as well as national, sub-national, regional, and local regulations. The disclosures in this Standard can provide information on an organization's compliance with applicable laws and regulations, and with other instruments concerned with environmental protection.

### 308: Supplier environment assessment

An organization might be involved with impacts either through its own activities or as a result of its business relationships with other parties. Due diligence is expected of an organization in order to prevent and mitigate negative environmental impacts in the supply chain. These include impacts the organization either causes or contributes to, or that are directly linked to its activities, products, or services by its relationship with a supplier.

## **Social GRI indicators (400)**

### 401: Employment

GRI 401 addresses the topic of employment. This includes an organization's approach to employment or job creation, that is, an organization's approach to hiring, recruitment, retention and related practices, and the working conditions it provides. GRI 401 also covers the employment and working conditions in an organization's supply chain. An employment relationship is a legal relationship between a worker and an organization that confers rights and obligations to both parties. This relationship is usually the means for determining whether employment or labor law is applicable or whether commercial law is applicable.

### 402: Labor market management relations

GRI 402 addresses the topic of labor/management relations. This covers an organization's consultative practices with employees and their representatives, including its approach to communicating significant operational changes. An organization's consultation practices are expected to be aligned with relevant international norms and standards. Collective bargaining can play an important role in an organization's consultation practices. Collective bargaining refers to all negotiations which take place between one or more employers or employers' organizations, on the one hand, and one or more workers' organizations (trade unions), on the other, for determining working conditions and terms of employment or for regulating relations between employers and workers.

### 403: Occupational health and safety

GRI 403 addresses the topic of occupational health and safety. The right to a healthy and safe workplace is recognized as a human right and is addressed in various authoritative international instruments.

The health and safety of workers can be affected by both the work they perform and the workplace where it is performed. Therefore, an organization is expected to be responsible for the occupational health and safety of:

- all workers performing work that is controlled by the organization;
- all workers whose workplace is controlled by the organization, whether or not their work is under the control of the organization.

The principles of occupational health and safety management systems include developing a policy, analyzing and controlling health and safety risks, providing training, and recording and investigating health and safety incidents. Health and safety at work involves both the prevention of harm, and the promotion of health and well-being. The prevention of harm means adhering to high standards and best practices with regards to a safe and healthy working environment. Best practices include following the industrial hygiene hierarchy of controls and its approach of controlling hazards to prevent risk. Best practices also include respect for human capacities and tolerances as described by the sciences of ergonomics

and toxicology. They also include the implementation of the principles of Process Safety Management. Health and safety impacts can arise over the use of unsafe equipment, machinery, processes, and practices. They can also arise with the use of dangerous substances, such as chemical, physical and biological agents. The promotion of health and well-being is to be tempered by workers' legitimate rights to medical privacy, and limited to an organization's genuine occupational requirements. Within these limits, the active promotion of health and safety can include voluntary programs in areas such as mental health, ergonomics, physical fitness or smoking cessation.

#### 404: Training and education

GRI 404 addresses the topic of training and education. This includes an organization's approach to training and upgrading employee skills, and performance and career development reviews. It also includes transition assistance programs to facilitate continued employability, and the management of career endings due to retirement or termination.

#### 405: Diversity and equal opportunity

GRI 405 addresses the topic of an organization's approach to diversity and equal opportunity at work. When an organization actively promotes diversity and equality at work, it can generate significant benefits for both the organization and workers. For example, the organization can gain access to a larger and more diverse set of potential workers. These benefits also flow through to society in general, as greater equality promotes social stability and supports further economic development.

#### 406: Non-discrimination

GRI 406 addresses the topic of non-discrimination. For the purpose of this Standard, discrimination is defined as the act and the result of treating people unequally by imposing unequal burdens or denying benefits, instead of treating each person fairly on the basis of individual merit. Discrimination can also include harassment. This is defined as a course of comments or actions that are unwelcome, or should reasonably be known to be unwelcome, to the person towards whom they are addressed. An organization is expected to avoid discriminating against any person on any grounds, including avoiding discrimination against workers at work. It is also expected to avoid discriminating against customers with respect to the provision of products and services, or against any other stakeholder, including suppliers or business partners.

#### 407: Freedom of association and collective bargaining

Freedom of association is a human right as defined by international declarations and conventions. In this context, freedom of association refers to the right of employers and workers to form, to join and to run their own organizations without prior authorization or interference by the state or any other entity. The right of workers to collectively bargain the terms and conditions of work is also an internationally recognized human right. Collective bargaining refers to all negotiations which take place between one or more employers or employers' organizations, on the one hand, and one or more workers' organizations (trade unions), on the other, for determining working conditions and terms of employment or for regulating relations between employers and workers.

#### 408: Child labor

GRI 408 addresses the topic of child labor. Abolishing child labor is a key principle and objective of major human rights instruments and legislation, and is the subject of national legislation in almost all countries.

Child labor is work that 'deprives children of their childhood, their potential and their dignity, and that is harmful to their physical or mental development including by interfering with their education. Specifically, it means types of work that are not permitted for children below the relevant minimum age.

Child labor does not refer to youth employment or to children working. It refers to a universally-recognized human rights abuse. The internationally-agreed understanding of the meaning of child labor is set out in the International Labour Organization (ILO) Convention 138 'Minimum Age Convention'. The minimum age for hazardous work is 18 years for all countries. Hazardous child labor is defined by Article 3 (d) of ILO Convention 182 'Worst Forms of Child Labour Convention' as 'work which, by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or morals of children.'

Due diligence is expected of an organization in order to prevent the use of child labor within its activities. It is also expected to avoid contributing to, or becoming complicit in, the use of child labor through its relationships with others (e.g., suppliers, clients).

#### 409: Forced or compulsory labor

Not to be subjected to forced or compulsory labor is a fundamental human right. According to International Labour Organization (ILO) Convention 29 'Forced Labour Convention', forced or compulsory labor is defined as 'all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.'<sup>1</sup> Forced and compulsory labor affects all world regions, countries, and economic sectors, and includes workers in both formal and informal employment.<sup>2</sup> Some of the most common forms of forced labor include forced labor in prisons (except for prisoners that have been convicted in a court of law, and whose labor is under the supervision and control of a public authority), human trafficking for the purpose of forced labor, coercion in employment, forced labor linked to exploitative labor contract systems, and debt-induced forced labor, also known as 'debt-bondage' or 'bonded labor'.<sup>3</sup> The victims are most likely from groups subject to discrimination or performing work on an informal or precarious basis. This can include women and girls forced into prostitution, migrants trapped in debt bondage, and sweatshop or farm workers, among other groups.<sup>4</sup> Due diligence is expected of an organization in order to prevent and combat all forms of forced or compulsory labor within its activities. It is also expected to avoid contributing to or becoming linked to the use of forced or compulsory labor through its relationships with others (e.g., suppliers, clients).

#### 410: Security Practices

GRI 410 addresses the topic of security practices. It focuses on the conduct of security personnel towards third parties, and the potential risk for excessive use of force or other violations of human rights. Security personnel can refer to employees of the reporting organization or employees of third-party organizations that provide security forces. The use of security personnel can have potentially negative impacts on local populations, and on the

upholding of human rights and the rule of law. Providing effective training in human rights therefore helps to make sure that security personnel understand when to use force in an appropriate way, and how to ensure respect for human rights.

#### 411: Rights of indigenous people

GRI 411 addresses the rights of indigenous peoples. While there is no universal definition of indigenous peoples, they are generally identified as:

- tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;
- peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

Many indigenous peoples have suffered from historic injustices and therefore are considered a vulnerable group. Such a group is at a higher risk of suffering a disproportionate burden of the economic, environmental and/or social impacts of an organization's activities. In addition to their collective rights, each person belonging to indigenous peoples shares universal human rights.

#### 412: Human rights assessment

GRI 412 addresses the topic of human rights assessment. The international standard that establishes the expectations of responsible conduct for organizations with respect to human rights is the United Nations (UN) 'Guiding Principles on Business and Human Rights', endorsed by the UN Human Rights Council in 2011.

An organization can impact human rights directly, through its own actions and operations. It can also impact human rights indirectly, through its interactions and relationships with others, including governments, local communities and suppliers, and through its investments.

Organizations are responsible for their impacts on the entire range of internationally recognized human rights. These rights include, at a minimum, all rights set out in the International Bill of Rights and the principles set out in the International Labour Organization (ILO) 'Declaration on Fundamental Principles and Rights at Work'. The International Bill of Rights includes the following three instruments:

- the UN Declaration, 'Universal Declaration Of Human Rights', 1948;
- the UN Convention, 'International Covenant On Civil and Political Rights', 1966;
- the UN Convention, 'International Covenant On Economic, Social, and Cultural Rights', 1966.

In addition to these three key instruments, the international legal framework for human rights includes more than 80 other instruments, from declarations and guiding principles to binding treaties and conventions. They also range from universal to regional instruments.

In order to identify, prevent and mitigate negative human rights impacts, an organization can undertake human rights reviews or impact assessments of its operations. It can also implement specialized training that equips employees to address human rights in the course of their regular work.

In addition, an organization can integrate human rights criteria in screening, or include human rights criteria in performance requirements when making contracts and agreements with other parties, such as joint ventures and subsidiaries.

#### 413: Local communities

GRI 413 addresses the topic of local communities. In the GRI Standards, local communities are defined as persons or groups of persons living and/or working in any areas that are economically, socially or environmentally impacted (positively or negatively) by an organization's operations.

The local community can range from persons living adjacent to an organization's operations, to those living at a distance who are still likely to be impacted by these operations.

An organization's activities and infrastructure can have significant economic, social, cultural, and/or environmental impacts on local communities. Where possible, organizations are expected to anticipate and avoid negative impacts on local communities. Establishing a timely and effective stakeholder identification and engagement process is important to help organizations understand the vulnerability of local communities and how these might be affected by the organization's activities.

Due to the heterogeneous nature of local communities, an organization is expected to consider the differentiated nature of communities and the distinct and specific vulnerabilities these groups can suffer as a result of the organization's activities.

#### 414: Supplier social assessment

An organization might be involved with impacts either through its own activities or as a result of its business relationships with other parties. Due diligence is expected of an organization in order to prevent and mitigate negative social impacts in the supply chain. These include impacts the organization either causes or contributes to, or that are directly linked to its activities, products, or services by its relationship with a supplier.

#### 415: Public policy

GRI 415 addresses the topic of public policy. This includes an organization's participation in the development of public policy, through activities such as lobbying and making financial or in-kind contributions to political parties, politicians, or causes.

While an organization can positively support the public political process and encourage the development of public policy that benefits society at large, this can also bring risks associated with corruption, bribery, and undue influence, among others.

#### 416: Customer health and safety

GRI 416 addresses the topic of customer health and safety, including an organization's systematic efforts to address health and safety across the life cycle of a product or service, and its adherence to customer health and safety regulations and voluntary codes.

#### 417: Marketing and labeling

GRI 417 addresses the topic of product and service information and labeling and marketing communications. This includes customer access to accurate and adequate information on the positive and negative economic, environmental, and social impacts of the products and services they consume – both from a product and service labeling and a marketing communications perspective.

Fair and responsible marketing communications, as well as access to information about the composition of products, and their proper use and disposal, can help customers to make informed choices.

#### 418: Customer privacy

GRI 418 addresses the topic of customer privacy, including losses of customer data and breaches of customer privacy. These can result from non-compliance with existing laws, regulations and/or other voluntary standards regarding the protection of customer privacy.

#### 419: Socio-economic compliance

GRI 419 addresses the topic of socioeconomic compliance. This includes an organization's overall compliance record, as well as compliance with specific laws or regulations in the social and economic area. Compliance can relate to accounting and tax fraud, corruption, bribery, competition, the provision of products and services, or labor issues, such as workplace discrimination, among others. This includes compliance with international declarations, conventions, and treaties, as well as national, sub-national, regional, and local regulations.