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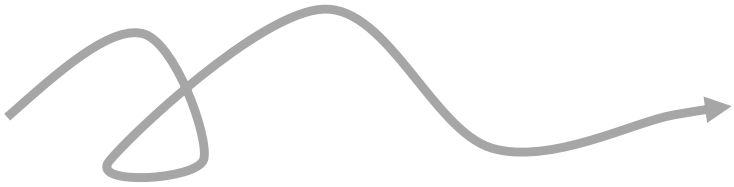

Strategic Sustainable Management Through Critical Factors For Sustainable Development

Joana Margarida de Almeida Lima

Supervisor: Doctor Maria do Rosário Sintra de Almeida Partidário

Thesis approved in public session to obtain the
PhD Degree in Engineering and Management

Jury final classification: Pass with Distinction

2021

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Lisboa, 6 de setembro de 2021

O presidente do júri

Homologo

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Jury

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2021

ABSTRACT

Finding a meaningful way to comprehend sustainability as a concept requires an in-depth understanding on how sustainability and sustainable development are used. In this research the applications of the word sustainable, as in sustainable cities, sustainable energy, etc, was explored and for simplifications these tying core words will be referred as S&SX (sustainability and sustainable-X, with X used for different types of development or sectors.

Following a grounded theory research strategy, a conceptual framework - SPRAY (Sustainability's PluRAlitY) was drafted, that respects the flexibility and emergent nature of the qualitative and quantitative characteristic of this research. A multi-method application of SPRAY enables the use of a comprehensive literature review, an online questionnaire and in-depth interviews - case studies. This gave the research a collection of rich and distinctive data.

The review of the literature on diagrammatic reasoning led to the use of thematic coding, cognitive maps and dynagrams (dynamic diagrams), allowing identify the central ideas from SPRAY's results: (i) Fragmented knowledge impedes integration of findings in S&SX; (ii) Contrasting paradigms in S&SX; (iii) Plurality or arbitrariness; (iv) Ambiguity and plurality in sustainability appear to be mutually reinforced; (v) Sustainability should be better dealt with as a wicked problem; (vi) Concreteness and integratedness in S&SX seem hard to be mutually viable; and (vii) Capabilities as a determinant factor to interpretate and understand Sustainability.

The discussion and the rational of the overall data collected is supported on Dervins' SMM, providing valuable insight to guide the construction of knowledge from the data. Weick's sensemaking is also use, its seven properties are expended as pillars to shape a model for strategic contributions for sustainability.

As the final step, from an inductive approach, the findings and knowledge from literature has shaped the outcome of this research - a model for strategic contributions for sustainability. ROSETA stands for a Roadmap fOr StratEgic sustainabiliTy trAnsitions, its main objective is help organisations enhancing their strategies to promote a transition to more sustainable management practices provide guidance to integrate four rationales of thought (System, Future, Design and Operational thinking) embracing sustainability's plurality.

KEYWORDS

Sustainability; Sustainable Development; Sustainability conceptualisation; Sustainability plurality; Sustainability Journeys.

RESUMO

Compreender a sustentabilidade como um conceito requer uma abordagem profunda sobre o significado de sustentabilidade e de desenvolvimento sustentável, ou de outras aplicações ao adjetivo sustentável (S&XS -sustentabilidade e X -sustentável- X para tipos de desenvolvimento).

Seguindo uma estratégia de investigação fundada na teoria, foi elaborado um quadro conceptual - SPRAY (Pluralidade da Sustentabilidade) - assente no multimétodo, que respeita a flexibilidade e a natureza emergente das características qualitativas e quantitativas da investigação. Permite, simultaneamente, fazer uso de uma revisão abrangente da literatura, funcionando, desta forma, como facilitadora da aplicação do questionário e das entrevistas. A utilização do multimétodo vem conferir à pesquisa uma coleção de dados mais ricos e mais distintos.

A revisão da literatura sobre o raciocínio diagramático induziu ao uso de codificação temática, ao desenvolvimento de mapas cognitivos e de diagramas dinâmicos, permitindo identificar as ideias centrais dos resultados do SPRAY, a saber: (i) conhecimento fragmentado impede a integração dos achados no S&XS; (ii) S&XS tem paradigmas contrastantes; (iii) pluralidade ou arbitrariedade; (iv) aparentemente a ambiguidade e pluralidade na sustentabilidade reforçam-se mutuamente; (v) sustentabilidade deve ser melhor tratada como um *wicked problem*; (vi) concretização e integração no âmbito da S&XS parecem difíceis de serem mutuamente viáveis; e (vii) capacidades e competências têm um papel determinante para interpretar e compreender a Sustentabilidade.

A discussão e a lógica dos dados gerais compilados são apoiados no SMM de Dervins e fornecem informações importantes para orientar a construção do conhecimento.O sensemaking de Weick é igualmente usado na investigação e as suas propriedades são integradas como pilares, com o propósito de estruturar um modelo de contributos estratégicos para a sustentabilidade.

Assim, partindo de uma abordagem indutiva, moldou-se um modelo de contributos estratégicas para a sustentabilidade, tendo em consideração as descobertas e o conhecimento da literatura. Como produto final da investigação é apresentado um roteiro para transições de sustentabilidade estratégica representado pela sigla
ROSETA, que tem como principal objetivo permitir que as organizações aperfeiçoem as suas estratégias para promover uma transição para práticas de gestão mais sustentáveis. A ROSETA indica orientações para a integração de quatro fundamentos de pensamento - Sistema, Futuro, Design e Pensamento operacional - abraçando a pluralidade do conceito sustentabilidade.

PALAVRAS-CHAVE

Sustentabilidade; Desenvolvimento Sustentável; Conceptualização da sustentabilidade; Pluralidade da sustentabilidade; Jornadas de sustentabilidade.

ACKNOWLEDGEMENTS
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To say that my dissertation path has been transformative it does not reveal or do justice to the immense road I travelled, during the process of building this thesis.

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I also want to thank the PhD Scholarship - BD 2015 from Reitoria da Universidade de Lisboa and CEGIST for funding my research project (2015-2019). Without this grant I could not have dedicated myself to this deep investigation.

To my thesis committee for accepting to be part of this process and for your critical remarks on concepts, theories and methods which contributed to what has now become this thesis. As well to many professors' form Engineering and Management PhD programme, especially Professor Rui Batista and Professor Carlos Freitas who were always available to hold moments of debate and critical reflection. I always will keep your good advice in mind.

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A special thank you to those that helped this research by opening their contacts or their organisations information. And exceptional thank you to those that team up with me in the projects that made my case studies, Margarida, Inês, Nuno, Bucar, Mangla, Leonor and Alassana. I will be forever grateful for the insights they have given me on the subject of research.

I am also very grateful for the support I have received from my colleagues and ex-colleagues from SENSU for sharing research ideas and all the support and encouragement.

I owe a word of gratitude to my three friends who were always present on this journey:

Joana Dias "we came as an item", thank you my journey mate.
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To my very patient husband for the love, affection and encouragement.

I would not have been able to complete the research and write this thesis without the unending support of my amazing family, to whom I dedicate this work.

PUBLICATIONS

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Lima J, Partidário MR (2020) **Plurality in Sustainability - multiple understandings with a variable geometry**. Journal of Cleaner Production, Vol. 250, 119474, https://doi.org/10.1016/j.jclepro.2019.119474

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THESIS ACRONYMS AND ABBREVIATIONS

BD 2015 grant	Bolsas de Doutoramento 2015
CEG-IST	Centre for Management Studies of Instituto Superior Técnico
CEO	Chief executive officer
CS	Corporate sustainability
CSR	Corporate sustainability responsibility
EbA	Ecosystem-based Adaptation
EU	European Union
GRI	global reporting initiative
IMVF	Instituto Marquês de Valle Flôr
ISO	International Organization for Standardization
NBI	Natural Business Intelligence
NGO	Non-governmental organization
PhD	Philosophy Doctor
ROSETA	Roadmap fOr StratEgic SustainabiliTy TrAnsitions
S	Sustainability
SMM	Sense Making Methodology
S & SD	Sustainability and sustainable development
S&SX	Sustainability and Sustainable-X (X for types of development)
SD	Sustainable Development
SDG	Sustainable Development Goals (2030 Agenda for Sustainable Development)
SENSU	Strategic Approaches ENvironment and SUstainability Research Group
SMM	Sense-Making Methodology
SPRAY	Sustainability's PluRAlitY
SPSS	Statistical Package for the Social Sciences
SX	Sustainable-X (X for types of development).
TBL	Triple Bottom Line
UN	United Nations

Chapter 1

Outline

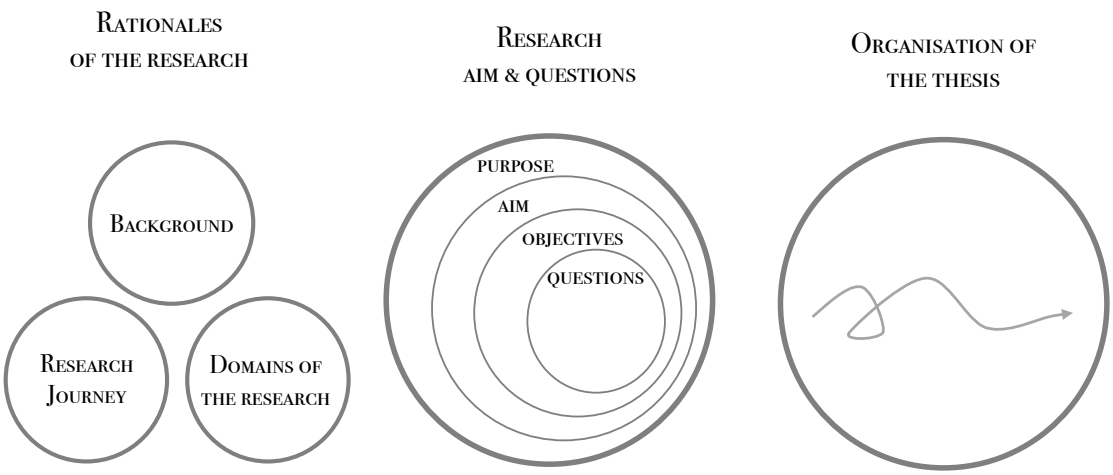
1.1 Introduction

This manuscript has been structured in seven chapters, all of which include an introduction, development and conclusion. The introduction also presents a graphic summary which illustrates the main themes that are developed in each chapter, as Figure 1.1 demonstrates. A brief conclusion with a sum of the focal content follows.

Thus, the *Chapter 1 - Outline* provides an overview of the PhD thesis, establishing how the context of the research has been conducted and providing a brief summary of what has been reviewed, learnt, depicted, discovered, discussed and developed along the journey of this investigation.

As Figure 1.1 represents the three sections of the Chapter 1. Section 1.2 offers the three rationales of the research, succinctly providing the (i) background of the research and summarizing the current understanding of the main underlying concepts, it is followed by the (ii) research journey, which provides the motivation for the development of the investigation, then the (iii) domains upon which the research is based.
Afterward, section 1.3 outlines the aim, states the purpose of the work and the objectives of this research that guided this investigation. Finally, section 1.4 presents the organisation and structure of the thesis, as can be seen in Figure 1.1.

Figure 1.1- Chapter 1. Outline summary



1.2 Rationales: background, journey, and domain

1.2.1 Background

The debate of sustainable development has multiple layers, from a macro level, such as sustainability and future generations, to a micro level that includes organisations and individuals, or group of individuals, as stakeholders. However, the science of sustainability seems to have not yet deliver on supporting the transformation towards sustainability in a significant way (Van der Leeuw et al. 2012; Miller et al. 2014; Abson et al. 2017, Lang et al., 2017). Thus, this investigation will be focus on what is missing so that it can be found a way to contribute in transitions towards sustainability.

Actually, this thesis has its foundations on the understanding of the different meanings of sustainability (plurality of meanings). In this way, the research tries to clarify paths of significance and how they can contribute to other ways to act towards sustainability, mainly in the organisational sphere. The focus of this work is to achieve concreteness (materialize) more integrated sustainability transitions, through a more feasible way of strategic sustainability management.

Exploring the plurality of meanings of sustainability, it can be observed that, the term is not as popular as the term sustainable development (SD). Probably owing to the broad dissemination of the Brundtland report "*Our Common Future*", in 1987. This report had a global audience and presented a SD concept that looks for growth and prosperity without depleting the carrying capacity of the planet's natural structures, and therefore meeting good quality of life for present society and future generations (WCED, 1987).

This Brundtland report has been the herald of the need for change in predominant development paradigms, and a key trigger to what would become the new global agendas for development (UNCED, 1992, 1998, 2002; United Nations, 2015).

Since 1987, sustainability, or sustainable development, even if they were poorly defined, they became the most popular buzzwords of recent times and a universal symbol of major ambitions and challenges at a local and at a planetary scale.

However, the concept of sustainability could be perceived as confusing and controversial, which may result from ideological differences. Furthermore, sustainability is often connected to viability. This association to another subjective concept (viability) can also contribute to accentuating even more differences in understanding of sustainability (Yolles & Fink, 2020).

Finding its way in many sentences across a variety of contexts and perspectives (Vos, 2007), from economics to ecological sciences, sustainability is used in a variety of ways, carrying many meanings, and adopting slightly different emphasis depending on the context.

A disadvantage of this diversity of sustainability perspectives could be that, within limits, anything works for sustainability (Partidário, et al, 2010). And because of the large quantity and diversity of approaches, sustainability is a concept that lacks *consensus* and direction,

and is ill-defined, not defined or contradictorily defined (ibid). This thesis will explore this concept in a deeper manner in Chapter 2 and Chapter 4.

According to Filho, W. L. (2000), there is a trend towards perceiving sustainability as an abstract concept. This position adds to the debate of sustainability being too theoretical and too broad and, by default, impossible to handle (ibid).

However, the multiplicity of interpretations of (both) sustainability and sustainable development has been considered not only as a kind of an academic challenge, as well as a political and social actors' game to play, due to its openness and plasticity to every context.

Within this point of view, understanding sustainability engages multiple views in a wide spectrum of technological, social and political positions, which is evident in many and different understandings, interpretations and conceptualizations available on Sustainability & Sustainable Development research (Lima and Partidário, 2020).

The literature reviewed (see Chapter 2) demonstrates the existence of little agreement about what constitutes the concept of sustainability. The most consensual definitions appear to be the ones that conceptualize theoretically definitions of sustainability. These connect to abstract values which makes it more difficult to be applied in particular and specific situations.

State of the art shows that there are several authors that agree on the fact that there is no need for a common understanding of sustainability, supporting this idea with real facts that provide some valuable contributions on sustainable practices (Chapter 2 goes in more details about the matter).

In a similar note, albeit with a different perspective, Partidario et al. (2010:2850-2852) affirm that sustainability has different meanings for different persons. This diversity in perspectives of sustainability reflects multiple social values and political priorities, and may require changes in values and norms, as well as a collective wisdom toward desired purposes. This constitutes a huge challenge in communication, especially when sustainability is the core subject.

To Yolles & Fink (2020) it is clear that the ideological differences about sustainability are consistent with the rise of distinct paradigms and arise through its degrees of congruency with various and possibly divergent values and goals of sustainability.

Despite so much academic work already developed, there is still severe criticism about the foundations, understandings, interpretations and conceptualizations regarding sustainability. Until today, it is not clear what are we talking about when we use these terms. The questions, such as: "What should be sustained?" and "How should it be sustained?" or "Who Sustains Whose Development?" persist, and this investigation attempts to dwell on it (see chapters 2 and 5).

This discussion of the plurality of meanings of sustainability and sustainable development and its challenges may contribute to an approach of dividing the concepts into smaller, and sometimes unconnected concepts, which provide the field of study for this investigation.

More recently, sustainability gained a new momentum with the UN 2030 Agenda (United Nations, 2015), going hand in hand with future and inclusive development, with the principles associated to the 17 Sustainable Development Goals (SDGs) and their 169 targets (United Nations, 2015).

The SDGs call for worldwide action among governments, business and civil society to define global sustainable development priorities and aspirations for 2030, and seek to mobilize global efforts around a common set of goals and targets (Collste et al., 2017; Engebretsen et al., 2017; Gupta and Vegelin, 2016; Lu et al., 2015; Neumann et al., 2017; Nilsson et al., 2016; Persson et al., 2016; Saito et al., 2017; Shepherd et al., 2015; Stafford-Smith et al., 2017).

Because of that, SDGs can be considered an innovative tool for global governance of sustainability. So understanding the interlinkages between various goals and targets will be a challenging area (Saito et al., 2017) (Verified on the practice of organisations - Chapter 4 and 5).

Nevertheless, the 17 SDGs and their targets are considered straightforward and as individual goals they can also leave much room for interpretation (Weitz et al. 2018). Weitz et al. (2018) highlight challenges in understanding interactions between targets, that requires quite detailed information, but it also requires the ability to maintain a holistic view of the system as a whole, since it is possible that one policy change can change the dynamics of the whole system (Weitz, Carlsen, Nilsson, & Skånberg, 2018).

So, although SDGs can support policy and decision makers seeking to ensure effective and coherent implementation, the systemic properties of the system as a whole are still poorly understood (ibid). This raises the question of how SDGs are contributing to the sustainability of the system as a whole? (This investigation offers a view on the matter which is explored in chapter 4 and 5).

Currently, another turning point for sustainability is being experienced globally: the COVID-19 outbreak. This has resulted in negative impacts on economic and social fields, however it has been a "blessing in disguise" for environmental issues at a societal level (Barreiro-Gen, Lozano, & Zafar, 2020).

The COVID-19 outbreak has affected organisations, their sustainability priorities and capacity of adapting to change and therefore, testing their resilience. The need to balance care for their employees with financial survival, took on a new meaning, regardless the type of organisation, country where they are based, organisation size, or the time the organisation have been working with sustainability (ibid). This raises the question about how the present challenge is being faced by organisations may (or not) contribute to the way sustainability is perceived and practiced.

Thus, it is important to understand why there are many interpretations of sustainability, how sustainability is being handled and where that lead us. So, this research will attempt to contribute to the improvement of the understanding about sustainability concept and how it is handled and practiced within organisations, by exploring its many attributes, as for example systemic, complex, integrated or interdisciplinary.

1.2.2 Research journey

This thesis has been developed as part of the PhD Programme in Engineering and Management at Instituto Superior Técnico (2015-2021). It was funded by the Reitoria da Universidade de Lisboa and the IST-ID (Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento), through a BD 2015 grant between May 2016 to May 2019, and developed within the Centre for Management Studies of Instituto Superior Técnico (CEG-IST).

The beginning of this PhD pathway was prompted by the complexities of contributing and expressing sustainability that the author felt while developing her professional activity. Since 2009, as a part of the Strategic Approaches ENvironment and SUstainability Research Group (SENSU) from CEG-IST, the author has worked on various interesting projects. However, two main projects contributed to a growing interest in sustainability from the strategic point of view: (i) a Corporate Sustainability Observatory with a Sustainability Index (2009-2014) and (ii) the development of the Strategic Plan for a company in the wine industry, with Sustainable Development as a Strategic Pillar.

In this context, the author started to explore, at that time, the existing literature and experiences worldwide about sustainability. With that, realised how sustainability comprises highly divergent understandings and approaches, which is quite challenging, especially when it needs a normalisation to fit in an index or a rating. Could that be a constrain when working on sustainability and sustainable development? Is it possible to overcome the complexity of sustainability? What is critical to a comprehensive and transversal approach to sustainability? These questions became increasingly relevant and drove the author to begin this investigation.

Although having territorial engineering as academic background, the author has developed the master dissertation on the strategic dimension in territorial plans, supporting the value, influence and impact of strategic approaches, especially in transitive or transformative processes. This background, combined with the PhD courses attended, also provided great insights to navigate in theories of organisational change processes, particularly in systems and complexity theories.

This PhD research started in September 2015 and comprised five stages of development:

- The first, involved developing knowledge in scientific methods and methodologies, by attending the PhD Programme five curricular units.
- The second stage considered the identification of existing gaps in the literature about sustainability meanings and understandings, and practices around sustainability, which set the tone for the research.
- The third stage comprises the development of a framework to structure the analysis and the data collection.
- The fourth, analysed the quantitative and qualitative data gathered.
- The fifth and last stage, establishes linkages withing the findings and the literature reviewed, considering the validation and evaluation stage of the research, together with the overall conclusion.

A document with the plan proposal and the preliminary findings was prepared for submission to the thesis commission in March 2018 and was presented later in September 2018.

1.2.3 Domains of the research

The purpose of this research is to contribute to sustainability transitions that can provide for more proactive sustainable management.

This is achieved by investigating the gap between current experiences and intended outcomes (some examples of outcomes might be: strategies, principles, indicators, targets, assessment frameworks). Therefore, it is vital to understand the key aspects (as understating the plurality of meanings and practices of sustainability, for instance) that may strategically help organisations to contribute to sustainability.

From the investigations it emerged the need to develop a model to help organisations enhance their strategies in a way that promote a transition to more sustainable management practices. Thus, in this research, the attention will be directed to understand how it is possible to contribute to the creation of sustainable value in organisations through a strategic design of the journey to sustainable development. The main challenge will be to handle sustainability as a target and not as a delimited definition or focus on measurement. Creating sustainable value concerns both internal practices of the organisation (e.g. risk or cost reduction) and external outcomes of the organisation (e.g. what the organisation offers - that is the value proposition of the business to its costumers/clients/community).

As Broman et al., 2013:1 highlight: "the next big challenge and opportunity is systems science for cross-disciplinary and cross-sector leadership and innovation for sustainability". Have Broman et al. perspective in mind, to developed the above mention model it must include the need to develop solutions that present coordinated and combined approaches, with a full systems perspective, and the need to achieve results in a myriad of sustainability related problems (Broman et al., 2014).

Although this research is not limited to corporate context, the literature on corporate sustainability management is a crucial source of this investigation, as the purpose, already outlined previously, regards sustainable transitions (Loorbach, 2010; Rotmans & Loorbach, 2009; Schäpke, Omann, Wittmayer, van Steenbergen, & Mock, 2017; Vandevyvere & Nevens, 2015; Wittmayer, Schäpke, van Steenbergen, & Omann, 2014) to drive organisations to more proactive sustainable management. Even if sustainability management and business models are still used in a fuzzy way (Boons and Lüdeke-Freund, 2013; Lüdeke-Freund, 2009; Schaltegger et al., 2012), Engert et al. (2016) the literature points out that the topic of integrating sustainability into strategic management is discussed more in sustainability related literature than in strategic management research. However, the same authors also refer the still existing lack of empirical studies (quantitative and qualitative) on integrating corporate sustainability into strategic management (ibid).

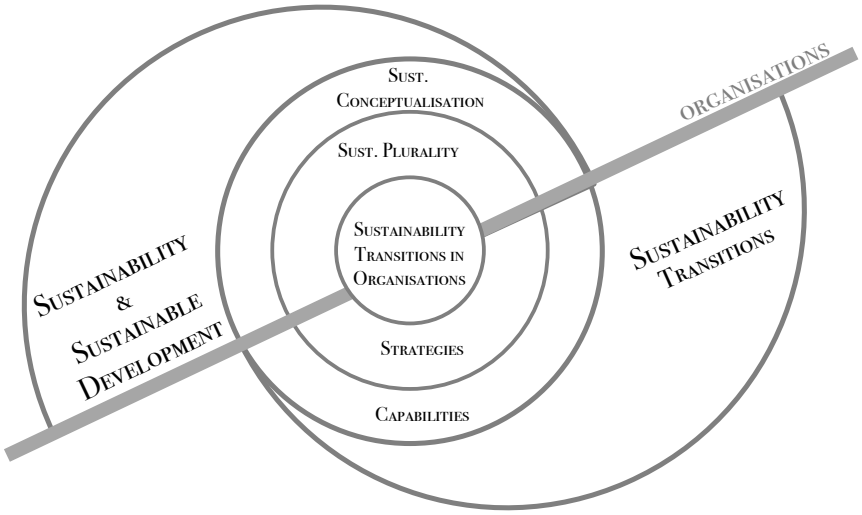
Engert et al. (2016) insist on the need for change in "traditional" strategic management, by adopting a systemic and holistic view, to enable broader considerations of the various sustainability topics. The authors also acknowledge the complexity associated with a long-

term view in sustainable development, especially considering stakeholders demands and engagement, as well as the required competencies to deal with it.

Hence, the large variety of approaches to address organisation's transition to sustainability and sustainable management that the literature suggests, e.g. Giannetti et al. (2015) or Rahdari and Rostamy (2015) miss the systemic sense of sustainability. This underlines the need for a more cohesive, systemic, simpler, and holistic ways to develop paths towards strategic practices of sustainability, which this thesis addresses.

This research focuses on ways to enable organisations to enhance their strategies, promoting a transition to more sustainable management practices. To understand that, it is fundamental to first understand what sustainability means, addressing the existing plurality of the concept. It is also of great value to gain an understanding of how strategic approaches influence the variety of meanings.

Figure 1.2- Domains of the research



Considering the extensive range of possibilities to approach sustainability Figure 1.2 highlights the pillar concepts that will guide this research's attention.

The two mismatched spheres of the figure constitute the research foundations, which are sustainability and sustainable development and sustainability transitions, crossed by a line representing the "what it is being applied to" – organisations.

The centred circle intersects all the concepts and summarises the major focus – sustainability transitions in organisations – with a strategic approach that acknowledges sustainability's plurality.

Embracing pluralism, provides a way out of the ideological and epistemological straitjacket that deter more cohesive and politically effective sustainability interpretations. Considering pluralism for the analysis and normative construction of sustainability, will help to explore the attributes of sustainability and its conceptualisation.
Sustainability transitions research proposes fundamental changes in societal systems' organisation to overcome persistent societal challenges and allowing systems to become more sustainable.

This research builds on sustainability transitions and transdisciplinary transition management to allow connecting strategy with sustainability practices in coherent, holistic, and systemic way. The objective of doing so has two fronts: a) increase the strategic benefits by creating a strategic relevant approach and, b) enhancing organisations' capacity to achieve sustainable management practices.

1.3 Research aim, Purpose, objectives and questions

As previously presented, the purpose of this research is to contribute to sustainability transitions that can provide for more proactive sustainable management.

This thesis addresses the need to achieve concreteness in making strategic sustainability management more feasible, while acknowledging the plurality of the sustainability concept. This plurality requires considering the complexity of the multiple interpretations and understandings, as well as the diversity of the approaches and instruments.

The plurality of meanings and the diversity of approaches, practices, and instruments has as a consequence pose some challenges, which this study addresses. As Lang et al. (2017) suggest, to approach sustainability, the focus should be less about delineating disciplinary and transdisciplinary research, but rather positioning the respective contributions of these practices and linking them in the execution.

Thereby, this investigation uncovers sustainability meanings, relates them to current practices of sustainability, aspiring to contribute, as Lang et al. (2017) refers, to sustainability transitions by (re)connecting strategy with sustainability practices. Sustainability transitions proposes fundamental changes in organisation's societal systems to overcome persistent societal challenges and allowing systems (which in this research are organisations) to become more sustainable.

Hence, the Research Aim of this investigation is to contribute to scientific knowledge concerning the improvement of organisations practices for sustainability and strengthen the science-practice linkage by researching forms of enhancing organisations' capacity to achieve sustainable management practices through sustainability transitions.

The Purpose and Aim of this PhD research, together with the challenges outlined above and the state of the art underlined in the key research domains, uncovered the Research Objectives as well as correspondent Research Questions:

1. The first Research Objective regards to investigate the gap between current experiences and intended outcomes, more specifically, *understand how literature and practice address the meaning of sustainability*. This objective posed two Research Questions:
   How did sustainability acquire so many different definitions?
   Moreover, is it a blocking factor to discuss sustainability?

2. Understand the key aspects that may strategically help organisations to contribute to sustainability, is the second Research Objective, which relates with the following Research Question:

   How to frame and gather evidence to picture sustainability's plurality?

3. The third Research Objective is focused on identify the main factors that enable organisations enhancing their strategies to promote a transition to more sustainable management practices, through a critical factors approach. This uncovered the Research Question concerning with:

What are the main factors that enable and/or constrain sustainability?

4. The fourth and final Research Objective is about understand how strategic sustainability journeys may be designed to enable sustainability transitions, linked with the Research Question:

How can a model guide the design of strategic sustainability journeys?
What are the critical factors for such a model?

Therefore, this research deals with understanding the plurality of meanings, and, as consequence, the diversity of practices, to explore how organisations address sustainability in their business models and strategies.

A model to help create organisations sustainability journeys was developed, to make clear the connection between meanings, practices and instruments, and their implications in strategic management. The key factor is to help designing sustainability transitions.

1.4 Organisation of the thesis

Document structure

The present document portraits this research in seven chapters as represented in Figure 1.3:

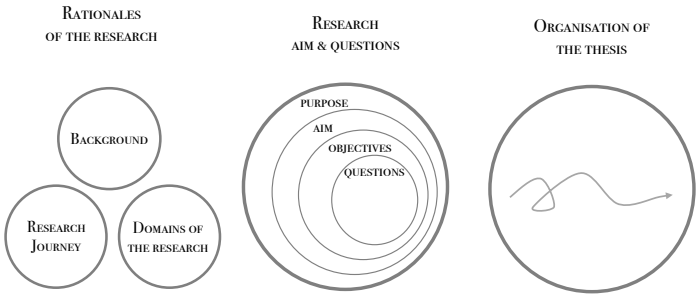
- Chapter 1 outlines the beginning of the research, presenting an overview of this thesis.
- Chapter 2 reviews the background concepts providing the state of the art of the pillar concepts of this research.
- Chapter 3 presents the Research Design and Chapter 4, the framework – SPRAY. Both chapters contributed to present the methodology aspects of the research.
- Chapter 5 introduces the SPRAY's results.
- Chapter 6 pairs the findings with the literature reviewed previously presenting a theoretical conceptual model.
- Chapter 7 is the concluding chapter that highlights the overall contributions.

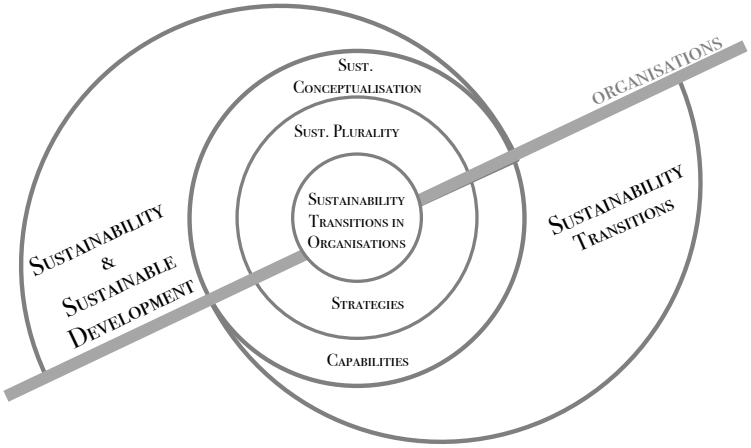
Figure 1.3 - Organisation of the thesis

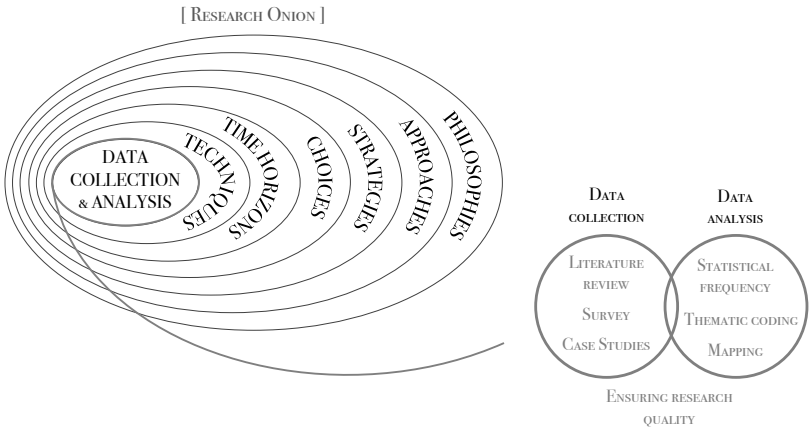
Overview of chapters' content

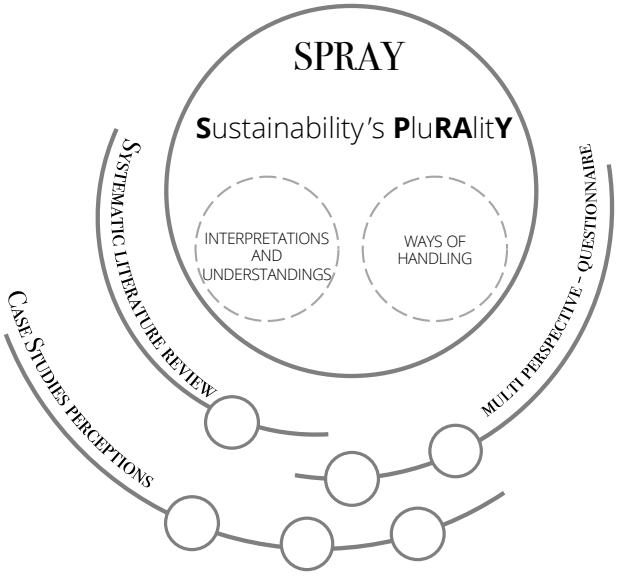
The following table provides a brief overview of each chapter as well as a graphic representation of its content.

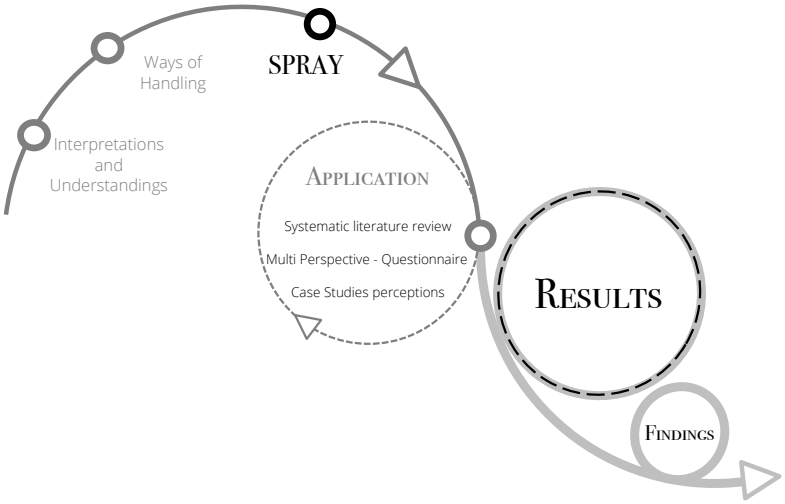
Table 1.1 - Chapters brief overview

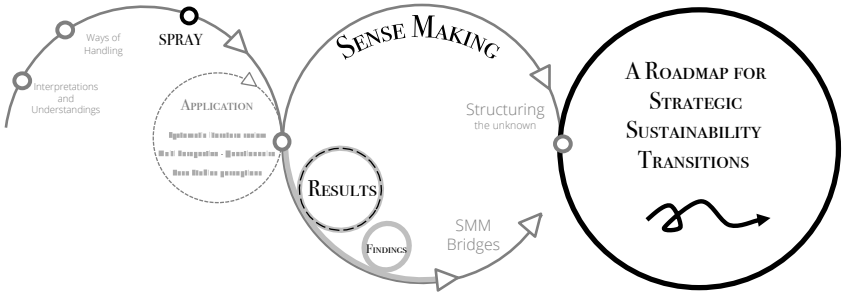
Chapter	Chapter Summary
Chapter 1 Outline	This chapter gives an overview of the thesis: presents the purpose, perspective, origins, and nature of research. The background of the research, its aim and objectives are outlined. Finally, the structure of the thesis is introduced. 

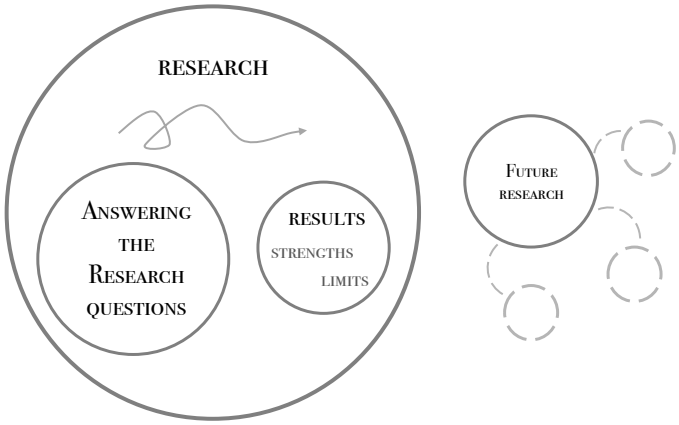
Chapter	Chapter Summary
Chapter 2 Review of Background Concepts	This chapter presents the main body of knowledge, describing the background concepts: sustainability, sustainability plurality, sustainability transitions, sustainability strategies, and the organisations' capabilities to address sustainability. It positions the research in the context of the state-of-the-art literature. 

Chapter	Chapter Summary
Chapter 3 Research Design	The broad scope of the research methodology is described and justified. The paradigm chosen, interpretivism paired with subjectivism-objectivism, is presented. The research is both exploratory and explanatory in nature. Following a grounded theory strategy using a framework to collect data and evaluate and validate the results. 

Chapter	Chapter Summary
Chapter 4 Framework for data collection – SPRAY	This chapter presents the developing process of the framework (entitled SPRAY – **S**ustainability 's **P**lu**RA**lit**Y**) and the data collection methods used in the exploratory phase of this research. It outlines the method and process used, as well as the samples of analysis. 

Chapter	Chapter Summary
Chapter 5 SPRAY 's Results	This chapter presents the results of data collection through SPRAY from literature, questionnaires and semi-structured interviews to three typologies of organisations (case studies). Key findings from the data analysis are presented. 

Chapter	Chapter Summary
Chapter 6 Research Outcome - ROSETA	Making sense of findings using the Sense Making Methodology to start shaping the model to enable organisations enhancing their strategies to promote a transition to more sustainable management practices. The result is a theoretical conceptual model: ROSETA (a Roadmap fOr StratEgic SustainabiliTy TrAnsitions) which is fully described, highlighting its components and how they relate with each other, and the contexts of its use. 

Chapter	Chapter Summary
Chapter 7 Conclusion	This concluding chapter highlights how this study answers to the research questions as well as potential paths for further research after presenting the research foundations, achievements, and potential limits of this study. 

Contribution to knowledge

As the key deliverables, this research presents a conceptual framework and a theoretical conceptual model based on all types of data gathered in the research journey.

The conceptual framework SPRAY – Sustainability 's PluRAlitY was developed to picture plurality of sustainability. Following a grounded theory research strategy, a conceptual framework - was drafted, which respects the flexibility and emergent nature of the

qualitative and quantitative characteristic of this research (Chapter 4). SPRAY as multi-method application, drives and structures the analysis around identified characteristics and multiple attributes of sustainability in research's applicability (Chapter 5).

Theoretical conceptual model is ROSETA, that stands for a Roadmap fOr StratEgic sustainabiliTy trAnsitions (Chapter 6). Its main objective is help organisations enhancing their strategies to promote a transition to more sustainable management practices.
ROSETA strive to embrace sustainability's plurality, thus is grounded on the integration of rational of thinking when a strategy to promote a transition to more sustainable management practices is design. And is composed by strategic path and implementation path.

1.5 Chapter conclusion

According to the ideas previously exposed, the context of the thesis has been set across this chapter, underlining the relevance of this research in the current body of literature and in the field of sustainability and its plurality.

It is important to refer that this thesis reports an investigation journey grounded from the findings, and not an investigation to support a pre-determined output.

The next chapters present how the purpose, aim, objectives and research questions of this thesis were attained. Chapter 2, in particular, presents a journey in the literature profoundly related with the research framework.

Chapter 2

REVIEW OF THE BACKGROUND CONCEPTS

2.1 Introduction

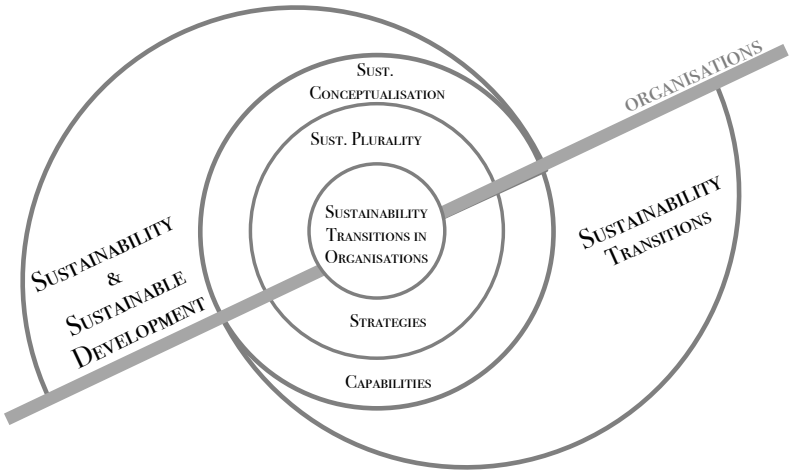
This chapter presents the main body of knowledge, describing the background concepts presented on the preceding chapter (section 1.2.3 -Domains of the Research). In Figure 2.1. are represented the two segments of the literature reviewed:

- the first, describing the sustainability and sustainable development foundations and meanings, supporting their plurality, this particular component of the research was published in Lima & Partidário (2020).
- and the second, relating to sustainability as a transition goal rooted in organisations' capabilities and sustainability strategies.

The terms "sustainability" and "sustainable development" (S & SD) constitute the first part of the research foundations. Note that although it is frequent to use S & SD interchangeably, and even though there is a recognised close relationship between them, these are two different concepts and consequently cannot be used interchangeably. Yet, and considering that, for the purpose of the research, the two concepts will be reviewed alongside looking mainly at the common aspects they share, and also allowing to demonstrate what differentiate them.

The second part of this chapter positions the research in the state-of-the-art literature on transition research and sustainability transitions. The emerging field of transition research suggests mechanisms to lead to a fundamental change in societal systems. While sustainability transitions are open-ended and nonlinear processes that contribute actively to solving complex and systemic challenges, requiring a real change in the structures, cultures and practices of a societal system aiming to become (more) sustainable.

Figure 2.1- Chapter 2. Review of the Background Concepts summary



2.2 Sustainability and Sustainable Development

The on-line definition provided by the oxford dictionary of the word sustainability is "the ability to continue or be continued for a long time", that relates with the ability to maintained any activity at a specific rate or level by some actor (individual or collective) (Yolles & Fink, 2020). Such wide latitude of this concept makes sustainability able to fit in any applicability, and that led to a growing need to understand how to handle the multiple uses of this term that appears to exist.

Sustainability and sustainable development flexibility made it possible to be used in multiple contexts, increasing their popularity in any speech about the future, becoming a buzzword, a slogan, a goal or an adjective, often used in an undiscerning and loose way.

Over time S & SD popularity has competed with more recent concepts (e.g. zero waste), more tangible terminologies of the same family (e.g. TBL or SDG); more circumscribed to a specific topic (e.g. CSR), or still other themes that may be included in the sustainability sphere (e.g. resilience or climate change). Thus, it is possible to perceive that sustainability has moved towards a meaningless and therefore less popular concept (Vos 2007; Gray, 2010; Yolles & Fink, 2020).

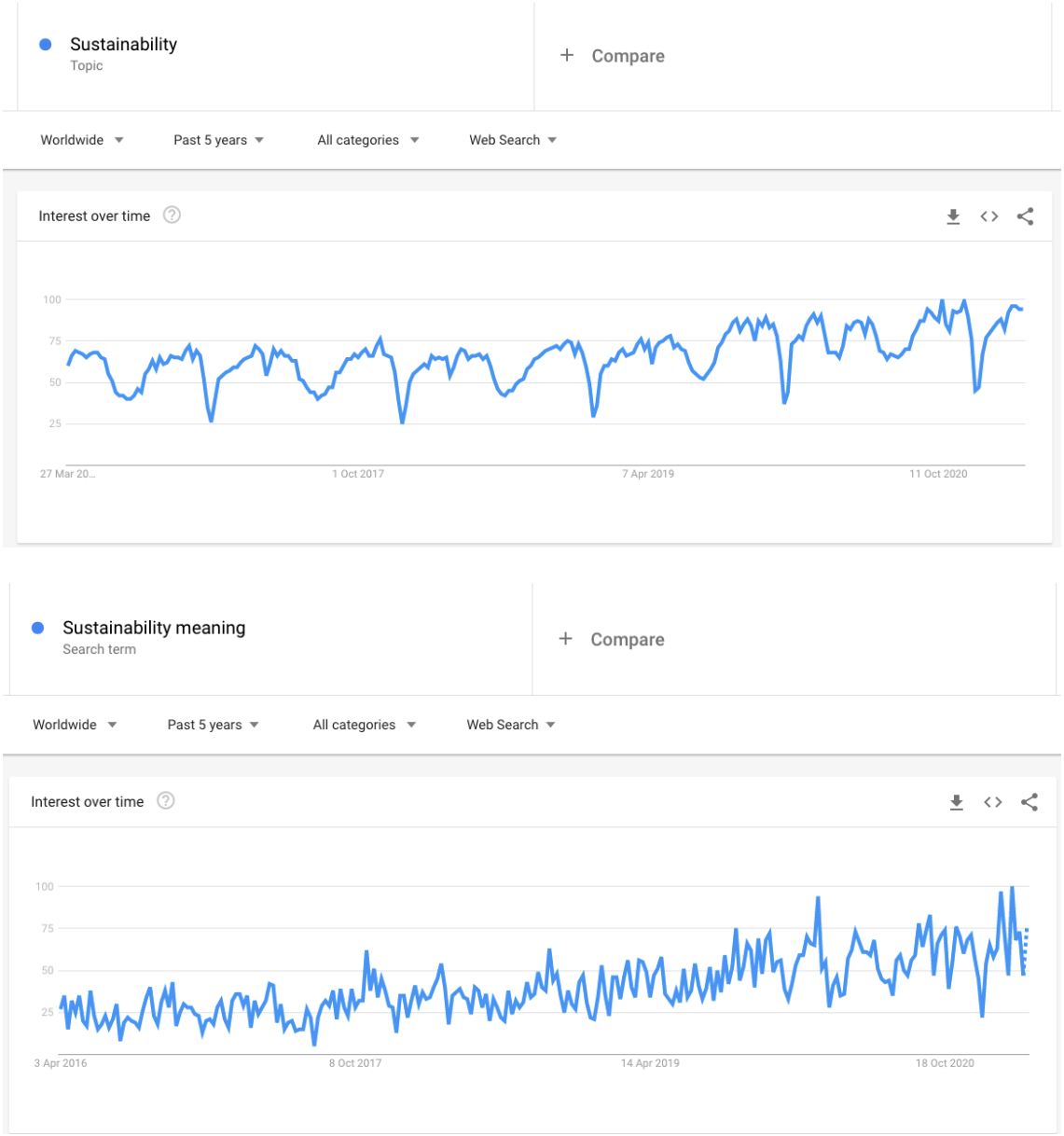
Nevertheless, the popularity in Google Search across the world of sustainability and sustainability meaning are still growing. According to Google Trends results (Figure 2.2) in the last 5 years the worldwide search on these two topics is increasing, although with some fluctuations. In Figure 2.2 is also possible to see that sustainability meaning has a steeper growth curve, revealed an average trend above 50 only at the end of 2019.

Understand how literature and practice address the meaning of sustainability is the first research objective of this thesis, in this section this theme is explored in three parts:

- Plural understanding of sustainability and sustainable development.
- Contributions to the conceptualization of sustainability and sustainable development.
- Plurality in sustainability and sustainable development.

Furthermore, chapter 4 and 5 explored the understanding the meanings of underlying patterns and logics in the use of the term's "sustainability" and "sustainable".

Figure 2.2- Google Trends on worldwide search of sustainability and sustainability meaning
Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term.



2.2.1 Plural understanding of sustainability and sustainable development

Sustainability or sustainable development has its roots in all cultures (Spindler, 2012). However, the concept of sustainability was coined in the 18th century by Hans Carl von Carlowitz. As a worker in the metal extraction industry, he was aware that the shortage of wood caused by the overexploitation of forests had a significant impact over time. Hence, in 1713, Carlowitz proposed to use the woods in a sustainable manner – allowing to bring down only trees that could regenerate on time through planned reforestation (Nachricht, Anweisung, & Baum-Zucht, 2012).

In 1987, Brundtland report (WCED, 1987) carve the most commonly used definition of sustainable development, as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. While quite broad and general this definition has been the guiding light for the theoretical and empirical contributions constructed so far. A multiplicity of views and interpretations of sustainability and sustainable development expanded since then, beyond this official definition, multiplying the discourses around this theme and the plurality of understandings in a variable geometry.

Two years later, in 1989, a paper for the World Bank collected 60 definitions and associated principles of sustainable development (Pezzey, 1989). Then, in 1997, the International Institute for Sustainable Development (IISD, 1997) produced a list of over one hundred series of principles used by public authorities, or by the private sector, in academic work or elsewhere (Zaccai, 2012). After that, in 2015, the adoption of the UN 2030 Agenda (United Nations, 2015), and the 17 SDG, provide direction and tangibility to the concept of sustainability and sustainable development (Le Blanc, 2015).

Coexisting with this evolving understanding, there seems to exist a widespread agreement that whatever this sustainable development is, it is a "good thing" (Gray, 2010) worth to be ambitioned. S&SD symbolize a collective effort for a better future for the world, with new opportunities to all (Mebratu, 1998). It raises the environmental and social agendas to the level of the economic agenda, and it may suggest that even more that these agendas are inevitably connected, featuring complex non-linear systems and relationships.

Despite these encouraging discourses, signs of understanding sustainability and sustainable development reveal an oversimplification of such complex and integrative concepts. The literature reveals ways to approach sustainability still blurred under discussions on effectiveness and applicability of so many frameworks (Gargalo et al., 2016; Hacking & Guthrie, 2008; Jabareen, 2008; Nilsson & Persson, 2017; Paya, 2018; Tsvetkova, 2014).

Attention to its actual implementation is still dominantly limited to the adoption and management of targets (Engert et al., 2016; Galbreath, 2009; Hahn & Kühnen, 2013). Many look into results and seek to operationalize the measurement of sustainability through its multiple indicators, recently exacerbated by the "need to measure" the 169 indicators of the 17 SDGs. A more strategic and effective implementation may require to integrate sustainability in policy, and to intertwine multiple relevant systems in sustainability, to

understand how they work together in line with the need to create an indivisible whole as prompted by the UN 2030 Agenda (United Nations, 2015).

More than being contested and ambiguous terms, sustainability and sustainable development are frequently captured and "(re)constructed by powerful groups and used in ways that distract attention from any conflicts that it might engender, and also from the planetary context in which it must be understood" (Gray, 2010:53).

It seems therefore that S&SD are sometimes perceived to be more of a political and social actors' play game, almost used as a marketing front page, rather than being internalized in agendas for action, recognising its openness and plasticity to every context. On this matter Avelino and Grin, (2017) pinpoint the political implications of such ambiguity, linking to the strategic games surrounding the sustainability discourse embedded in the global political stage. Some authors refer to political inertia in governments and businesses, reflected in the signing up for treaties and frameworks on sustainable development, yet continuing to follow the same conventional agenda (Lélé, 1991; Victor, 2006).

Therefore despite much debate, academic and practical work with application to a variety of contexts and situations, and efforts to clarify meanings (Aarseth, Ahola, Aaltonen, Økland, & Andersen, 2017; Avelino & Grin, 2017; Bansal & DesJardine, 2014; Bebbington, Russell, & Thomson, 2017; Bolis, Morioka, & Sznelwar, 2014; Filho, 2000; Gray, 2010; Hjorth & Bagheri, 2006) the general perception is still of vagueness, abstract meaning and much ambiguity in understandings, interpretations and conceptualisations of S&SD. For example Bebbington et al. (2017) refer to sustainability as "loosely structured, multi-dimensional, multi-disciplinary, political and scientific, dynamic and characterised by complex non-linear relationships" (Bebbington et al., 2017:27).

Partidario et al. (2010) pointed out that a downside of this diversity of perspectives could be that, taking the sky as the limit, "anything works for sustainability" (Partidario et al., 2010:2851), suggesting some arbitrariness in its use. The same authors argue that the conceptualisation of S&SD is still lacking consensus and direction, eventually being "ill-defined, not defined or contradictorily defined" (Partidario et al., 2010:2852).

These ideological tension and philosophical turbulence that emerges from a variety of conflicting incommensurable paradigms contributes to a lack of clarification not only in the concept of sustainability, but also in the definition of viability to which it refers (Yolles & Fink, 2020). Relating sustainability to viability Yolles & Fink (2020) grouped some views on sustainability as:

- *Positive views* - grounding sustainability with future and organisational aspects related to growth, (e.g. Atkisson (1999), FTL (2013) and Frechette (2010)).
- *Negative views* - that pointed out Sustainability is a null concept, unclear and undefined, ideologically controversial nature (e.g. Beckerman (2002); Gladwin, Kennelly, & Krause (1995:874) and Lutz Newton & Freyfogle (2005)).
- *Views that connect with viability* - make positive net contributions to viability and the development of the larger supersystem (e.g. Baumgärtner & Quaas (2007), Bossel (2001), Espinosa (2004), Schwaninger (2001)).

2.2.2 Contributions to the conceptualisation of sustainability and sustainable development

In an effort to distinguish clearly sustainability from sustainable development Strand et al. (2015) utilize the expression sustainability as "umbrella constructs" that encompass concepts as sustainable development (J. Peters & Simaens, 2020; Strand, Freeman, & Hockerts, 2015). The "umbrella constructs" is used in the sense of Hirsch and Levin's (1999: 200) as "a broad concept or idea used loosely to encompass and account for a broad set of diverse phenomena" (Gond and Crane, 2010:680-681).

Nevertheless, and as previously mentioned, sustainability and sustainable develop find their way across a variety of contexts (Vos, 2007) which also contributes to the resulting variable geometry. In economics, social or in ecological sciences, S &SD are used in multiple ways, carrying many meanings, and adopting different emphasis depending on the context.

Avelino and Rotmans (2011) argued that two of the most important aspects of sustainability are its long-term dynamics of change and an interdisciplinary paradigm, distinguishing from the most traditional approaches that see sustainability as a future end state to be aimed at.

In the literature two synthesis of the major contributions to the conceptualisation of S&SD stand out, Baumgartner in 2011 and Partidario et al. in 2010. Baumgartner (2011) highlighted five major contributions in the effort to conceptualize sustainability and sustainable development:

1. interpretations and the limited progress in societal sustainable development (Dobson, 1996; Gończ, Skirke, Kleizen, & Barber, 2007; Haque, 1999; Hopwood, Mellor, & O'Brien, 2005; Lélé, 1991; Sneddon, Howarth, & Norgaard, 2006);
2. the development of the "Triple Bottom Line" (TBL) approach (Elkington, 1998) and its influential contributions;
3. the attempt to define Sustainability Science (Kates et al., 2001);
4. the Framework for Strategic Sustainable Development (Missimer, Robèrt, Broman, & Sverdrup, 2010; Ny, MacDonald, Broman, Yamamoto, & Robért, 2008; Robèrt et al., 2002); and
5. the dialogues about weak and strong sustainability concepts and approaches (Daly, 1997; Neumayer, 2010; Solow, 1997; Stiglitz, Daly, & Stiglitz, 1997).

On the other hand, Partidario et al. (2010) looks more into different interpretations and ways of handling sustainability, summarizing in five main understandings of sustainability in the literature:

1. The classic TBL paradigm (Elkington, 1998) with the combination of three pillars—environmental, social, economic— in a more or less integrated way, depending on the context;
2. The addition of a fourth institutional dimension to those three core pillars of sustainability;
3. The relationship of the society with its most direct environment, looking into the socio-environmental values;
4. Sustainability underpinning specific themes or sectors such as sustainable energy, sustainable construction, sustainable tourism or sustainable transports, to name a few;

5. The more integrative paradigm that intertwines the various dimensions of social, environmental, institutional, political, economic with the time element - the intergenerational factor of sustainability – in a systemic way.

Both authors refer Elkington's TBL, this paradigm has been the leading conventional understanding of sustainability, widely popularized in both corporate and public policy contexts (Pope, Annandale, & Morrison-Saunders, 2004). It reflects the rational-technocratic scientific and societal thinking in the creation of knowledge, which engaged generations of professionals in development processes. TBL provided the capacity to simplify this complex concept and make it accessible to multiple disciplinary contexts. Many of the above contributions highlighted by Baumgartner (2011) have been designed after the TBL approach.

Taking into account the contributions of Elkington's TBL, this research considers that the TBL is one of the dominant paradigms in the conceptualisation, in the discourse and in different applications of sustainability.

Divergent to the TBL based approaches are the more integrative, systemic and complex ways of thinking and understanding sustainability which have been promoted by several authors (Gibson, 2006; Hacking & Guthrie, 2008; Partidario et al., 2010; Pope, Bond, Hugé, & Morrison-Saunders, 2017). This line of thought acknowledges systems as an integrated whole made up of interconnected and interacting parts, which cannot be detached without losing much of its meaning (Merali & Allen, 2011). It also acknowledges the ambiguity and the complexity of the concept, and the need to find simple ways, without being simplistic, to deal with sustainability, increasing its concreteness and practicality.

For Gibson (2006) sustainability is essentially an integrative concept, depicted as the intersection of social, economic and ecological interests and initiatives, which Hacking and Guthrie (2008) and Pope et al. (2017) refer to as "integratedness" in their attempt to reconcile the broad range of emerging approaches to sustainability assessment.

Hacking and Guthrie (2008) proposed a three-dimensional framework with three main axes: comprehensiveness of the SD coverage; the degree of "integration" of the techniques and themes ("integratedness"); and the extent to which a strategic perspective is adopted ("strategicness"). Beyond the discussion on the intersection of the three conventional pillars, Partidario et al. (2010) adds that multiple social values and political priorities generate a plurality of interpretations and understandings, and that sustainability may require changes in values and norms, as well as collective wisdom towards desired purposes.

This line of thought in sustainability theory is firmly associated with the complexity, and the intertwining, of human and ecological systems, in dynamic self-organising processes, engaging multiple interacting systems, at various scales, with pervasive and inevitable uncertainties (Gibson, 2006). And, because of that, sustainability requires innovative approaches and creative tools, combining complexity theory and wicked problem thinking, recognising the uniqueness, stakeholder dependency, time and space specific contextualisation of problems, and of solutions, framed by uncertainty.

This way of thinking is recognised in this investigation as an alternative paradigm in the discourse and practicality of sustainability, acknowledging the complex and intertwining nature of the concept, albeit contrasting with TBL based approaches.

Regarding sustainability's complexity and intertwining nature, many scholars argue that sustainability is about strongly interrelated systems in complex ways and can hardly be solved or treated only with specialized knowledge within one discipline. Instead sustainability and sustainable development require combining specialized knowledge with comprehensive and systemic thinking, by which it is refered to approaches that embrace, connect and integrate multiple viewpoints, subjects, or issues and interrelations at the same time (Ferrer-Balas et al., 2010; Jerneck et al., 2011; Kates et al., 2001; Lewontin & Levins, 2007; Meadows, 2008; Ostrom, 2009; Waddington, 1977; Willamo et al., 2018). Scholars also argue that it needs to be built up in a participative way (by including multiple and even conflicting viewpoints), or as a way to change our world-views (Espinosa & Walker, 2011).

With the increasing recognition of complexity science, wicked problem thinking is evolving apparently aligned in the literature, scholars frame issues as wicked problems associating to multi-actor networks and collaborative partnerships (Artmann, 2015; Dentoni & Bitzer, 2015; Frame, 2008; Hartmann, n.d.; Hocking, Brown, & Harris, 2016; Perry, 2015; Tietjen & Jørgensen, 2016). Thus, it is consider that wicked problem fit well with the sustainability and sustainable development complexity discussed in the literature as above described, in accordance with authors that suggest that sustainability problems, in all of its manifestations, can be seen as wicked problems (Andersson & Törnberg, 2017; Meckenstock, Barbosa-Povoa, & Carvalho, 2015; Waddock, 2013), which do not need to be taken as good or bad but just as complex problems with no unique or immediate solution (B. G. Peters, 2017).

As recognised in the literature there is a need for a shift of mind-sets, away from "black and white" approaches, such as growth, or protection, at any cost, moving towards better understanding of resource constraints, combining multiple perspectives, exploring common pathways for feasible solutions, and a whole spectrum of other issues.

2.2.3 Plurality in sustainability and sustainable development

According to Leuschner (2012:191) "one reason why people argue for pluralism is that scientific progress mostly flourishes when many different approaches are engaged". The same author refers that pluralism can concern diverse areas of science particularly for solving a problem or understanding a research object, but also when it relates to methodological approaches, individual perspectives and value concepts (Leuschner, 2012). Perhaps that is why Sneddon et al., (2006:261) suggested that embracing pluralism could be a way out of "ideological and epistemological straightjackets that deter more cohesive and politically effective interpretations of sustainability and sustainable development".

Following this line of thought, plurality should be a matter of concern in sustainability. It shows progress, according to Leuschner (2012), towards more cohesive interpretations of sustainability. Yet, what the literature reviewed suggests is that perhaps there are established routines, practices and ways of thinking, that may be limiting the plurality of sustainability, leading to discretionarity and arbitrariness. The evolution appears to be more business as usual with change in terminologies but not so much in attitudes and actions.

A question that subsists is whether the lack of consensus on what sustainability means a path to plurality or just a clear contribution to its arbitrariness. On one hand it is recognisable plurality in the opportunity provided by the flexibility of the concept, expressed in the applicability to a vaster latitude of contexts, providing direction for development. On the other hand it is also recognisable that there is a risk of arbitrariness, discretionarity, openness to just everything and almost anything, often meaningless, leading to the generalisation of problems that do not point to any sense of direction (Baumgärtner, Becker, Frank, Müller, & Quaas, 2008), pending on the Yolles & Fink (2020) negative views on sustentability.

Although challenging, the plurality of meanings and interpretations of sustainability and sustainable development discussed in previous sections can be encouraging as it reveals a concept with permeable boundaries, flexible and adjustable to different needs and situations. Perhaps the analysis of its multiple resulting shapes may show common patterns for interdisciplinary alignments and multidimensional agreements. In addition, there seems to exist agreement on the fact that there is no need for a common understanding of sustainability (Espinosa & Walker, 2011), instead there is a need to support the concept on real facts that show some valuable contributions in sustainable practice.

2.3 Sustainability Transitions

Regardless of whether contributions to the conceptualization of sustainability can be grouped as positive or negative views, the idea of sustainability has always been seen as a path to everything that is positive and desirable in society, and widely adopted as the future(s) that we desire (Asikainen, Brites, Plebańczyk, Mijatović, & Soini, 2017).

Thus, linking transitions to sustainability is a way to initiate, design and manage the possible trajectories for a different future(s) leading to sustainability transformation.

Sustainability transition research has evolved exponentially over the last ten years, diversified in terms of topics and global applications, and reinforced in terms of theories and methods (Köhler et al., 2019). Especially because it is increasingly agreed that sustainable development as incremental change is not sufficient, new modes of thinking and acting are required (Asikainen et al., 2017).

Although these transitions do not automatically lead to sustainability, a suitable facilitation could enable it (Rotmans & Loorbach, 2009; Schäpke et al., 2017; Vandevyvere & Nevens, 2015). Transition frameworks including transition management pointed out that sustainability transitions cannot be managed in a regular way, due to their open-endedness, non-linearity and uncertainty, they require an iterative, reflective and explorative way to approach them (Loorbach, 2010; Schäpke et al., 2017; Wittmayer et al., 2014).

When being implemented in close collaboration between scientists and stakeholders and aiming to solve real-world problems, transition management shows commonalities with other approaches of transdisciplinary (sustainability) research (Jan, René, & Marjolein, 2001; Loorbach, 2010; Rauschmayer, Bauler, & Schäpke, 2015; Rotmans & Loorbach, 2009; Vandevyvere & Nevens, 2015) .

Transition management combines the universal definition (e.g. Brundtland) and procedural definitions of sustainability expressing the need for contextualization and deliberation (Frantzeskaki, Loorbach, & Meadowcroft, 2012; Miller, 2013; Wittmayer et al., 2014). Thus, advocates a collective meaning-making process of sustainability definition to express its meaning in a specific context. Through this process the actors involved will share the same understanding of what sustainability will mean.

Belying its name, transition management is not about management, but about organising process(es) and content through "an interactive and selective participatory stakeholder searching process aimed at learning and experimenting" (Grin et al. 2010: 140, Schäpke et al., 2015, Wittmayer et al., 2014). Thus, the creation of space for ideas, activities and actors to innovate and search for alternatives are part of influencing and design transitions (Loorbach 2007, 2010, Wittmayer et al., 2014).

This research rooted sustainability transition management in two main factors: in developing strategies and take into account the organisations' capabilities.

Strategic approaches offer potential to deal with sustainability challenges and with the formulation to create a journey towards sustainability within transition management. In this

research it is also considered that assessment processes or frameworks can guide, contribute or support transition management to sustainability.

Although there is an inherent tension when assessing the outputs and outcomes of transition management, mainly because of the open-endedness and complexity of transitions and the attempt to govern or manage it in direction of sustainability (Schäpke et al., 2017). Assessment processes can give focus on adaptive, process-oriented aspects capturing mechanisms of solving wicked problems, in contrast to positivist, impact-oriented evaluation approaches (ibid).

Capabilities, in the other hand, are a conditioning factor, it can enable or constrain the whole process of transition. Besides that, it also provides a background element of organisation specifics.

Two different types of contributions link capabilities to sustainability in the literature:

The *Capabilities Approach* (Lessmann & Rauschmayer, 2013; Nussbaum, 2009; Pelenc, Lompo, Ballet, & Dubois, 2013; Rauschmayer et al., 2015; Rauschmayer & Lessmann, 2013; Sen, 2013) - Capabilities of current and future generations can be used as targets for sustainability transitions and its evaluations allow judgments on inter- and intragenerational effects of policy measures — it herewith offers a normative framework for sustainability- related assessments (target knowledge) (Rauschmayer et al., 2015).

And practice approaches to sustainability that consider the *Organisations* (or individuals) *Capabilities* identifying the interrelations between skills, resources, capacities to give meaning, and can be used to observe macro-societal as well as on the level of collectives or groups which practice non-mainstreamed activities (ibid). This is also in line with dynamic capabilities from strategic management (Barletta, Berlin, Despeisse, Voorthuysen, & Johansson, 2018), Teece et al., 1997, 2007, 2009,2012).

This research considers the latter approach to sustainability, reflecting on organisations perform at rendering the bigger picture (systems knowledge) by highlighting the complexities and entanglements of sustainability. Thus, in this section is explored insights from these two topics: “Sustainability Strategies” and “Organisations’ Capabilities”.

2.3.1 Sustainability Strategies

In line with arguments developed in previous sections, the integration of sustainability into strategic management offers one (potential) approach to deal with environmental and social challenges and with the formulation and implementation of organisations' sustainability strategies.

And while it is agreed that sustainability strategies formulation is relevant, a strategic approach in what concerns the organisations' sustainability is still lacking. Attention to its actual implementation is limited, particularly to specify the concrete steps needed to translate sustainability strategy into practice (Engert and Baumgartner, 2016; Galbreath, 2009; Hahn, 2013).

According to Mintzberg and Waters (1985) strategic management comprises three important phases strategy: (i) formulation, (ii) design & formation and (iii) implementation. Strategy formulation is the process of developing the strategy: *Where are we now? Where do we want to be?* and includes internal and external analyses of the organisation and the definition of objectives (ibid).

With respect to the strategy formulation and implementation it can be argued, in line with Mintzberg (1978), that strategies can be either intended and deliberate or emergent.

Mintzberg et al. (1998) described ten different schools of thought that focus on the strategy formation process and emerge in management practice, but it is considered that the main adopted positions are the market-based-view, from Porter (1979 and 1980) and the resource-based-view from Penrose (1959) and Barney (1991) (Engert et al., 2016, Engert and Baumgartner, 2016).

Managers increasingly recognise that the integration of sustainability is important (Kiron et al., 2012, 2013; McKinsey & Company, 2014). Nevertheless, various authors alert that the integration of sustainability is rarely considered in strategic management (ibid), although the academic efforts that contributed to this gap.

Several frameworks rooted in the strategic management discourse propose the integration of corporate sustainability (e.g. Robèrt et al., 2002; Labuschagne et al., 2005; Zhang et al., 2013; Baumgartner, 2014; Engert and Baumgartner, 2016) hence, considering corporate sustainability (CS) in business strategies and processes may be one promising way to cope with desired or expected changes (J. Peters & Simaens, 2020).

It is important to mention that, as S&SD, CS experiences some of the same challenges, a variety of concepts have been proposed over the years to conceptualize business and society relations, such as CS, although there is no universal CS definition (Roca and Searcy, 2012; Dahlsrud 2006; Rahdari and Anvary Rostamy, 2015), CS has become the concept most widely used to address these relationships (Lourenço et al., 2012).

Regarding the academic contributions on corporate sustainability strategy, Baumgartner and Ebner (2010) differentiate two types of contributions in that literature:

> (i) identification and determination of distinct aspects concerning dimensions of sustainability, as in economic, ecological and social (example: guidelines to develop a sustainability report), and
>
> (ii) recognizable specific sustainability strategies supported by scientific effort (example: strategies that focus on internal/external orientation of sustainability commitment).

While type (ii) contributions explain that strategies should be structured to enhance efficiency and performance in terms of issues identified, in many situations the link between aspects and sustainability strategies are missing in practice (ibid:76).

Moreover, as it is understood that sustainability strategies need to be carefully tailored and specifically adapted to suit the unique circumstances of the business (Engert et al., 2016) many normative processes emerge.

According to Baumgartner (2014) based on Ulrich (2001), the normative level of sustainability in organisations focusses at ensuring and enhancing the legitimacy of its activities by stakeholders and the society as a whole. It comprises organisations' vision, policy, governance and their organisational culture (Bleicher, 1996).

Thus, although strategic management level makes sure that effectiveness is being considered and long- term objectives can be reached (David, 1989) it seems that the lack of an approach anchored on strategic thinking and sense-making sustainable development can be a limit to the entire process.

When thinking about an organisation and its behaviour towards sustainability, some authors clearly outline that taking action in terms of corporate sustainability and adopting proactive corporate sustainability strategies have a positive impact on corporate reputation (Lankoski, 2008; Calabrese et al., 2012; Valentine, 2010; Ganescu, 2012; Klettner et al., 2014, online 2013).

Although the motivation for a transition to a more sustainable organisation is still primarily because of marketing and reputation, some authors see an opportunity in this since improvements to corporate reputation resulting from sustainability initiatives and strategies are often difficult to imitate, and sustainability initiatives are particularly effective in enhancing the organisations' reputation (Engert et al., 2016; Falkenberg and Brunsael, 2011; Filho et al., 2010).

Sustainability Performance

The starting point for every strategy is the question of purpose of the whole endeavour. This is the input for strategy activities. The dimension of strategy process is the way to develop the strategy, i.e. the throughput (the how, who and when of strategy). Nevertheless, a performance assessment is a great insight to start a process of strategy formulation particular in a sustainability transition process.

Sustainability performance measures the extent to which an organisation embraces sustainable factors into its operations, and ultimately the impact they exert on the organisation and society (Artiach et al., 2010; Searcy and Elkhawas, 2012), and is an essential tool to measure organisation's contributions to SDG.

It is possible to list many specific approaches, which link corporate performance to SD such as eco-efficiency/eco-effectivity, Cleaner Production, Industrial Ecology, Life Cycle Assessment, The Global Reporting Initiative, Corporate Social Responsibility or the ISO 26000 (Baumgartner and Ebner, 2010).

However, in a sustainability performance process it is common that an organisation only assesses some aspects of sustainability, lacking a systemic view, the result is insufficient to cover the wider scope of sustainability. That is recognised by several authors, for example Baumgartner and Ebner (2010) established that two terms are inevitably used in sustainability performance discussion:

- aspect (GRI, 2006; Welford, 2005; von Geibler et al., 2006) and
- criterion (see, e.g., DJSI, 2007; FTSE, 2006; Labuschagne and Brent, 2006).

Although it is very important to keep in mind that sustainability is not objective metrics, neither it is just results. It has more to do with systems and the capacity building in the company to develop processes guided by strategic management for sustainability, including the essential factors in transition processes towards sustainability (holistic goals of diversity, transparency, quality, capacity, timeliness and justice, increase knowledge, learning skills and converging practices, based on dialogues and principles of social respect) (Partidario et al., 2010).

Considering the societal outcomes of these performance initiatives, it is questionable if the companies have made "real" progress towards more sustainable societies (Bracken et al. 2015; Lang et al., 2017). Thus, in this research, and according to Baumgartner (2011), sustainability performance reveals to have more value as a way to be aware of the range of sustainability issues and challenges that have to be regarded. Therefore, instead of being an end in itself, sustainability performance contributes directly to develop sustainability strategies, or in some cases to readjust them.

Sustainability Instruments

In this research the term "Sustainability Instruments" comprise a large number of ways to approach sustainability, the expression goes further than the instruments and tools and consider ways and processes that are relevant to understand the discussion of design, contribution, evaluation and performance of these instruments for sustainability at a high level.

An extensive study on this topic is not within the scope of this investigation.

Many of the Sustainability Instruments cross conventional topics of sustainability and are largely used, but not necessarily in a strategic manner.

Thus, this section aims to present how it is possible to organize these instruments, without detailing the added value or their differences.

The most popular models and evaluation methodologies stand out. In the review by Rahdari and Rostamy (2015), the authors list some of the most common models of dealing with sustainability in the organisational context:

> Stakeholder theory (Freeman, 1984), corporate social performance (Wood, 1991), corporate social responsibility (Frederick, 1994), triple bottom line (Elkington, 1999), bottom of the pyramid (Prahalad, 2004), corporate citizenship (Crane et al., 2008), corporate sustainability or application of sustainability at the corporate level (Gray, 2010), shared value (Porter and Kramer, 2011), sustainability and corporate responsibility (Visser, 2011), conscious capitalism (Mackey et al., 2013), among others.

In addition to these models, it is also possible to list many specific methodologies and processes, which link the contribution to the sustainable development of organisations, such as eco-efficiency / eco-efficiency, cleaner production, industrial ecology, life cycle assessment (Labuschagne and Brent, 2006), global reporting initiative - GRI, corporate social responsibility (Welford, 2005), *ISO 26000,* or raters (*DJSI, FTSE, RobecoSAM, Sustainalytics' ESG Risk Ratings, Bloomberg ESG Performance Scores, EcoVadis CSR Rating, CDP Climate, Water & Forests Scores, ISS,* among others).

As a summary of some publications from the sustainability consultors and the literature review, in Figure 2.3 is presented the most publish instruments, that are grouped differentiating the type and objective of each instrument. Therefore, the instruments are organized by

> (i) norms and processes more related with compliance, institutional standards and regulations.
> (ii) indexes and ratings are used to communicate sustainability performance, most provide guidance to monitorization and performance assessment, but are commonly used to communicate corporate reputation as a response of public awareness or pressure.
> (iii) models and (iv) frameworks these instruments are mostly used when sustainability incorporates organisational values and/or is integrated in the business.

Further on, in chapter 5, this summary of instruments is used to assess which instruments are most used by the organisations.

Figure 2.3 – Relevant instruments to sustainability

2.3.2 Organisations' Capabilities

It is recognised that for strategic sustainability actions to be successful must be part of the organisational culture (Baumgartner, 2009). Thus, sustainable development aspects must be a part of the thinking of leaders, decision makers, and members of the organisation so the developed activities affect the core business efficiently (ibid).

Still, when J. Peters & Simaens (2020) describe the barriers to integrating sustainability into corporate strategy, the authors list as one of the main barriers the lack of competence of top management to manage sustainability challenges as a system (with multiple and simulations goals). This lack of competence consequently blocks sustainability translation and integration into corporate strategy and executive operations (ibid).

Thus, several frameworks propose the integration of sustainability in the discourse of strategic management, for example: Robèrt et al., 2002; Labuschagne et al., 2005; Zheng et al., 2010; Baumgartner, 2014; Engert and Baumgartner, 2016. However, it is also recognised that the skills, capacities and capabilities of the teams that create, develop, apply and disseminate these practices condition the success and the potential of implementing these frameworks.

In the review of competency definitions - capabilities, Lindbom et al. (2015: 46) point to five emerging trends: (1) competence is equated with resources, (2) resources are an important component of competence, (3) competence describes the ability or ability to do something, (4) competence is capacity and (5) competence is a factor that affects an outcome or goal. Some of the definitions of capabilities contain only one of these "emerging trends", while others contain several (Johansson, Jonsson, Veibäck, & Sonnsjö, 2016; Lindbom, Hassel, Tehler, & Uhr, 2018; Lindbom, Tehler, Eriksson, & Aven, 2015).

Still, Lindbom et al. (2015) choose to relate the concept to risk, vulnerability and resilience assessment, and define "capability" as the uncertainty and severity of the consequences of an activity, given the occurrence of the initial event and the task performed (ibid:53).

Mousavi & Bossink (2017: 226) also relating capabilities to risk, vulnerability and resilience assessment, including the ability to reconfigure competences and the organisation specifically associated with the concept of innovation. The authors consider three areas of competence important in the strategy and organisation of sustainability: detection, apprehension and reconfiguration.

- *Detection* - developed by organisational, strategic and management skills, seeking to identify alerts for innovation opportunities, leading to proactive sustainability strategies from monitoring anticipation processes.
- *Apprehension* - used to explore and capture the potential value of sustainability, through marketing activities, institutional dialogues, co-specialisation activities and the development of new business models.
- *Reconfiguration* - applied to all resources and focuses on developing new methods of organising work responsibilities, new business practices, new methods of organising external relations and adapting the business ecosystem.

Resuming the cross-linking with the studied characteristics of sustainability, Teece et al. (1997) stand out by establishing a clear relationship between capabilities and the sustainability characteristics, such as dynamic, systemic, complex and interactive, when exploring dynamic capabilities.

The same authors develop theoretically the concept of dynamic capabilities that aim to deal and manage changes by integrating and reconfiguring internal and external competencies. This reconfiguration leads to the transition, and sometimes to the transformation, of organisational skills. This reconfiguration sometimes is limited to the choices from agents (leaders, decision makers, ...). The constant and conscious observation of contextual and environmental changes is crucial in processes of transition to sustainability (ibid).

Argote (2012) also argues that especially in non-linear market contexts, managers who depend only on existing knowledge and past experiences face organisational challenges. This leads organisations to innovate, and leaders are forced to reorganise their knowledge using real-time information, cross-functional relationships and other communication alternatives. This also requires systemic approaches in this context.

The interpretation of these factors requires a deep understanding of what constitutes sustainability systems and subsystems for each context and their interactions Missimer et al. (2010, 2017).

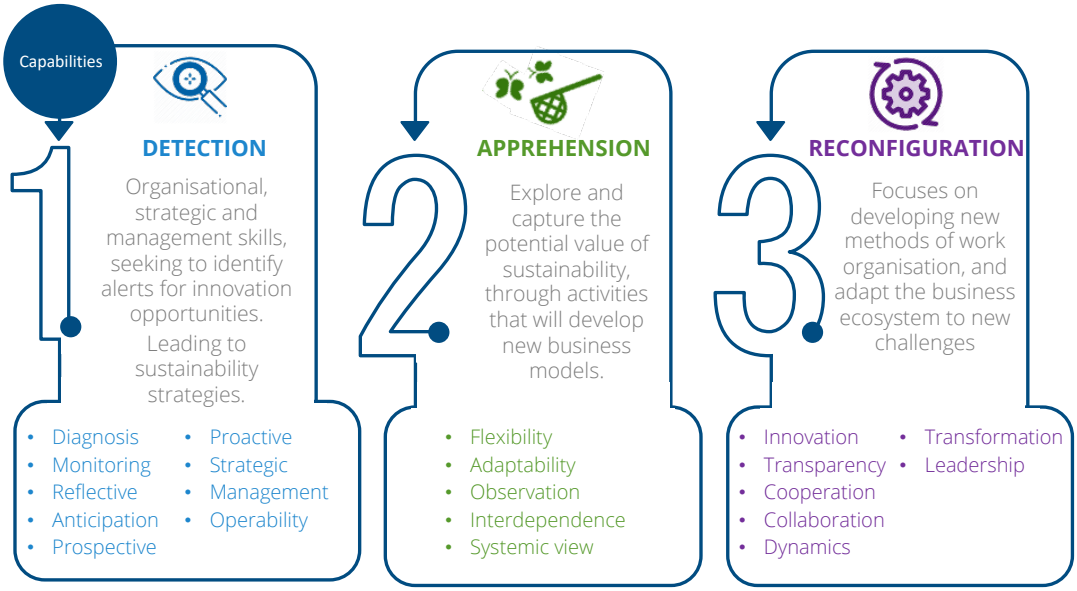
Other essential ways to consider sustainability in developing actions, and complementary to systemic thinking, arise from the most popular lines and processes of thought: wicked problems, strategic, design and future (Abbas, Shaheen, Elhoseny, Singh, & Alkhambashi, 2018; Arnold & Wade, 2015; Behl & Ferreira, 2014; Merali & Allen, 2011; Mingers & White, 2010; Patlins, 2017; Shapira, Ketchie, & Nehe, 2017). The skills that these ways of thinking highlight in common are flexibility and innovation.

Flexibility and adaptability are key factors that allow to welcome and cultivate innovation. Innovation as a crucial ingredient for driving change. Recognising the interdependence of these two competencies, the authors Wetering, et al. (2017) emphasise that developing flexibility and innovation skills are based on cooperation and collaboration skills based on transparency.

Supported by the literature, the frame that upholds the capabilities approach in this research, are presented in Figure 2.4. Inspired by Mousavi & Bossink (2017) and Teece et al. (1997) is represented in Figure 2.4. summarise capabilities that determine the organisation ability and willingness to implement changes into their processes, and crucial to contribute to transitions toward sustainability, the figure was designed specifically for this research.

Capabilities have an explicit focus on how organisation perform (innovative) activities and reconfigure their organizational and managerial processes and routines in pursuit of evolutionary fitness, and that can play a key role as foundation to sustainability transitions processes.

Figure 2.4- Key capabilities to enhance the approach of sustainability inspired by Mousavi & Bossink (2017) and Teece et al. (1997)



In Figure 2.4. the first group "detection" comprise the capabilities related to the starter point of a transition process, involves the aim at gaining knowledge about needs, exploring opportunities, probing, listening, and scanning.

- Monitoring, diagnosis and reflective are aspects related with assessment that give information about the past and present status and potential issues that the organisation can, or already, face. Additionally, they are also useful to seek and identify signals for opportunities.
- Anticipation, and Prospective are key aspects of future thinking, that robust strategies.
- Proactive, management and operability have a more prominent role on developing action plans e its implementation.

The second group "apprehension" is related to the mobilisation of resources to act on the recognised opportunities and capture value from them.

- Observation regards to seizing the innovation opportunities for sustainability.
- Flexibility and Adaptability can conditionate mobilisation of resources trough change.
- Systemic view and interdependence because there are typically a wider range of organisations' systems often more complex than purely market-driven changes when is about sustainability transitions.

The "reconfiguration" constitutes the final group of capabilities that are essential to consider in designing and executing strategies to sustainability transitions, since they are enables of renewal and orchestration and offer sources and competencies to match the requirements of a changing environment.

- Innovation, transformation and dynamics more related to the organisation as a system in a transition process.
- Leadership, cooperation, collaboration and transparency more related to the human resources and its practices and routines.

2.4 Chapter conclusion

The term Sustainability is used across several disciplines and "*Given the large number of perspectives and contexts in which the term sustainability is used, its meaning varies widely across the literature*" (Stepanyan, Littlejohn & Margaryan, 2013: 94).

These different uses appear to rely on cognitive orientation, which can lead to inconsistency or even misunderstanding when there is a divergence in orientation and values.

The rise of the sustainability concept has drawn significant criticism (Harrison, 2000; Beckerman, 2002; Lutz Newton & Freyfogle, 2005; Swyngedouw, 2007) with some comments implying that it is an unsustainable concept due to its unconvincing, controversial or unclear nature and development (Yolles & Fink, 2020).

These arguments reflect a linear and rationalistic view of sustainability. But as shown in the work of Espinosa and Walker (2011), a "universal model" for sustainability cannot work as it does not allow for contextual variations and interpretations. Therefore, it is possible to conclude that there is no need for a common understanding of sustainability and that its plurality should be embraced.

Yolles & Fink (2020) grouped some views on sustainability as: positive views, negative views and views that connect with viability. This research is positioned in this last group of views, conscious that the challenge lays in shaping and materializing theoretical conceptualisations that connect to abstract values, maintaining the flexibility of concept (to apply in a wide spectrum of technological, social and political positions).

The multiple meanings generally are grounded on desirable future(s), and that brings questions about the possible trajectories for a different future(s) and development of humanity. Strategies that are grounded in sustainability transitions can provide guidance. That is enable with a better understanding of the role of strategic approaches in sustainability transition management, and organisational capabilities.

The literature and consultant organisations provide a variety of sustainability instruments and tools, some are broadly used, but not necessarily in a strategic manner. Particularly, sustainability performance can exceed its monitoring contribution constituting itself as a starting component in the formulation of the strategy.

It is argued that decisions related to sustainability should be taken at a strategic level, and be the subject of strategic management, as a form of integration in a company's strategy, vision and culture (Stead and Stead, 2000; Jin and Bai, 2011), to approach that the research relates capabilities with sustainability.

Organisational capabilities address the ability to reconfigure competencies and the organisation towards risk, vulnerability and resilience while considering innovative approaches. Finally, the relevant capabilities are grouped by three areas of competence that are central in sustainability transition management: detection, apprehension and reconfiguration.

Chapter 3

RESEARCH DESIGN

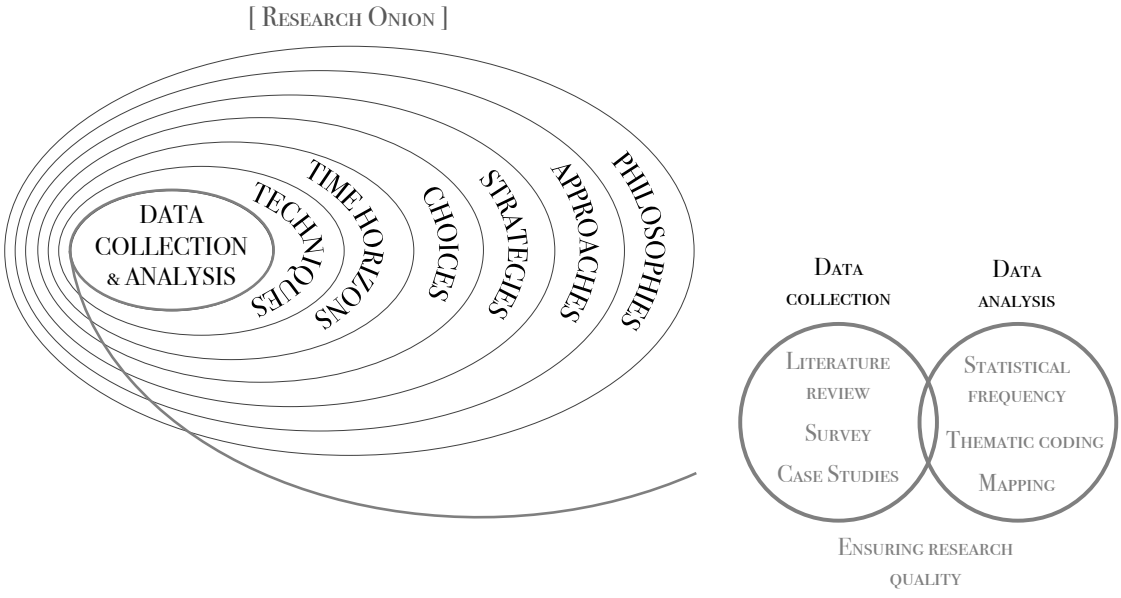
3.1 Introduction

The research approach conditionate the discussion of the results and also determinates how the research is used in practice. As outlined in chapter 1, this research is about a meaningful way to address sustainability.

This chapter presents the frame that structurer this investigation and the considerations of how to interact with practice as a researcher. The research paradigm of this study is outlined, as well as an overview of the research method and tools that demonstrate its robustness, reliability and validity towards this thesis objective.

The chapter also explores the ways of doing research with a focus on understanding and applications of sustainability in different contexts, as a way to bridging research and practice. This mix-method research carried out within an interpretative paradigm, relies on a multipurpose (exploratory and explanatory) and both inductive and deductive combined perspectives. It follows a grounded theory strategy to uncover directions from the data.

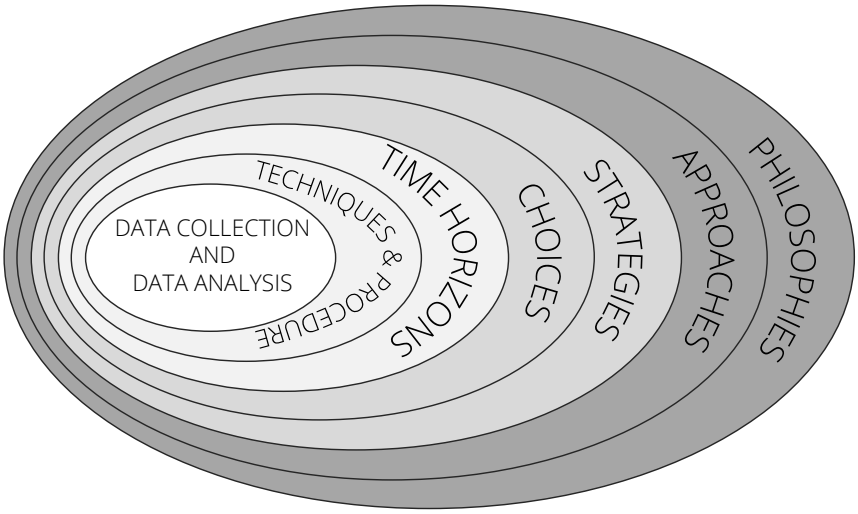
Figure 3.1- Chapter 3. Research Design summary



3.2 Research Onion

Following Saunders et al., 2009 research "onion" the details of the research design will be specified in seven parts (Figure 3.2).

Figure 3.2- The research "onion"
Source: Saunders et al., 2009:108



The following sections will provide more detail for each "onion" layer:

1. Philosophies - contains the important assumptions about the way in which the researcher views the world.

2. Approaches - research project will involve the use of theory distinguish between main research approaches: deductive and inductive.

3. Strategies - research directions to approach theory distinguish between deductive and inductive.

4. Choices - distinguish between mono or multiple methods to apply on the research.

5. Time Horizons - distinguish between longitudinal and cross-sectional.

6. Techniques and Procedures - consider credibility and ethical aspects.

7. Data Collection and Data Analysis - consider using secondary data, collecting data, and analysing quantitative and qualitative data.

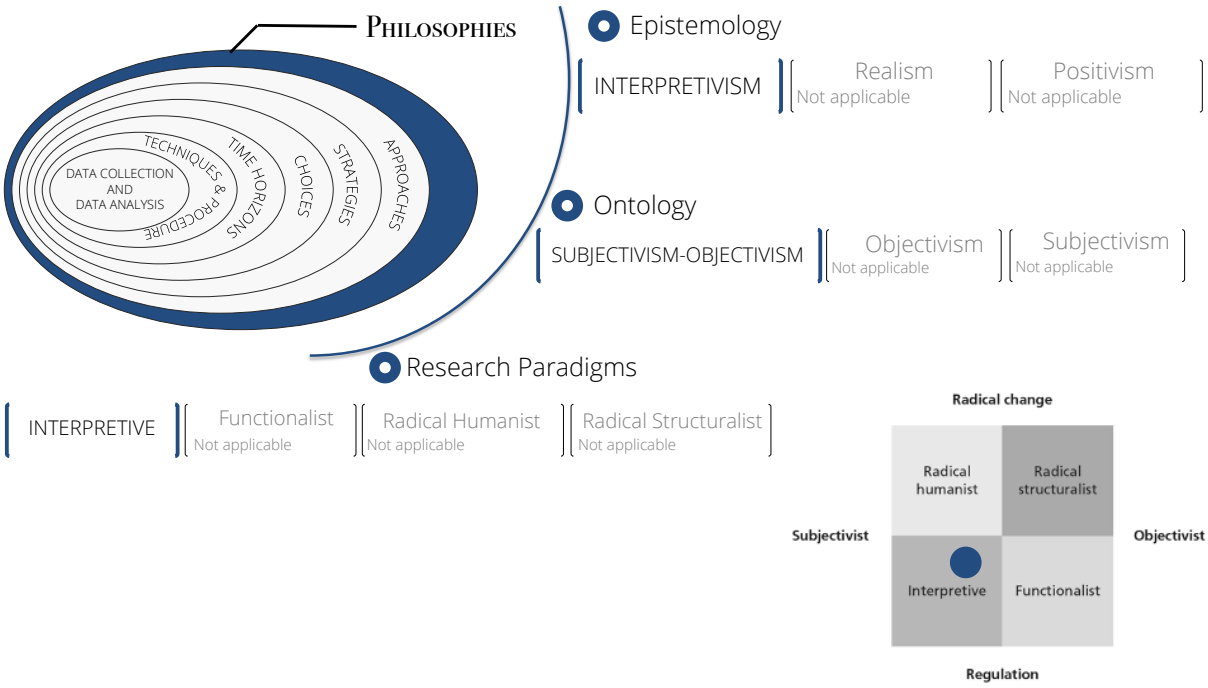
3.3 Philosophy & Approaches

3.3.1 Philosophy

The first step is to understand the relationship between ontology and epistemology, which will provide the methodological approach, the "basic set of beliefs that guide action" (Guba, 1990:17).

Figure 3.3 presents a schematic perspective of the interconnection between ontology, epistemology and research paradigms, completed by a summary of the premises that the three components encapsulate.
While ontology refers to the nature and social reality of the research and how the researcher understands and perceives the world, epistemology has largely to do with the theory of knowledge assumed by the researcher to make sense of the researcher perceptions. Finally, the research paradigms refer to how the research will be approached.

Figure 3.3- The research "onion"- Philosophies
Source: Adapted from Saunders et al., 2009



3.3.1.1 Epistemology

This research follows the principles of interpretivism, in terms of epistemological position, because it supports that it is essential for the researcher to comprehend differences between humans (and companies or organisations) in a role as actors, especially as social actors.

Although it could be argued that critical realism is sometimes present in this research, especially in the analysis of perceptions and representations of sustainability, interpretivism expresses the principles adopted in this research.

3.3.1.2 Ontology

Ontology is concerned with nature of the reality. This research will have some subjectivist aspects (when the researcher approaches some concepts such as sustainability or organisations' management, strategies or culture) but also some objectivist aspects (such as sustainability measurement aspects, or statistic indicators), being the more appropriated viewpoint the subjectivist-objectivist ontology (Smircich, 1983, cited on Saunders et al., 2009).

3.3.1.3 Research Paradigms

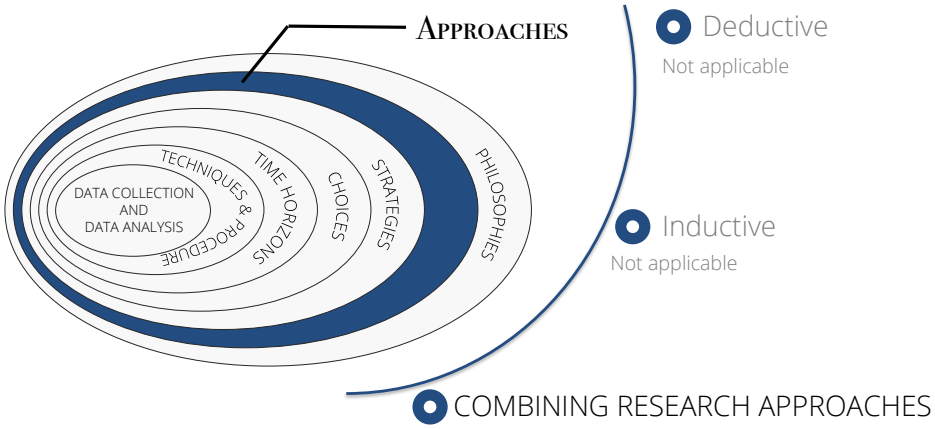
The most suitable paradigm is the interpretive paradigm, because is the philosophical position to which this refers (the epistemology interpretivism), and this is the way that we as humans attempt to make sense of the world around us (Saunders et al., 2009).

3.3.2 Approaches

There are two main research directions to approach theory:
(i) when a researcher uses deductive direction, where a theory and hypothesis (or hypotheses) are developed and a research strategy is designed to test that hypothesis; and (ii) when a researcher uses inductive direction, where data are collected and a theory is developed as a result of the data analysis (Neuman, 2014; Saunders et al., 2009).

This research will combine these two approaches, the deductive, mainly on literature review, and the inductive approach to develop the theory that will follow the data results, and a mixed approach to the final contributions of the investigation (
Figure 3.4).

Figure 3.4- The research "onion" - Approaches
Source: Adapted from Saunders et al., 2009



3.4 Strategies & Choices

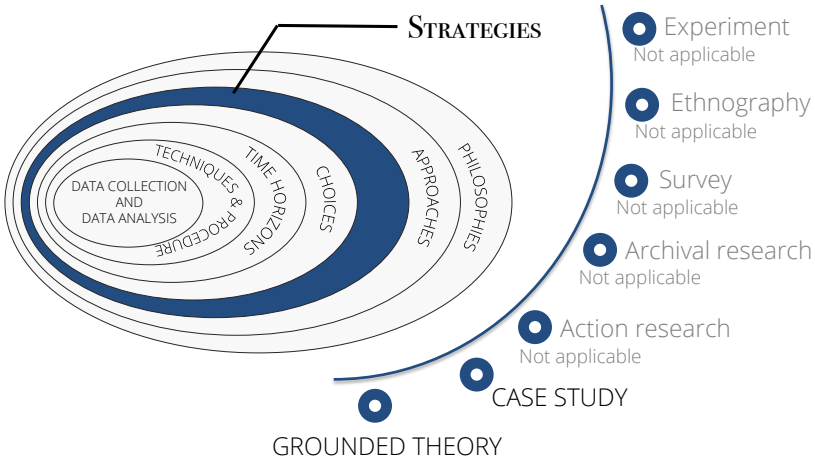
3.4.1 Strategies

The research strategy will be based on grounded theory and case study review and its analysis (

Figure 3.5).

Grounded theory because of (i) theory-building which combines induction and deduction, (ii) data collection beginning without the initial formation of a theoretical framework and (iii) theory developed also based on data, that will be obtained by series of observations
Based on Robson, 2002, and Yin, 2003, *cited on* Saunders et al., 2009, case study as a strategy for doing research involves an empirical investigation of a particular contemporary phenomenon within its real life context, which is appropriate to the aim of the investigation.

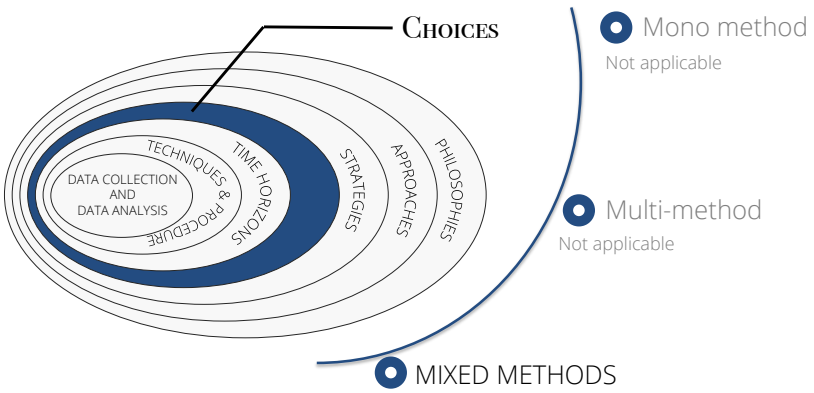
Figure 3.5- The research "onion"- Strategies
Source: Adapted from Saunders et al., 2009



3.4.2 Choices

This research will use more than one data collection technique and analysis procedures to address the research questions. It will be used Mixed Methods approach – where both quantitative and qualitative data collection techniques and analysis procedures are used, as for example in-depth interviews with experts, questionnaires and discussion groups – Figure 3.6 (Saunders et al., 2009).

Figure 3.6- The research "onion"- Choices
Source: Adapted from Saunders et al., 2009


Choices
PHILOSOPHIES
APPROACHES
STRATEGIES
TIME HORIZONS
TECHNIQUES & PROCEDURE
DATA COLLECTION AND DATA ANALYSIS
Mono method
Not applicable
Multi-method
Not applicable
MIXED METHODS

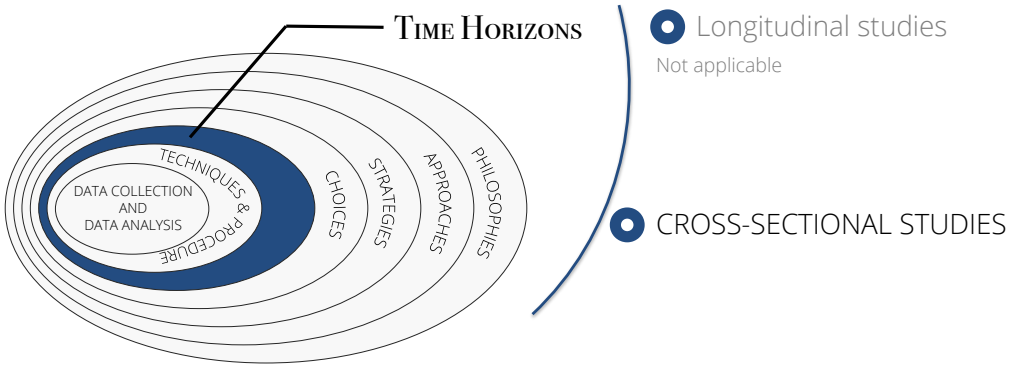
3.5 Type of Research

3.5.1 Time horizons

To study the integration of sustainable development in corporations a longitudinal study will be useful to analyse the history and development 3 organisations, however the research aims to observe the integration of sustainable development in marked moments (Figure 3.7) as a "snapshot". So, in terms of the time horizon of the research the cross-sectional study is more suitable.

According to Saunders et al. (2009), the research can be a "snapshot", taken at a particular time, also called cross-sectional. The author also expresses that research projects undertaken for academic degrees, such as doctoral degrees, are necessarily time-constrained.

Figure 3.7- The research "onion"- Time Horizons
Source: Adapted from Saunders et al., 2009

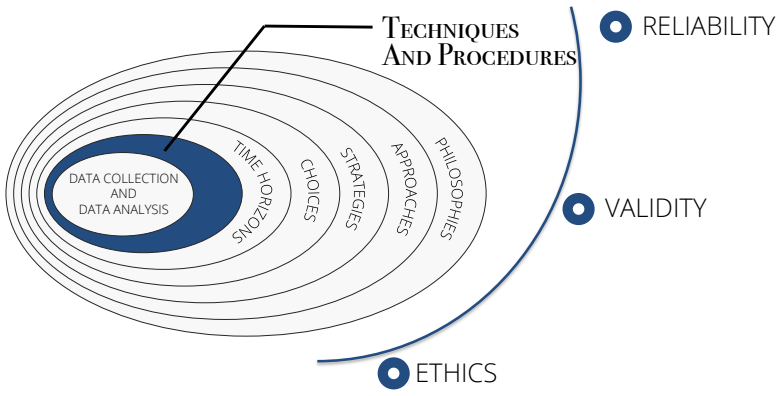


This subject is further explored in the detail of the case study data collection (chapter 4), where is provided in a timeline the interactions with the 3 organisations.

3.5.2 Techniques and procedures

In terms of techniques and procedures is essential to consider credibility (reliability and validity) and ethical aspects (Figure 3.8).

Figure 3.8- The research "onion"- Techniques and Procedures
Source: Adapted from Saunders et al., 2009



Regarding the techniques and procedures for the data collection and the data analysis it is essential to take into account several issues, such as data protection policy.

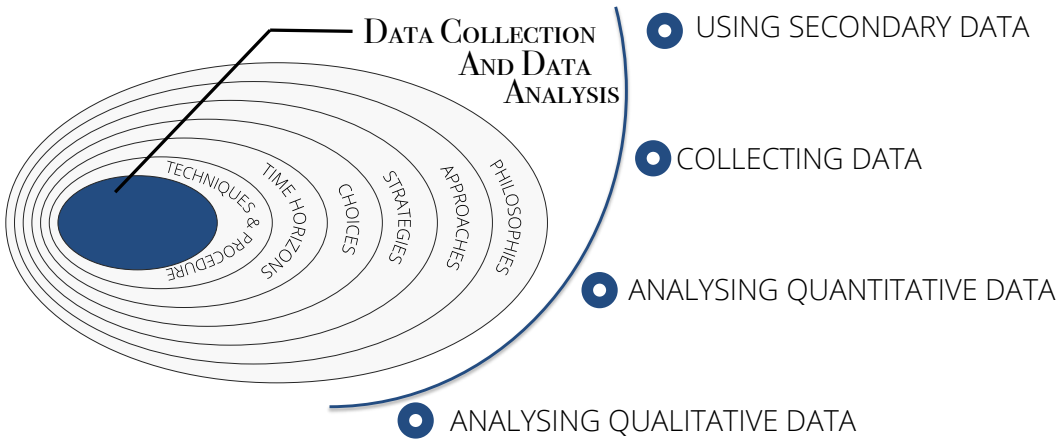
The research credibility will be supported by triangulation approach and steering group, being also important to take into consideration the threats to reliability and validity.

- Triangulation approach contains multiple theories, methods, data and investigators (Denzin, 2012) crossing these mixed methods will contribute to more consistency.
- Steering group can also contribute to consistency, but as a more important role, in terms of validity.

3.6 Data collection and data analysis

To conduct the literature review protocol is necessary to determinate search parameters (time period, databases, categories, keywords) and restriction factors (scientific journals impact factor, scientific field, language) will be established, such as in the study conducted by Fernqvist and Ekelund (2014).

Figure 3.9- The research "onion"- Data collection and Data analysis
Source: Adapted from Saunders et al., 2009



3.6.1 Data collection

Regarding data collection and analysis, primary and secondary data source will be used. Quantitative and qualitative data will be collected, also to establish the bases for research and analysis from different sources:

a. Systematic Literature review
b. Questionnaire
c. Semi-Structed Interviews and Observation / Application (case study)

The details of data collection of the different sources of this research will be presented in the next chapter.

3.6.2 Data analysis

In terms of data analysis, the ability to connect numerous details and simultaneously formulate a more comprehensive understanding of a qualitative data set constitutes a challenge. Qualitative data analysis requires organizing and synthesizing often large quantities of text, this analysis entails negotiating the interplay between raw data, semantic themes or codes, and the overarching conceptual framework (Guest and McLellan, 2003).

The process of data analysis from the different sources consisted in two steps (1) systematize the results - coding the data (the results form literature, the questionnaire answers, and the transcribed interviews), and (2) map the results.

Based on Strauss and Corbin (1997), the theoretical sampling procedures to data coding started by the emerge from categories from the framework to collect data, through theory and data comparison, emerged the keywords, topics or variables that can be defined by their properties (sub-categories). Through a process of coding, these categories are differentiated and classified.
Next, was possible to establish a link between categories, it was visible through the properties of the relationships that were found. When the coding was saturated, and no additional linkages could be made a core category emerges that provides the necessary input to data analysis.

This method creates taxonomies based on the researcher's subjective interpretation of logically consistent conceptual relationships between themes and code. (Guest and McLellan, 2003). Is also important to understand that codding do not necessarily capture patterns between themes in the text (ibid).

After the coding procedure to the method was applied two prototype-feature analysis that was implemented to summarise the results in maps and diagrams.

Martin Eppler, in 2006, publishes a comparation between concept maps, mind maps, conceptual diagrams, and visual metaphors as complementary tools for knowledge construction and sharing (Eppler, 2006).

The author compares these tools accordingly to: definitions, main function, typical application context, application guidelines, employed graphic elements, reading direction, core designs rules, macro structure applicability, level of difficulty, extensibility, memorability, understandability by others (Eppler, 2006). Regarding these format parameters, two of them make the concept map the most proper tool to apply, the main function considers systematic relationships among sub-concepts relating to one main concept and has a high level of understandability by others.

Although concept map is a graph in which emphasis on identifying concepts (and their multiple relationships) and represent and structure sequential content, for knowledge construction the author recommended more complex visualization methods such as cognitive maps (ibid).

Colin Eden (2004) presents cognitive maps as usually derived through interviews, and so they are intended to represent the subjective world of the interviewee, thus more suitable to apply to this research phase. The author defines cognitive map as "the representation of thinking about a problem that follows from the process of mapping" (Eden, 2004)

A cognitive map is a representation of thinking about a problem that follows from the process of mapping, dealing with messy and complex data without losing its richness, integrating ideas to existing systems, synthesize complex topics into a single visualization that can be shared with other team members (Eden, 1988, 2004; Eppler, 2006).

So, after transfer interviews from record to transcripts, and apply the codding process, is created for each interview a cognitive map that gave a systemic view of the data and uncover linkages, giving additional meaning to the analysis and helping to structure a narrative grounded in the data (Guest & Mclellan, 2003).

Because cognitive maps are not a visual tool that offered great proprieties to comparison the different cases studies, it was conducted a review of the literature on diagrammatic reasoning. A visual tool that presented the most suitable approach was dynagrams (dynamic diagrams) from (Eppler & Kernbach, 2016), that offers more than just information synthesis enabling to deal with greater levels of complexity than typical visual design thinking tools can afford.

In dynagrams the researcher must rely on three key diagram mechanisms: (1) identified and described in diagram research; (2) the notion of diagrammatic free ride, and (3) the idea of encoding in diagrams (ibid:92). The authors illustrate these principles in three examples, Roper Dynagram, Sankey Dynagram, and Confluence Dynagram, this last type is the selected dynagram to use in this research.

Confluence Dynagram offers a multi-dimensional configurator in the shape of a radar plot and can be dynamically labelled and adapted to capture dimensions that define the development of any conceptual prototype (ibid). The dimensions that were consider were supported in the framework categories, the data analysis themes and the coding developed in the previous stage.

After that it was conducted a three-step-approach, as suggested by Eppler & Kernbach (2016:107): (1) identify a scale, (2) group dimensions, and (3) create interdependencies between factors and established a profile for the prototype. The same prototype was applied to all the cases, providing a basis of comparison.

3.7 Chapter conclusion

Chapter 3. presents the research design that encloses three frames: research, conceptual, and methodological.

This chapter has described and explained the Interpretative paradigm and where ontology and epistemology lie. It identifies grounded theory as the main strategy, as it embraces mixed methods, techniques and procedures.

With an inductive and deductive approaches and an exploratory nature, which evolved to an explanatory stage, the research is manly qualitative, although it also resorts to quantitative studies.

The next chapter provides more detail on data collection.

Chapter 4
FRAMEWORK FOR DATA COLLECTION – SPRAY

4.1 Introduction

The importance of recognising plurality in sustainability is motivated by arguments in the literature that the words sustainability and sustainable are vague, ambiguous, ill-defined and lacking concreteness (chapter 2).

To acknowledge the plurality of sustainability the use of different interpretations and understandings was explored, as well as the adoption of different approaches and instruments. To this end, the conceptual framework SPRAY (**S**ustainability's Plu**RA**lit**Y**) was developed to apprehend the plurality of sustainability. SPRAY drives and structures the data collection and analysis around the identified characteristics and multiple attributes of sustainability in research's applicability.

The development of the conceptual framework SPRAY was published in Lima & Partidário (2020).

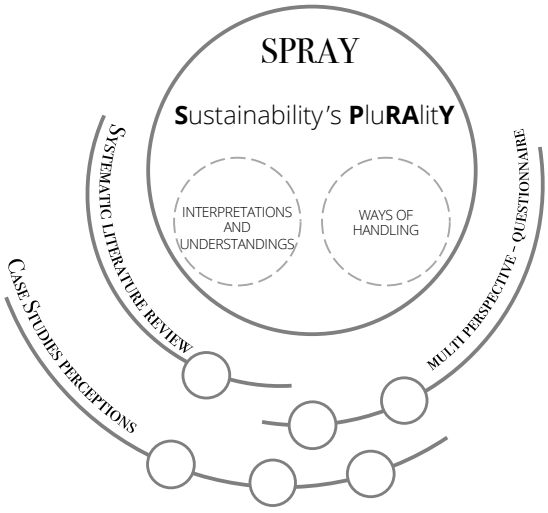
This chapter presents how SPRAY's structure data collection and analyse in the following applications:

(i) To look into the scientific literature, a systematic literature review was conducted (content and discourse analysis) of peer-reviewed publications

(ii)To collect prespectives on sustainability, a questionnaire was applied to a pool of different organisations

(iii) To gather perceptions of a sustainability journey, a case study analyses were developed resorting to in-depth interviews.

Figure 4.1- Chapter 4. Framework for data collection – SPRAY summary



4.2 SPRAY's Background

Finding a meaningful way to comprehend sustainability as a concept requires an in-depth understanding on how is addressed sustainability and sustainable development (or other applications of sustainable). These two concepts are further referred as SX, or S&SX (sustainability and sustainable-X, X for types of development).

Therefore, the conceptual framework SPRAY (Sustainability's PluRAlitY) was adopted to picture plurality of sustainability.

The main objective of SPRAY is to contribute to understanding sustainability and sustainable development in its complexity, acknowledging its plurality and searching for its underlying patterns and logics, as well as a cohesive and intertwined understanding while recognising that a unified concept may never be possible or even desirable (for further reading Lima & Partidário (2020)).

In this section will be described how the conceptual framework SPRAY was designed, and how it drove and structured the analysis around identified characteristics and multiple attributes of sustainability in research's applicability. The results of SPRAY application in this investigation will be presented in Chapter 5.

SPRAY was built based on inductive and deductive approaches, engaging consultations with several scholars in the academia, students in sustainability courses as well as drawing from the most commonly used keywords in the literature review. And reviewing its components after the first trials of its application.

A framework for a systematic review and analysis of the applicability of the S&SX concept was developed, to enable meeting the objective of the framework: look at plurality of sustainability. Thus, SPRAY aims to cover: what translates the plurality of the concept, looking at both interpretations and understandings as well as ways of handling S&SX.
To that end, SPRAY explores:

(i) the most common interpretations and understandings of S&SX;
(ii) how, and in which context, these interpretations and understandings of S&SX, as well as instruments and approaches, are used.

This chapter presents how SPRAY's structure data collection and analyse in the following applications:

(i) Systematic literature review
(ii) Multi Perspective Questionnaire
(iii) Case Studies Perceptions

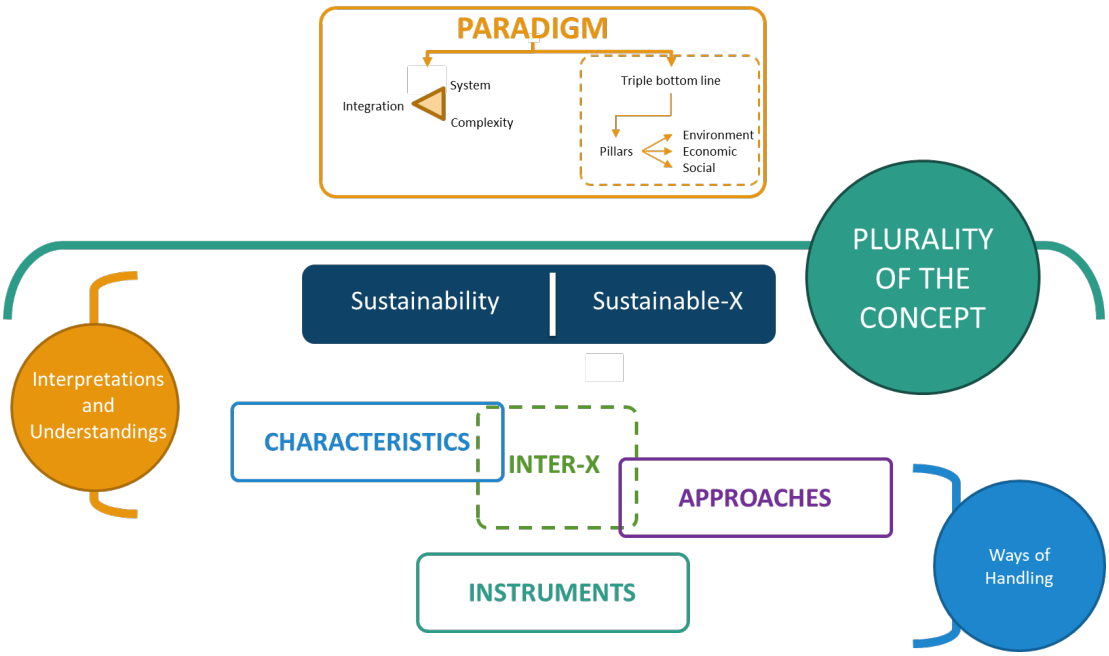
Employing such multiple methods of data collection applying SPRAY allows triangulation of sources information (Guba and Lincoln 1994). Triangulation is fundamental as a strategy for validating findings, and it can be achieved by examining the same phenomenon under study using two or more independent sources of data to increase the credibility and trustworthiness of the investigation (Saunders et al. 2009).

So, the construction and mapping of the SPRAY's keywords followed four sequential steps:

1. A selection based on literature review (as inspiration to select the adopted keywords), experience and perception, led by three main objectives of analysis: plurality; interpretation and understanding; and ways of handling (deal and approach S&SX).
2. The resulting keywords were grouped to create the structure of analysis in four categories: paradigms, characteristics, approaches and instruments (splitting between action-oriented and future-oriented instruments and approaches).
3. NVivo was used to identify the most frequent keywords in the sample (considering 100 top papers in each sector and perspective under analysis).
4. Additional keywords were added following an academic discussion with colleagues on results so far achieved.

That structured SPRAY in four categories of analysis: (i) paradigms, (ii) characteristics, (iii) approaches and (iv) instruments (Figure 4.2). Because of the numerous keywords starting with "inter" as a prefix, the inter-X (further described) was adopted as a concept in the research to group that range of keywords, and which can be characteristics or approaches. The differences in relation to how the terms S&SX are used in the literature was also analysed.

Figure 4.2 – SPRAY's main categories



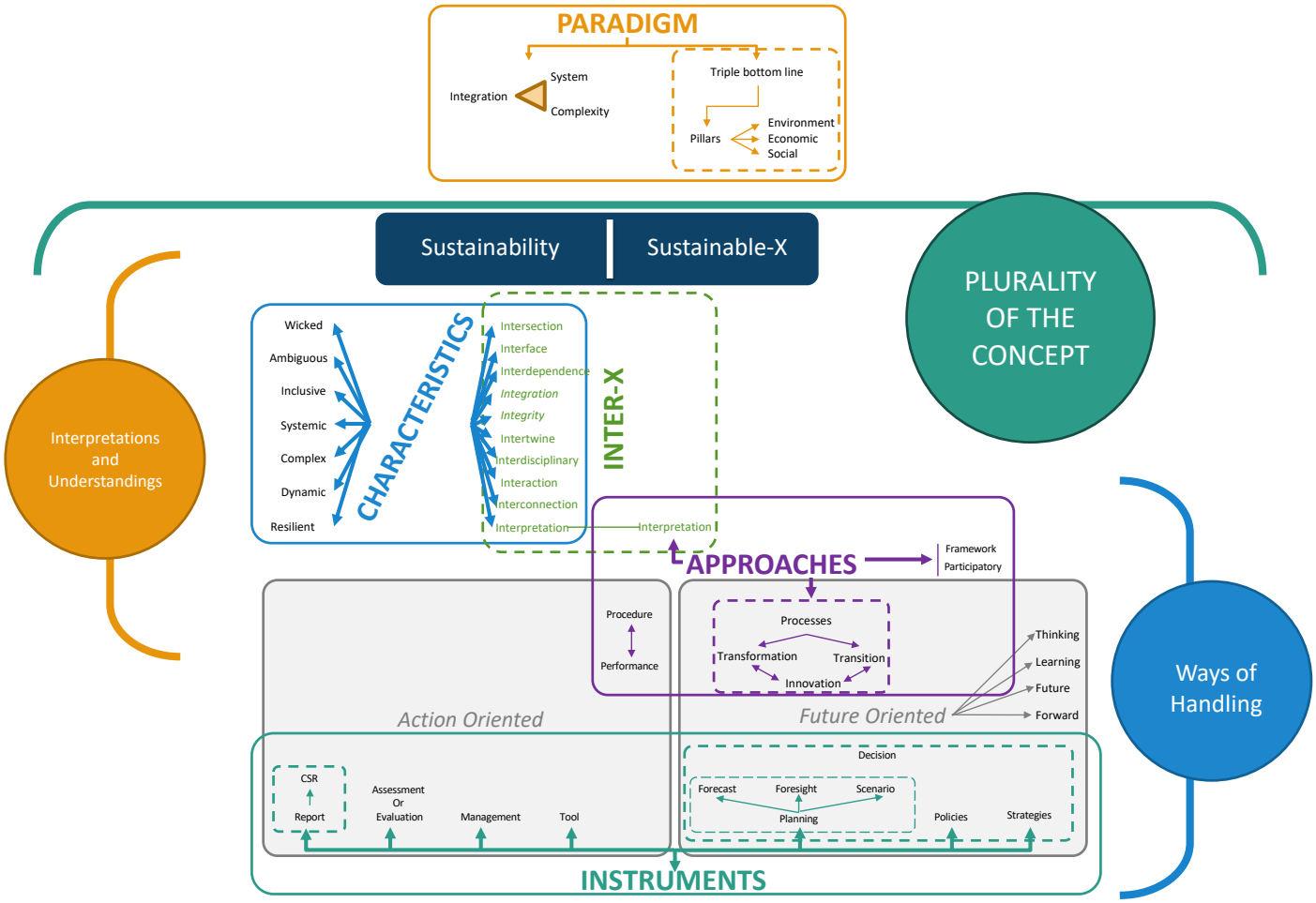
4.3 SPRAY's categories

A word-map of 48 keywords related to S&SX was detailed in the framework to enable the systematic analysis of the sampled papers (as represented in Figure 4.3).

The tactic followed was the building block for literature search suggested by Booth (2008). This tactic asks researchers to (i) dissect a topic into constituting elements, (ii) devise potential terms for each element and (iii) combine resulting building blocks.

With the resulting set of keywords, a cross-related analysis was conducted. Keywords of the same family (e.g. complexity and wicked), or with the same root (e.g. complex and complexity), were cross-related in the different categories (characteristics, paradigms, approaches, instruments) and its frequency observed in comprehensive literature review.

Figure 4.3 - SPRAY's word-map



A total of fifty keywords were used to carry out the mapping. This includes 'Sustainability' and 'Sustainable-X' as the core keywords that would then have in its vicinity at least one of the other 48 keywords. These 48 keywords express possible descriptors, attributes, properties or any other way of relating or handling S&SX.

4.3.1 Sustainability and Sustainable-X

The X in Sustainable-X represents a multitude of possible thematic applications of sustainable development, where sustainable acts as an adjective (such as sustainable consumption, sustainable transports, sustainable cities, etc.).

When reviewing the literature, it seemed that the two keywords – sustainability and sustainable – appeared to be used interchangeably quite frequently.

According to the online Oxford Dictionary of English regarding the category of the word, sustainability is a noun while sustainable is an adjective. Discourse analysis was then used in an aleatory sample of 50 papers to try to understand the function of the two keywords and why "sustainability" is more frequently used than "sustainable". Results suggest that sustainability is used with a double sense (and hence why more frequent): as an object (such as in sustainability management or the management of sustainability), but also as an attribute (as in "sustainability in management"). Sustainable appears to be used basically as an attribute, as in sustainable development or in sustainable-X (such as sustainable management, sustainable cities, etc.).

This confirms a previous assumption that sustainability appears to be used to express places, things, states, qualities or an idea of the ability to be sustained and supported (as a name to refer to objects), while sustainable appears more as an adjective associated to actions, systems or processes, as a modifier of a noun, to indicate its quantity or extent (Gray, 2010; Partidario et al., 2010). It also can be interpreted that these results in the sense that perhaps the literature places more emphasis on the idea of sustainability as an objective that requires action, then on the demonstration of the actual action as sustainable-X.

4.3.2 Paradigms

The content analysis undertaken applied also to the search for a multiplicity of viewpoints that could express the preference for the two dominant paradigms in S&SX as discussed in chapter 2: the widely popularized TBL and the integrative or intertwined understanding of sustainability that acknowledges complex and systems thinking.

4.3.3 Characteristics

The content analysis on the category Characteristics of S&SX used the following seven keywords: Wicked, Ambiguous, Inclusive, Systemic, Complex, Dynamic, Resilient.

The keyword Wicked, which could be argued is often used to refer to complex systems, and to complexity (Andersson, 2014; Espinosa & Walker, 2011; Hales & Jennings, 2017; Vildåsen, 2017; Willamo et al., 2018). So, although it is not so common in S&SX it is possible to assume that wicked, perhaps, is still an emerging keyword and a less known concept.

4.3.4 Inter – X

As argued by Gibson (2006) the constituent dimensions of sustainability are epistemologically different and it is not always easy to cross-relate them, considering their interdependencies for an effective integration. In addition the established fragmented knowledge of expert capacities, trained separately in social, economic and ecological fields (Gibson, 2006), may impede or limit integratedness (Hacking & Guthrie, 2008).

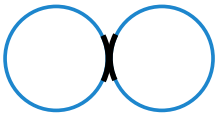
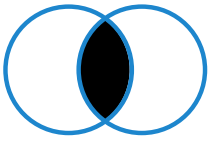
It is important to emphasize the need in S&SX to establish new forms of conceiving development and looking into the future, which require changing practices and mindsets.

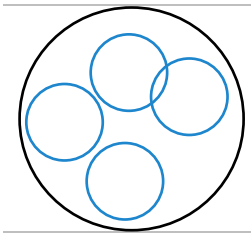
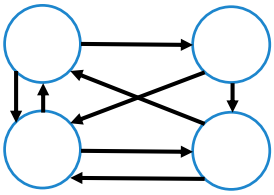
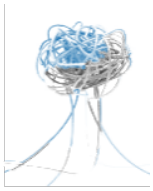
As already outlined above in the literature reviewed (Chapter 2), when addressing the ambiguity of S&SX, often there are no changes in the political or business agendas despite visible subscription of treaties or agreements for sustainability. It is possible that this happens whenever there is no major change in practices, strategies and philosophies, persisting standard ideas and convictions, despite new terminologies being adopted.

Several words that share the prefix INTER are among the most popular words in S&SX. It includes: Integration, Integrity, Intersection, Interface, Interdependence, Intertwine, Interdisciplinary, Interaction, Interconnection, Interpretation. "Inter" is a prefix that expresses relationship, and systems, and hence why this research highlights this set of INTER-X keywords, with core differences. It is recognisable that the words "integration" and "integrity" do not start with "inter", but they were also considered in the INTER-X category because they reflect the spirit of an integrative approach and only miss the letter "r".

The description of the eight INTER-X, in the context of sustainability, is presented on the following table (Table 4.1).

Table 4.1- Understanding the eight INTER-X

Interface 	A surface as the common boundary of two bodies, spaces, or phases. May include the facts, problems, considerations, theories, practices, etc., shared by two or more disciplines, procedures, or fields of study. Lehtonen (2004) discussing the social aspect of sustainability, argue that the key challenges of sustainable development reside at the interfaces—synergies and trade-offs—between its various dimensions.
Intersection 	Any place of overlap or the act or fact of intersecting. Sustainability is often taken as the intersection of social, economic and ecological interests and initiatives, as Bansal (2005) or White (2009) stated in relation to corporate sustainability.
Integration	An act or instance of combining, or integrating, into a whole (a religious, or ethnic group; an organisation, place of business, etc.). In Psychology it is understood as the organisation of the constituent elements of the personality into a coordinated, harmonious whole.

	Gibson (2006) refers to sustainability as an essentially integrative concept.
Interaction 	Reciprocal action, effect, or influence. The direct effect that one kind of particle has on another Baumgartner (2011) refer that sustainability problems are concerned with many different disciplines, the interactions of which are of high complexity.
Interconnection 	Connect with one another (eg public telephone network). The interconnected parts in systems determine the behaviour of the system as a whole (Merali and Allen, 2011). The value of a systems thinking approach to sustainability springs from considering and understanding the dynamic interconnections between actor's networks across scales in systems and sub-systems. Williams et al. (2017) and Merali and Allen (2011) conclude that this approach is crucial for the management of complex systems in order to achieve sustainability.
Interdependence 	The quality or condition of being interdependent, or separate but mutually reliant on each other (eg Globalization of economies leads to an ever-increasing interdependence of countries). WCED (1987) introduced sustainable development as a way whereby human socioeconomic needs can be met in harmony with environmental issues, given their strong interdependence.
Intertwine 	As a strong thread composed of two or more strands twisted together. As an act of twining, twisting, interwinding or interweaving. Gibson (2006) says that in the pursuit of sustainability, the means and ends are intertwined and the process is open ended Partidario et al (2010) refer to drivers reflecting the integrative, and interweaving, understanding of relevant conventional themes, enabling objectives and dialogues for a sustainable throughput
Integrity	Adherence to moral and ethical principles; soundness of moral character. Also understood as the state of being whole, entire, or undiminished (eg to preserve the integrity of the empire). Waas et al. (2010) refer to sustainable development as the best way to address complex and interrelated problems for the integrity of the planet.

4.3.5 Approaches

Academic publications in S&SX establish frameworks for actions, and that many engage innovations. Transition processes for S&SX, as well as on participative change and transformative processes, and a moderately low concern with exploring possible different interpretations of sustainability. This can reveal that the sense of urgency that justifies a whole body of literature on transformative actions and transition processes for sustainability (de Haan, Rotmans, Hans de Haan, & Rotmans, 2011; Farla, Markard, Raven, & Coenen, 2012; Gliedt, Hoicka, & Jackson, 2018; Johnstone & Newell, 2018; Khalili, Cheng, & McWilliams, 2017; Loorbach, Frantzeskaki, & Meadowcroft, 2009; Loorbach & Wijsman, 2013; Silva & Stocker, 2018; Turnheim & Nykvist, 2019) is not yet in the full stream of the S&SX literature.

4.3.6 Instruments

Literature on assessment and evaluation of performance and management, offers a mostly operational perspective, while the use of futures thinking instruments are apparently less frequent. Which can be perceived as paradoxical.

This argument is based on the assumption that the future-oriented nature of S&SX would normally require more long-term systemic approaches, and capacity driven processes, guided by strategic management for sustainability, including essential factors in transition processes towards sustainability (Partidario et al., 2010).

Various instruments linking corporate performance to S&SX include eco-efficiency/eco-effectivity, cleaner production, industrial ecology, life cycle assessment, the Global Reporting Initiative, corporate social responsibility or the ISO 26000, exemplifying efforts with the measurement of sustainability, even though there does not seem to exist a universally agreed method for measuring sustainability (Searcy & Elkhawas, 2012).

4.4 SPRAY's applications

Enduring the aim of the framework to look at the plurality of sustainability in different contexts (environments, perspectives and settings), not in a comparable manner but to capture a variety of realities. SPRAY was applied on different sources of collecting data to understand how to sustainability is expended.

This conceptual framework aims to facilitate the understanding of sustainability and sustainable X in its complexity, acknowledging its plurality and searching for its underlying patterns and logics.

As previously mentioned, this framework is a continuum of perspectives itself and was used in this investigation as an electrode to data collection. To that end, this investigation applied SPRAY to (i) systematic literature review to look at the academic setting (ii) a questionnaire to a pool of different organisations, and (iii) interviews for case study in-depth analysis.

The first application of SPRAY was a content analysis on a sample of academic papers, as previously referred, that developed the first results and also contributed to the construction of the framework providing robust and validation of the primary design and translated direct word mapping.

SPRAY does not work in a linear manner, the second and the third application of SPRAY to look at plurality was to a questionnaire and cases studies (through interviews), in this cases SPRAY guide and structured the sources of data collection.

The following sections provide detail for each application.

4.5 SPRAY's Application - Systematic Literature Review

This investigation undertook a comprehensive literature review on sustainability and sustainable development using content and bibliometric analysis.

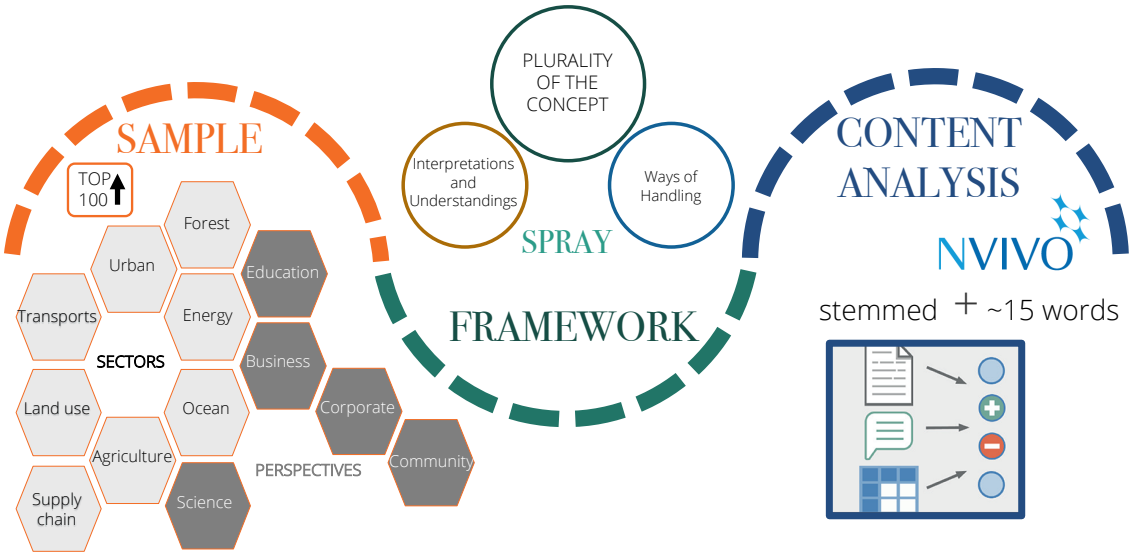
A systematic research methodology was used (Saunders et al., 2008; Tranfield, Denyer, & Smart, 2003) to ensure the consistency and quality of the work developed and to provide a suitable examination of the decisions, procedures, and conclusions taken. The content analysis of the sampled papers was done using NVivo software with SPRAY's word-map (Figure 4.3).

Using Nvivo as the instrument, and considering the categories above, the collected sample was analysed by finding the number of times these keywords appear in the sample, near the word sustainable or sustainability. To this end, Nvivo queries were prepared using the functions "exact matches" (e.g. "talk") or "stemmed words" (e.g. "talking") and using the neighbourhood of 15 words from the word sustainable or sustainability (Figure 4.4).

Keywords were further defined to apply cluster analysis to collected papers for each topic. Sustainability and Sustainable were the starting keywords – SPRAY's categories. These two different expressions appeared often with sustainability as a noun and sustainable as an adjective to development, or to multiple other themes (hence why the use of Sustainable-X).

The keywords were then selected for each category identified in (Figure 4.3) to conduct the search associated with each topic (sample detail in the next section). Through Nvivo it was possible to obtain the frequency of the appearance of a SPRAY keyword next "sustainability" and "sustainable". For each automatic result the reading of the full sentence was preformed, enabling discourse analysis.

Figure 4.4 - Research methodology applied on literature review



4.5.1 Sample - 1.292 peer-reviewed publications

The literature review was extensive, but not exhaustive, which would be an impossible task. Therefore, several filters were used to select the sample for analysis, the research methodology is illustrated in Figure 4.4.

For material collection, only papers or book chapters written in English and published in peer-reviewed journals, with no limit on the date range, were considered. The papers' selection was made through an initial search using the Science Direct Data Base (logged with University of Lisbon protocol access), with papers ranked by relevance. The access to the website and the final updated set of data for the review was compiled in July 2017.
Although the Science Direct Data Base provides a broad coverage of the academic literature it does not cover all peer-reviewed publications, consequently it is possible that relevant papers may have not been selected.

Since searching for peer-reviewed publications based on only two keywords (sustainability and sustainable) would result in a gigantic number of papers, it was necessary to introduce topics to recognize different contexts and perspectives and meet the proposed objectives. Thirteen different topics were selected to analyse how sustainability and sustainable development were used in the literature. These topics include 8 sectors: Urban, Energy, Transports, Land use, Agriculture, Forest, Ocean, and Supply chain, and 5 perspectives: Business, Corporate, Community, Science, Education. The rationale for this selection is primarily based on the authors academic background and work experience aiming to be wide in coverage, addressing the most popular themes in sustainability and sustainable development, however enabling cross-related analysis.

The procedure for collecting the sample for analysis involved a search of the top 100 papers (more relevant according to the ScienceDirect website algorithm) that included the keywords sustainability and/or sustainable, to which one of the 13 topics was added. Those 100 papers were downloaded for further analysis in a total of 1300 papers. The following search filters applied (Table 4.2).

Table 4.2 - The search filters applied

FILTERS	SEARCH FILTERS APPLIED	EXAMPLE: THE TOPIC: "URBAN"
Keywords	"Sustainability + Sustainable + *TOPIC*"	"Sustainability + Sustainable + urban"
Article Type	Review article, Original research, Book chapters	Review article, Original research, Book chapters
Sorted by	Relevance	Relevance
Search results		107.981 results

The same procedure was applied to all the 13 topic areas. The first 100 more relevant articles for each topic, according to the ScienceDirect website algorithm, as mentioned, were downloaded for analysis.

In the few cases where access to articles required subscription, and the packs of 100 articles could not be entirely downloaded, the sample was smaller. Table 4.2 shows the number of encrypted articles that were included on the top 100 more relevant articles, and the total number of the downloaded sample for each topic.

Table 4.3 - Number of articles that were encrypted and final sample of each topic

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Original sample	100	100	100	100	100	100	100	100	100	100	100	100	100
Encrypted	4	0	0	2	0	0	0	0	0	0	1	0	1
New sample	96	100	100	98	100	100	100	100	100	100	99	100	99

A first screening applied to remove the encrypted papers and 1292 papers were identified and downloaded as the sample for analysis. To which the NVivo software applied, separately, to each group of papers under the 13 topics. The results presented on Chapter 5 are the sum of the results of the different 13 groups (not been aggregated in NVivo, only in results analysis).

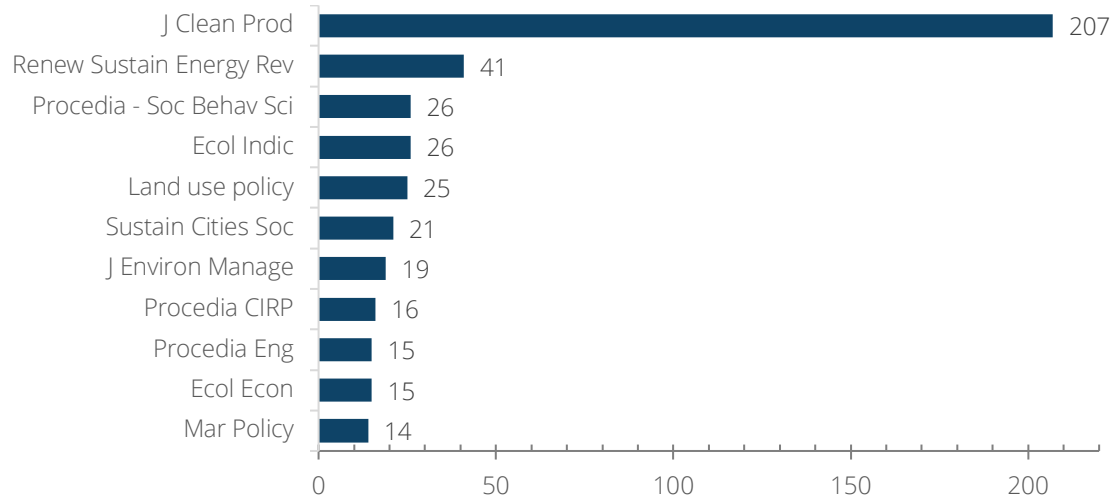
Consequently, each of the 13 groups of papers eventually include repeated papers, following the ScienceDirect relevance in different topics (Figure 4.5).

This means that only 830 different papers were actually collected although it was consider 1292 papers as the full sample used in the analysis. Interestingly only one paper (Bebbington, Russell, & Thomson, 2017) was found in the top 100 (according to *Sciencedirect*) in 12 of the 13 topics of analysis (only missed in the Supply Chain topic).

In terms of bibliometric analysis, 80% of the 830 papers were published in 2016 and 2017 (Figure 4.5) with most papers published in the Journal of Cleaner Production (25%) followed by Renewable and Sustainable Energy Reviews (5%) and Procedia-Social and Behavioural Sciences (3%) (Figure 4.6). Surprisingly the journals Sustainable Development, Sustainability and Sustainability Science have not shown among the top 100 papers (according to ScienceDirect) in each topic, possibly because of the ScienceDirect algorithm for rating papers.

Figure 4.5 - Frequency of papers by number of times that it repeated (graph on the left) and by publication year (graph on the right)

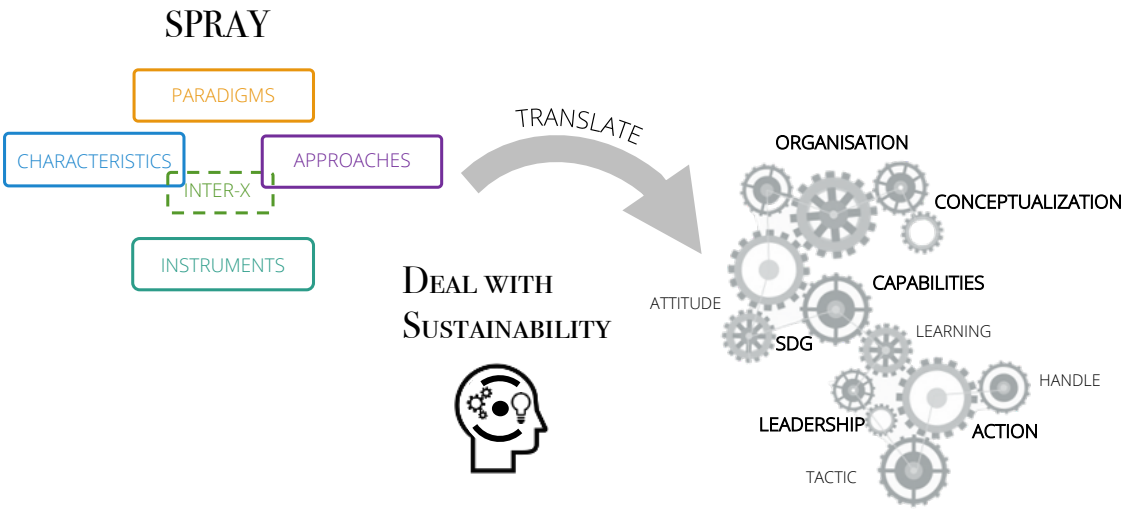
Figure 4.6 - Frequency of papers by the most frequent publication journal



4.6 SPRAY's Application - Multi Perspective Questionnaire

To collect systemic reflections on sustainability from organisations was created a questionnaire. The questionnaire was built based on SPRAY relevant topics that were validated through the literature review. The effort was on how to groups of keywords could be translated to organisation semantic, in order to capture in what way organisations, deal with sustainability (Figure 4.7).

Figure 4.7 – SPRAY influence on the questionnaire's topics

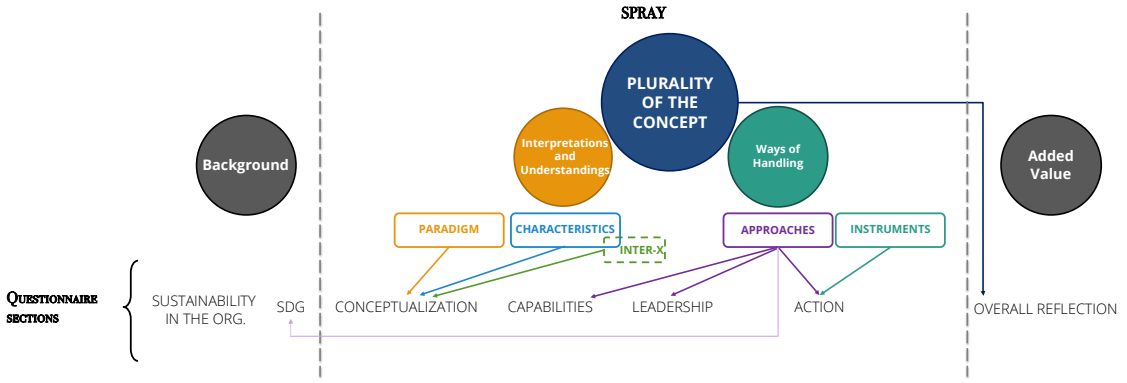


The questionnaire aim is about organisations' perspectives on sustainability integration, so the SPRAY application was an effort to translate how groups of keywords could be converted to organisation semantic, in order to capture - in what way organisations deal with sustainability.

The questionnaire is composed in nine sections (Annex 4A and B): (1) personal data, (2) identification, (3) sustainability in their organisation, (4) sustainable development goals (SDG), (5) Conceptualisation, (6) leadership, (7) capabilities, (8) action and (9) closing section.

In this chapter, is presented the sections (1) and (2) in the questionnaire sample-. Considering that in the questionnaire sections, Figure 4.8 presents the relation between the SPRAY's categories and the questionnaire sections.

Figure 4.8 - SPRAY's categories relation to Questionnaire sections



The SPRAY four categories (paradigms, characteristics, approaches and instruments) were converted in following questionnaire sections: (i) personal data, (ii) identification, (iii) sustainability in their organisation, (iv) sustainable development goals (SDG), (v) conceptualization, (vi) leadership, (vii) capabilities, (viii) action and (ix) closing section.

The first two questionnaire sections (i and ii) were about characterization on the organisation and the individual that was answering and had the purpose to give a context. In section iii the questions were about the relation between the organisation and sustainability (contribution, involvement, constrains, ...). In section iv was also about the relation between the organisation and sustainability but was specifical about SDG.

Conceptualization (section v) was the most literal translation form SPRAY, it captures paradigms and characteristics aspects from the framework. Anchor to the ability to understand the concept were leadership styles (section vi) and capabilities (section vii).

Section viii (action) was created based on SPRAY's approaches and instruments, and is focus on how, who and what is taken in account on actions for sustainability developed in the organisation.

The questionnaire ends on three topics, the ability to relate sustainability with Covid-19 pandemic, the added value on sustainability, and if the questionnaire contributed to thinking about sustainability differently.

Thirty-five (35) questions were included in the questionnaire (most of them mandatory), and included a variety of question types, open and closed questions, with ratting, multiple and single choices.

The results will be presented using the graphical representation of the data in Chapter 5.

4.6.1 Sampling selection

For all non-probability sampling techniques, the issue of sample size is ambiguous and, unlike probability sampling. Rather the logical relationship between sample selection technique and the purpose and focus of the research is important, generalisations being made to theory rather than about a population (Patton, 2002, cited in Saunders, 2009). Consequently, the sample size is dependent on heterogeneous realities to picture perceptions.

And because of this purpose, the sample techniques that were used were all based on suitability on exploratory research needed and difficulties in identifying best cases.
Thus, to find out, what will be useful, what will have credibility and what can be done within available answers, was used data saturation.

The questionnaire was answered exclusively via the web, hosted at Google Forms, considering that the targeted recipients would be well familiar with online tools, and was available in two languages: Portuguese and English.

E-mails were sent to 50 organisations whose contact was obtained through the collection, personal contacts, internet pages and other media sources. It also was disseminated in a website and social media like LinkedIn and Facebook, and sent by e-mail, sms and WhatsApp. Adding to that, the last page of the questionnaire suggested to send the questionnaire to other organisations enabling the snowball effect for sampling.

To obtain cognitive access to appropriate data to a large number of organisations was applied the following strategies to gain access (Saunders et al., 2009):

- ensuring the researcher is familiar with and understand the organisation or group before making contact;
- allowing the researcher sufficient time;
- using existing and developing new contacts;
- providing a clear account of purpose and type of access required;
- overcoming organisational concerns;
- highlighting possible benefits to the organisation;
- using suitable language;
- facilitating replies;
- developing access incrementally;
- establishing credibility;
- being open to serendipitous events.

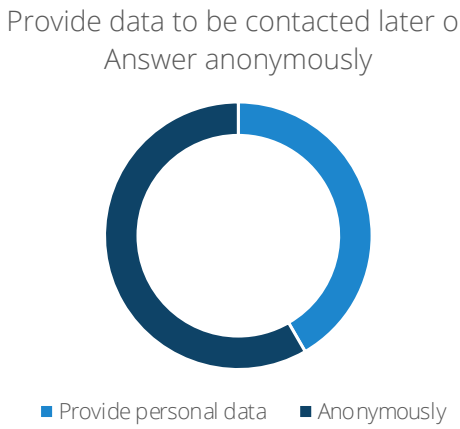
The questionnaire was carried out between 1st of July until 15th September 2020 and was obtained 60 answers.

4.6.2 Sample - 60 questionnaire responses

The questionnaire was open to be answered by all kind of organisations (academy, consulting public administration, companies, industries, NGOs and others), from technical staff to senior staff, to top management (including executive management or administration).

The questionnaire follows the Regulation (EU) 2016/679 of the Parliament and of the Council, of 27 April 2016, on the protection of individuals concerning personal data processing and the free movement of such data. Thus, it starts with a confidentiality message ensuring that the collected data will be used exclusively for the purposes of this PhD research and will not be shared by the researcher for other purposes. Nonetheless, participants were provided with two options on how to answer the questionnaire: (i) anonymously or (ii) providing personal data in case they wanted to be contacted later in terms of the questionnaire results and PhD research. Figure 4.9 shows that 40% of the respondents chose to provide personal data, while 60% answered the questionnaire anonymously.

Figure 4.9 – Results on providing data to be contacted later or answer anonymously

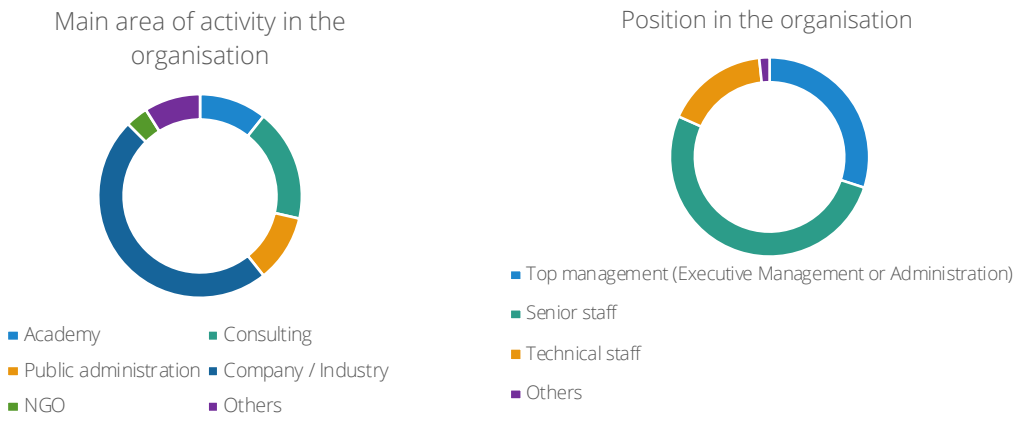


In total, 60 answers were collected comprehending different types of activities (such as Company or Industry (48%), Consulting (18%), Academy (11%), Public administration (11%) NGO (4%), and Others (9%) - that includes bank, small businesses such as design and communication business or small establishments as in a grocery.

In Figure 4.10 is represented the position that the person responding to the questionnaire holds in the organisation. It is possible to observe that the majority of the respondents correspond to senior staff (26%) and top management (15%) of their organisations.

Most of the sample organisations have activity in Portugal (80%), although most are not Portuguese organisations. As for their contribution to sustainability, 90% of the people who responded perceived that the organizations, where they work, actively contribute to sustainability.

Figure 4.10 – The main area of activity in the organisation and the position that the person that responded to questionnaire hold in the organisation



4.6.3 Data analysis

In terms of data analysis, once the online questionnaire deadline passed google forms enable to export all responses to a spreadsheet format (.xls).
Because the questionnaire was carried out in two languages a merge data process was carried out.
The data was afterwards transferred into Microsoft Excel and more analyses and calculations were done, as well as tables and figures created.

Regarding the open answers, the approach was to create a cloud-word with Nvivo software. With the help of that result, were grouped the answers in clusters, after the clusters were created, the same statistical analysis was applied as if the clusters were answered options.

4.7 SPRAY's Application - Case Studies Perceptions

SPRAY's application on Case Study explored the perceptions of three different organisations about the plurality of sustainability. The three cases selected were an NGO – Instituto Marquês de Valle Flôr (IMVF), an agriculture company – Esporão and a start-up Natural Business Intelligence (NBI).

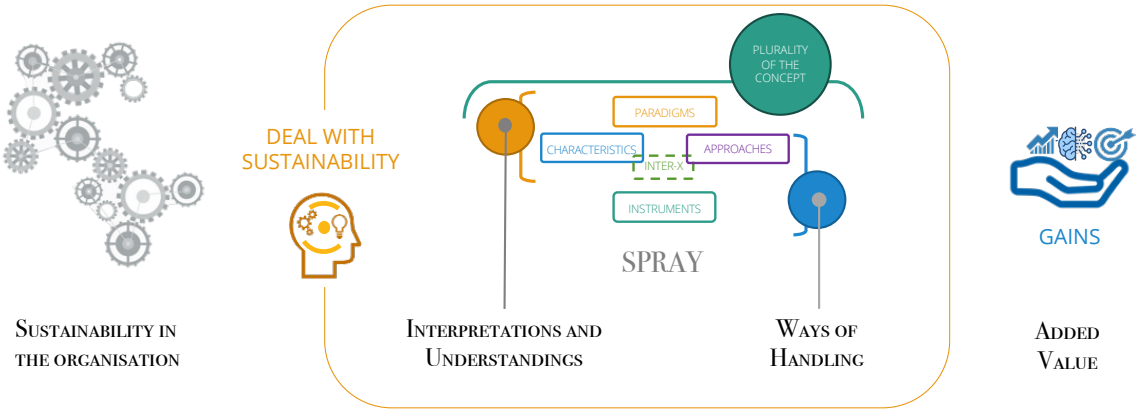
These three cases share activities on the agriculture sector, and that was a relevant point in its selections, because that is the economic sector with more dependence of natural resources, and it enables a deeper understanding of sustainability, which helped with the time-constrains of the research.

So, in this last application of SPRAY's framework it is intended to translate into a practical plan of how the conceptual questions (explored in the questionnaire) are applied.

Also aligned with SPRAY's themes, the data collection and analysis focus more on how plurality is translated to the practice in the organisations, thus the focus is not only on the organisations but specifically about an initiative (project/ plan/ mission/….). For that data was gathered from the questionnaire and complemented with the semi-structured interviews.

To illustrate how these sources of data deal whit sustainability it is considering four elements: (i) sustainability in the organisation, (ii) the interpretations and understandings of sustainability, (iii) the ways of handling sustainability and (iv) the added value of sustainability . The interpretations and understandings of sustainability and the ways of handling sustainability constitutes SPRAY's framework.

Figure 4.11 – Data analysis themes to apply on case studies



To capture the organisations perspective and the cases perceptions SPRAY need to be complemented with context and background, so the first element - sustainability in the organisation- contains the section of the questionnaire's first part and is complemented by the SDG, providing more background. The second element considers the conceptualisation of sustainability and how capabilities and leadership can enable that.

Following the Ways of Handling, that includes the instruments and tools used, complemented with practical experience in terms of action to sustainability. Moreover, the last element has to do with the recognition of the added value of sustainability.

4.7.1 Data collection

Case study methodology has relevant characteristics like the potential for learning through cases: *"the case study produces precisely the type of context-dependent knowledge which makes it possible to move from the lower to the higher levels in the learning process"* (Flyvbjerg 2001: 71).

According to Yin (2003), a case study also helps in research that is centred in answering questions like "how" or "why", the author also underlines that case study can be exploratory, explanatory, and descriptive (ibid). In this research, the use of case studies aimed to be explanatory, by explaining how initiatives address sustainability.

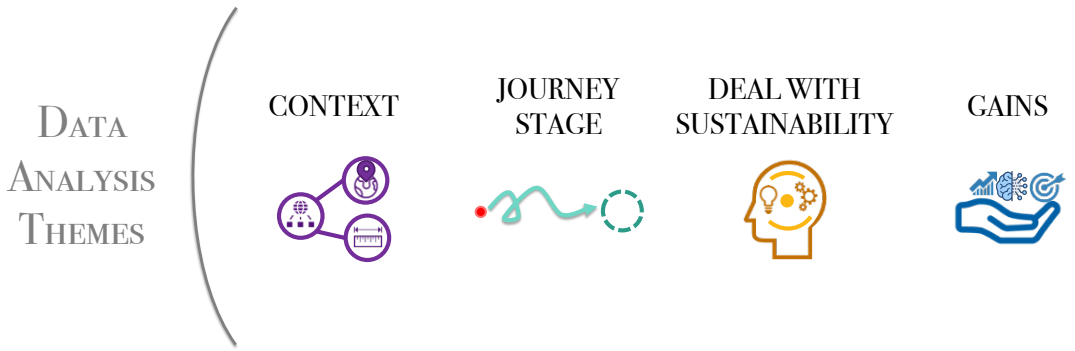
In this way, this research was based on subjectivism-objectivism ontology, with the construction and validation of knowledge on an interpretative epistemological paradigm. It has an exploratory purpose in a deductive perspective. This is qualitative research using a strategy based on grounded theory and a case study.

The data collection was structured in the four themes (Figure 5.27): (i) context, to illustrates the characteristics of the organisation and the initiatives (ii) journey stage, aims to give a time-line of the process of these initiatives, (iii) show to deal with sustainability, supported by SPRAY's framework crosses the results from the questionnaire and the semi-structured interview, (iv) the gains are about the lessons learned and the recognised add value of sustainability.

The questionnaire results from the three cases are presented on the Annex 5. C.
For a closer look, semi-structured interviews were elaborated to address how specific projects, plans or another kind of initiatives address sustainability. In this way, SPRAY will collect data focus more on practice and beyond organisations perceptions (provided by the questionnaire).

In terms of data, there were four themes that assemble the cases (Figure 4.12): (1) context of the organisation and the initiative; (2) journey stage that describes the initiative and its stage of development; (3) how it deals with sustainability, exploring the SPRAY topics; and (4) what are the identified gains, in terms of impact and the learning points.

Figure 4.12- Case study data collection and data analysis themes



4.7.1.1 Case Studies' time horizon

In terms of agent collaboration, it could be argued that the research strategy in this stage was between case study and action research. But as (Coughlan & Coghlan, 2002) described that action research has substantial differences between consulting, and the collaboration, and in the first two cases the approach was primarily consulting. In the last case, it was not possible to have any kind of interaction in the case study initiative because it is a start-up with little time of being.

The same authors specify that consultation is frequently linear (engage, analyse, act and disengage) and action research is cyclical (gathering and analysing the data, planning action, taking action and evaluating, leading to further data gathering and so on) (ibid). "*In action research, the investigator virtually becomes part of the arena being studied with the purpose of solving organizational problems*" (Bryman, 2003:155)

For many researchers the basic ideas relating to action research are too close to a consultancy role, however, action research is explicitly concerned to develop findings that can be applied in organisations, a position that contrasts with the peripheral relevance to organisations that much organisational research exhibits (ibid).

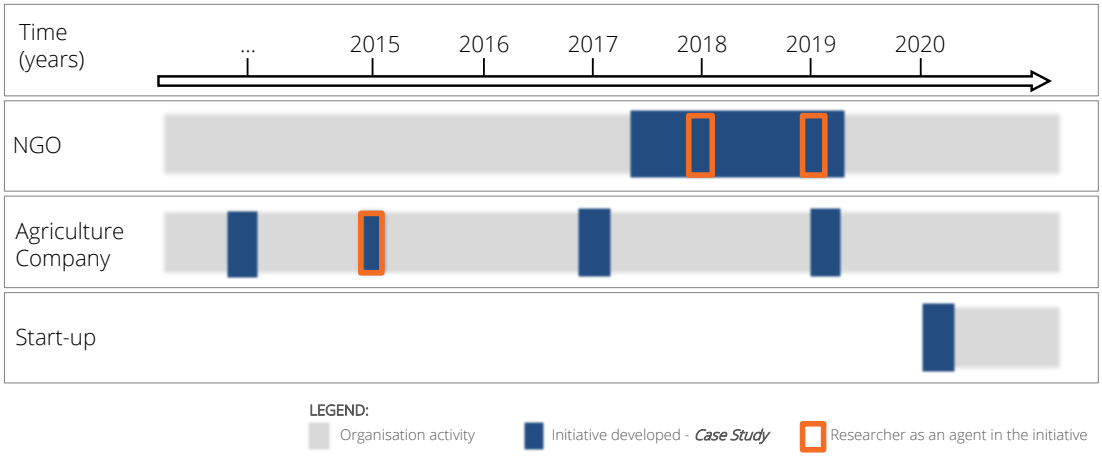
Therefore, it is recognized the researcher as an agent in the initiatives that are analysed in the case studies research. It is also acknowledged that on interactions in the first two cases occurred most of the described steps in action research ((1) a pre-step: to understand context and purpose; (2) six main steps: to gather, feedback and analyse data, and to plan, implement and evaluate action; (3) a meta-step to monitor) (Coughlan & Coghlan, 2002): 230).

But because the interactions fail to deliver some aspects of action research, especially because the interactions emerged on consultancy and were not framed in a protocol to explicitly stating the purpose, clarifying the dilemma, sharing assumptions and generates emergent theory to the organisations.

Overall action research necessarily stretches beyond a consulting relationship, though it may overlap and can begin there, to engage more systematically with knowledge creation (Huang, 2010):95) and that only occurred in the PhD research and not the interactions within the organisations.

In terms of time horizon each case has a different horizon, so to clarify these concepts (Figure 4.13) present the organisation activity, the initiatives that will constitute the case studies and the researcher interactions with the cases, not to collect data, but to perceive the relevance of the cases and establish relations that facilitate data collection (questionnaires and semi-structed interviews).

Figure 4.13 – Case Studies' time horizon



4.7.1.2 Semi-structured interviews

The semi-structured interviews were elaborated as a sequence of the questionnaire.

Each interview was applied to the organisation after submitting the questionnaire, following that, the organisation's responses were reviewed. It was also considered any kind of information available on the internet or on previous knowledge gathered in prior interactions.

Thus, the interviews started with follow up questions or clarifications of some answers from the questionnaire or from the of information available on the internet, if needed.

The semi-structured interview guide for cases studies follow the subjects and guidelines summarized in Table 4.4.

Table 4.4 - Subjects and guidelines for the semi-structured interview

Subjects	Guidelines
Specific initiative	Project/ Plan/ Mission/….
	Journey stage
Approach	Start of the initiative (when, where, why, and how – aims and goals, values)
	Triggers and motivations for starting the initiative
	Ways of thinking
Actors	Main responsibility for the idea of the initiative, main responsibility for the implementation, and decision-making structure
	Actors/Members /teams/ beneficiaries
	Most important actors who played significant roles (as enablers and blockers) and why
Capabilities	Capabilities
	Training activities: Is needed / For what purposes / By whom
Tools	tools
	Channels of communication within the initiative: to disseminate news and events, to disseminate learning outputs and practices
Impact	Contribution to sustainability
	Impact of the initiative until now
Learning	Innovation
	Monitoring and evaluation procedures in place, and its purpose
	Learning points from the initiative's
	Things that could have been done differently
	Changes over time in aims and goals, strategies and efforts
	Advice to action

The interviews were carried out in August and September of 2020, using online applications for videoconference meetings, such as Zoom and Microsoft Teams, using record options to transcribe the interview.

After the transcription the codding data process was preformed, as detailed in section 3.6.2.

4.7.2 Sample - 3 Cases

4.7.2.1 Cases context

As previously explained, the three organisations have different types of activity. Here is a brief description of the organisation, the initiative that focuses on analysis and the actors that provided the data.

Instituto Marquês de Valle Flôr

Created in 1951 as a private institution of public benefit, the IMVF is a Foundation for development and cooperation, having started as an NGO in 1988 in São Tomé and Príncipe. From the 1990s onwards, expanded their activities to other countries, with a predominance of Portuguese-speaking countries. In 2017, they again extended action to new geographies in Africa and Latin America. The results achieved have made the IMVF a reference NGO in the fields of cooperation and development.

The initiative studied was a project to operate on a territory in precarious situation - Komo in Guinea Bissau, since the populations depend essentially on rice crops, and in the years immediately before there were several saltwater invasions on the crops, there were no longer any means of subsistence.

That project was initiated because the IMVF was aware of that region's near-emergency state and soon was able to have a fund from the European Union. As a coordinator in Guinea Bissau, had the discretionary decision to apply the fund.

The initiative began with an innovative approach, notably distinct from the project funded in African territories, where IMVF would not pay to the communities. The strategy was to help share knowledge, pay for the required materials for the rehabilitation of rice crops, and invest in being present and creating trusting relationships with the community.

The data was provided by technical staff, one off the Portuguese headquarters that provide more institutional data and another as the initiative project coordinator and IMVF representative in Guinea Bissau who provided details about the initiative.

Esporão

Esporão started off in 1973, in Alentejo, Portugal, from "the unconditional desire to make the best wines". That motivation remains at the base of everything they do, now extended to other products and territories. Developing in this company mission: Making the best products that Nature provides, in a responsible and inspiring way.

Esporão believes that companies should be at the service of society, and not the other way around. Therefore, they try to be responsible in the way of developing their activity. This responsibility is neither abstract nor just collective: it is individual, of each one who makes part of Esporão.

The data presented on this research was provided by the Esporão CEO, that started as CEO the transformation process to a biological approach, in 2006. What made Esporão a case study was in the transition to biological agriculture, the phenomenon of transfer sustainability from a concept present in the strategic plans (in 2008) to integrate into its culture and DNA.

Natural Business Intelligence

Finding opportunities for transformation that allow human progress and the improvement of collective well-being, while natural resources are regenerated, climate resilience is increased, and ecological systems are restored is the motto of NBI.

The start-up recognising a world in crisis, the disappearance of biodiversity, climate change and ecological degradation are symptoms of unsustainable growth, believes that is essential to evolve from "Business as Usual" to "Business as Natural".

The NBI team comprises senior consultants and researchers with long experience in developing strategic, planning and management and innovation projects based on technical and scientific knowledge in ecology, economics, and management, both in business and organisational consultancy.

NBI was set up on March 9, 2020, the last day before Portuguese lockdown due to covid-19 pandemic. Although experience and history are brief, an NBI partner gave insights to this initiative's motivations and beliefs. The analysed initiative is the creation of a start-up to enable sustainability transitions.

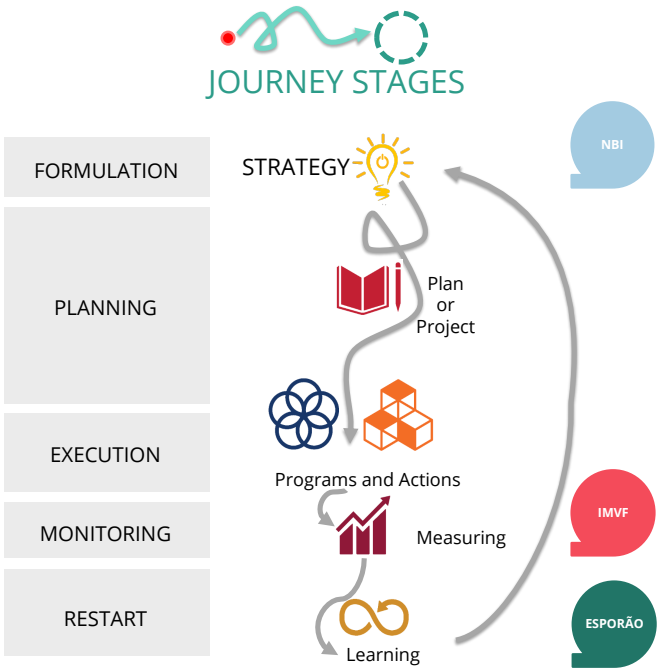
4.7.2.2 Cases Journey Stage

Considering the journey stages of a strategy process, from formulation to implementation considering also the stages for monitoring, assessing and learning the implementation results of the strategy. The stages considered in this research and the initiatives of cases position, are represented in Figure 4.14.

Since the purpose of the case studies was capture heterogeneity, besides the organisations are completely different in scale, type, dimension and experience, the initiatives are also incomparable.

As Figure 4.14 presented, the initiatives are in different stages regarding their journey, and each has singular attributes concerning scale, type, dimension and time-horizon. This difference in these attributes also determinates the extend of the detail provided on the same subjects.

Figure 4.14 – Initiatives on journey stages of implementing a strategy



Instituto Marquês de Valle Flôr

As previously mentioned the IMVF was able to use funds from UE, particularly the flexible fund available in the UE-ACTIVA project, for a Rice Crops rehabilitation in Komo.

So, a set of "bolanhas" (specific Rice Crops) were selected to be rehabilitated. A study was carried out to identify the intervention needs and produce recommendations for rehabilitation, as a result 14 bolanhas were selected for rehabilitation in two phases.

In a first phase, 8 bolanhas were rehabilitated in 2017, with the rest being rehabilitated during 2018. The main beneficiaries of this rehabilitation lived scatterd in 17 small villages. The process began with the mobilization of the communities, creating committees of management and groups to work on the crops, all of the members had training from hydrological specialists. From the project, besides training, the beneficiaries had all the materials that they need to rebuild drainage systems of the crops (specially the dikes) and they also were provided with a seed bank of several species of rice.

The impact assessment of the first 8 crops rehabilitation was conducted in 2018 and aimed to understand what could be improved to the second stage of crops rehabilitation. The impact assessment was focus on the welfare of the beneficiary families in the region.

In 2019, the impact assessment study was applied again, this time to all the beneficiary families of the 14 crops. That study was complemented with an assessment of the rebuilt dikes, meter by meter.

The main results from the assessment studies were that project:

- Reduced vulnerability of crops,
- Reduced need for monitoring the crops, particularly because of the reduce of the risks of flooding, invasion of salt water and destruction of dikes by erosion and animal attacks
- Increased rice production and productivity
- Increase in the amount of rice produced per household, and financial power
- Reduce food shortage
- Contribution to create new economic dynamics, in trade on the local market
- Contribution to the settlement of the population
- Promote gender equality, particularly on the distributions of tasks and responsibilities
- Collective participation in the rehabilitation intensifies the sense of community
- Conflict reduction because of the committees of crop management
- Awareness of the importance of the biodiversity and consequences of deforestation and degradation of this ecosystems, promoting the rehabilitation of agricultural production areas instead of abandoning them and cultivating in mangrove areas.

Although this project was not design with the purpose to respond to SDG, the studies of impact assessment establish a direct contribution on SDG (particularly SDG1,2,5,8,12,13,14, 15, 16 and 17).

Esporão

In 2008 Esporão developed two plans. There was a strategic plan and a sustainability plan. After that, sustainability started to appear within the strategic plan. The next triennial strategic plans are three cycles of strategic journeys.

The first cycle considers sustainability activities within a specific organisation systematising and planning, and since 2015, one of the pillars of the strategic plan has been sustainability. Nowadays, sustainability initiatives have the same weight, the same type of organisation, and the same treatment as any other initiative.

The knowledge took, and the learning process from how the three strategic plans capture and approach sustainability (12/14, 15/17 and 18/20) is the focus of this case study.

In a way, the learning stage as part of the restart process is not restricted to one loop of the journey, the baggage of knowledge from the previous journeys are absorbed in each strategy process.

Natural Business Intelligence

The focus of this study in this case is the formulation of the start-up.

Facing the same questions of the other cases NBI can answer with a specific background, free from bureaucratic contains form a big structed or history, this project was born in a particular moment of times (covid-19 world pandemic) with the urges to create possibilities to transformation.

The insights provided form this case aim to show how a new generation of business formulates a sustainability strategy. As new strat-up NBI is free of the constrains from a big structurer or heavy culture and history that can limit transformation.

4.8 Chapter conclusion

The importance of recognizing plurality is motivated by the arguments in the literature that S&SX are vague, ambiguous, ill-defined and lacking concretness. The understanding is that these arguments reflect a linear and rationalistic view of S&SX.

SPRAY aims to contribute to understanding sustainability and sustainable development in its complexity, acknowledging its plurality and searching for its underlying patterns and logics, as well as a cohesive and intertwined understanding while recognising that a unified concept may never be possible or even desirable.

In order to fulfil its aim SPRAY look at the plurality of sustainability in different contexts (environments, perspectives and settings), structuring different types of collecting data to understand how to sustainability is expended.

Procedures to data collection and analyse are detail for the following samples:

- 1.292 peer-reviewed publications
- 60 questionnaire responses
- 3 cases

Chapter 5

SPRAY's Results

5.1 Introduction

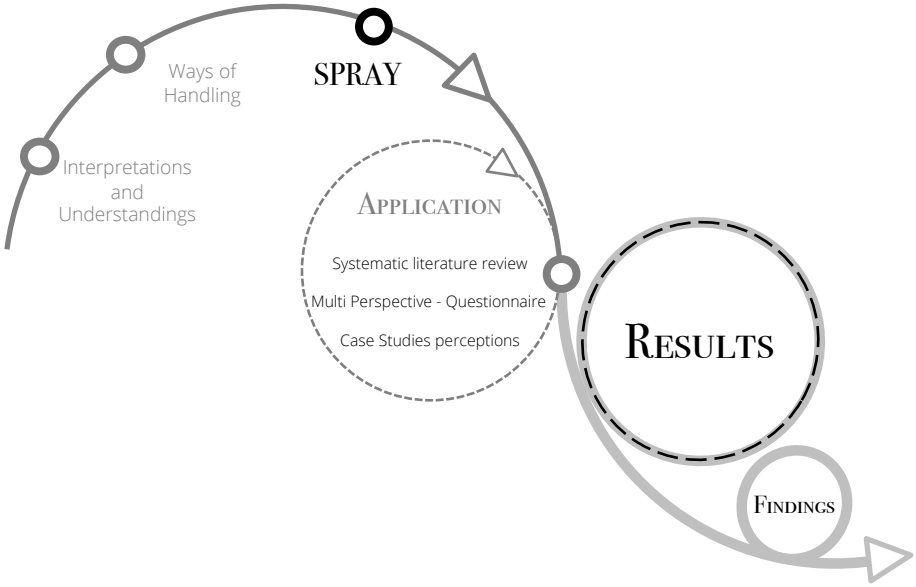
The conceptual framework SPRAY (**S**ustainability's **P**lu**RA**lit**Y**) was developed to picture plurality of sustainability. SPRAY drives and structures the analysis around identified characteristics and multiple attributes of sustainability in research's applications (described in chapter 4).

This chapter presents the results and findings from the use of SPRAY's in the following applications:
(i) To look into the scientific literature, a systematic literature review was conducted (content and discourse analysis) of peer-reviewed publications
(ii)To collect perspectives on sustainability, a questionnaire was applied to a pool of different organisations
(iii) To gather perceptions of a sustainability journey, a case study analyses were developed resorting to in-depth interviews.

The application of the framework in the three samplings was non probabilistic so, to that extent, the intention was not to represent a universe but to capture how content specific sustainability is.

The results details for each application are presented on Annex 5.A, 5.B, and 5.C.

Figure 5.1- Chapter 5 SPRAY's Results summary



5.2 SPRAY's Results - Systematic Literature Review

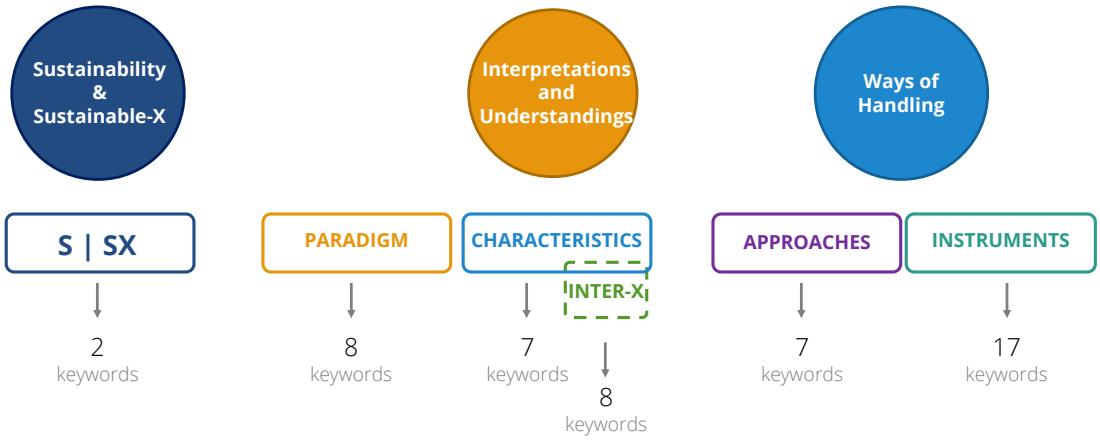
As explained the first application of SPRAY was on systematic literature review, where was conducted a content and discourse analysis of peer-reviewed publications. This particular component of the research was published in Lima & Partidário (2020).

This section presents and the main results of the content and bibliometric analysis, and follows the methodology explained in the previous chapter. As already referred, in the almost 1300 papers analysed, S&SX was used 168.106 times.

This section is structured according to the core categories of analysis, which was adopted to picture the plurality of sustainability, as shown in Figure 5.2. Six major topics were established as categories to include the keywords, occurring within the range of 15 words for each time S&SX appeared.

The statistics detail for each of the categories analysed is presented on Annex 5.A.

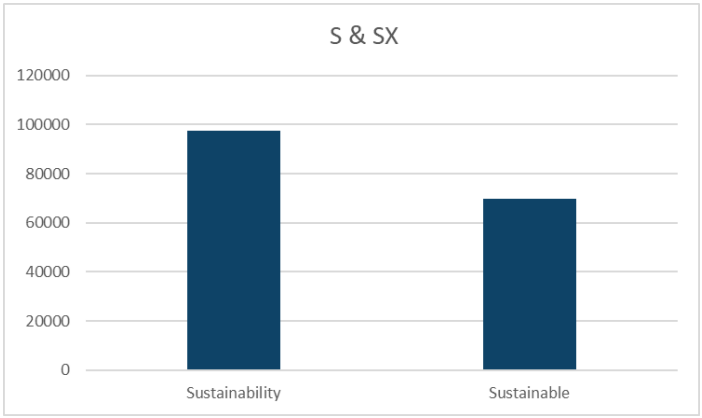
Figure 5.2 – SPRAY's main categories



5.2.1 Sustainability and Sustainable-X

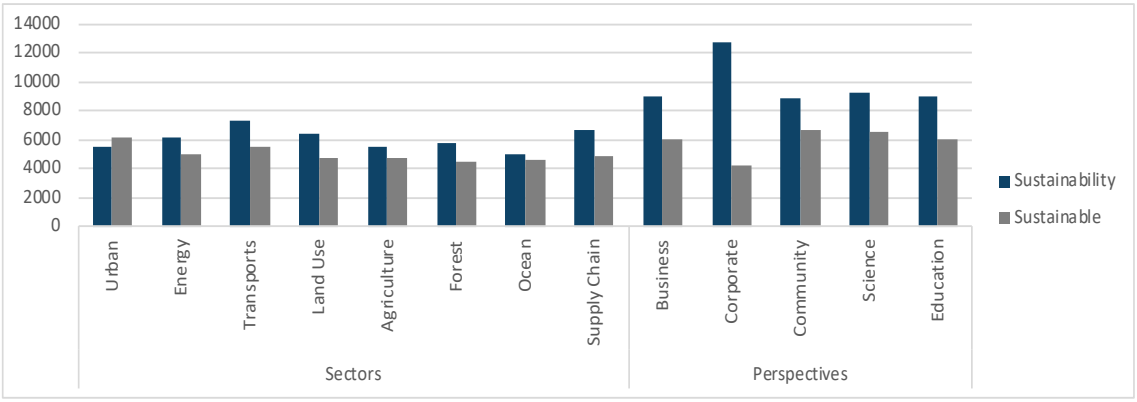
From the systemic content analysis carried out with the 1.292 papers, it is possible to see that the word sustainability is more frequently used than sustainable (Figure 5.3).

Figure 5.3 - Global results: Sustainability and Sustainable-X



In Figure 5.4, considering the results by topic (sectors and perspectives) it is clear that sustainability is significantly more used within the corporate perspective. The urban sector is the only case that uses sustainable more often.

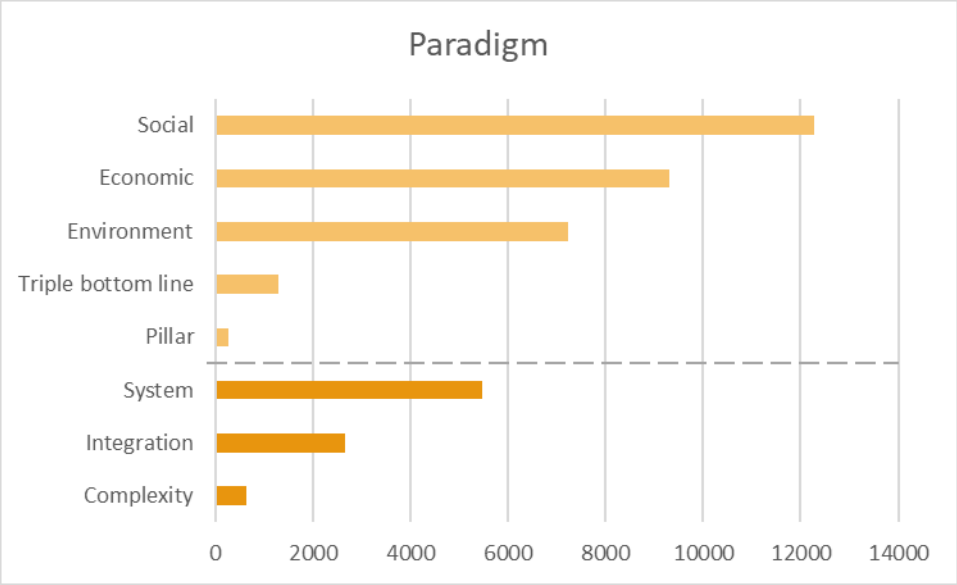
Figure 5.4 -Results by topic: Sustainability and Sustainable-X



5.2.2 Paradigms

Looking at the frequency of keywords in the analysed sample (Figure 5.5), the keyword "pillar" (as in pillars of S&SX) is not a very frequent keyword in the category Paradigm. However, the keywords: "environment", "social" and "economic", that represent the pillars of TBL, were the most frequent. System is also within the top ten most frequent keywords under this category, revealing the emergence of a possible paradigm shift into more systemic approaches to sustainability.

Figure 5.5 - Frequency in the absolute use of keywords of Paradigm category

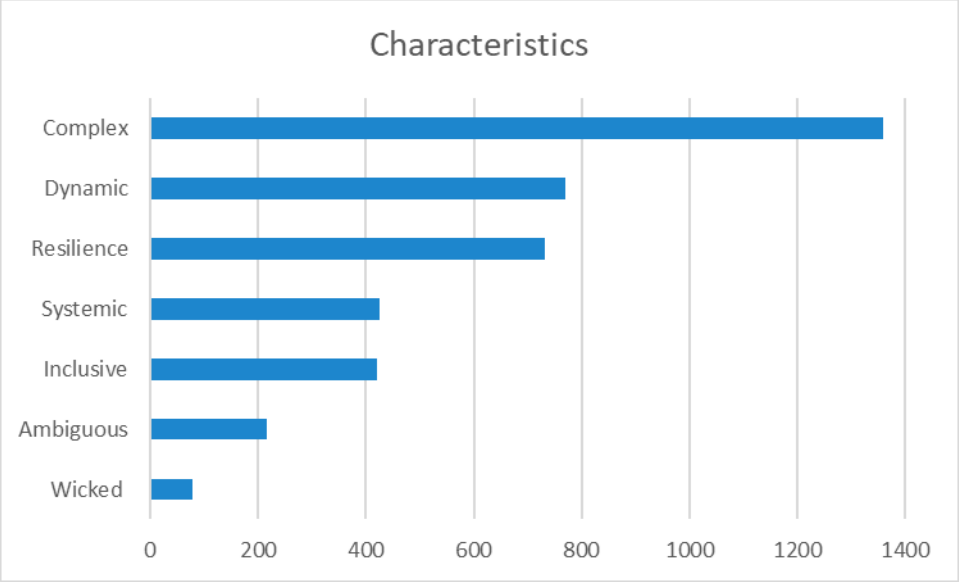


It should be highlighted that, since content analysis uses the 15 neighbouring words, it is likely that different understanding could be captured. For example, in (i) social sustainability and (ii) social aspect/dimension of sustainability, the first can be understood as focusing only in one of the pillars in the TBL, while the second appears to acknowledge that there are several dimensions in a possible integrated concept of sustainability, even though in that case only one of the dimensions is important.

5.2.3 Characteristics

The content analysis on the category Characteristics of S&SX used the following seven keywords: Wicked, Ambiguous, Inclusive, Systemic, Complex, Dynamic, Resilient. The frequency of these keywords is shown in Figure 5.6 (together for both sectors and perspectives).

Figure 5.6 - Frequency in the absolute use of keywords of the Characteristics category



Complex is by far the keyword more frequently used, however, discourse analysis reveal, quite often as a reason to not develop or explore S&SX furthermore. Resilience and Dynamic (associated to systems) are the next two keywords more frequently used.

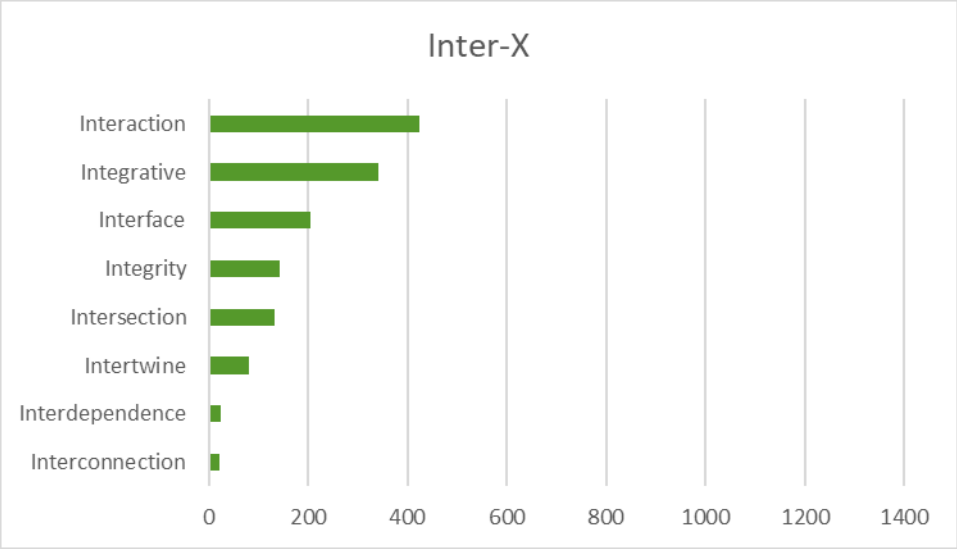
Discourse analysis also reveal that most of these keywords are used in the papers but not further explored, meaning, there are limited, or no explanations on what is meant when the keyword is used, and above all what is the meaning in S&SX contexts, or which tools could be appropriate to explain the meaning.

Worth mentioning is that, within the 168.106 times that S&SX shows, these characteristics in Figure 5.6 only in 2% of the times are nearby one of the keywords (S or SX), which may reveal a rather limited effort to actually characterize S&SX.

5.2.4 Inter – X

Figure 5.7 shows the frequency in the use of the eight INTER-X keywords.
Interaction is by far the most frequently used, immediately followed by Integrative. Based on the literature reviewed these results suggest perhaps the dominance of the TBL paradigm in influencing the understanding of S&SX.

Figure 5.7 - Frequency in the absolute use of keywords of the eight Inter-X category

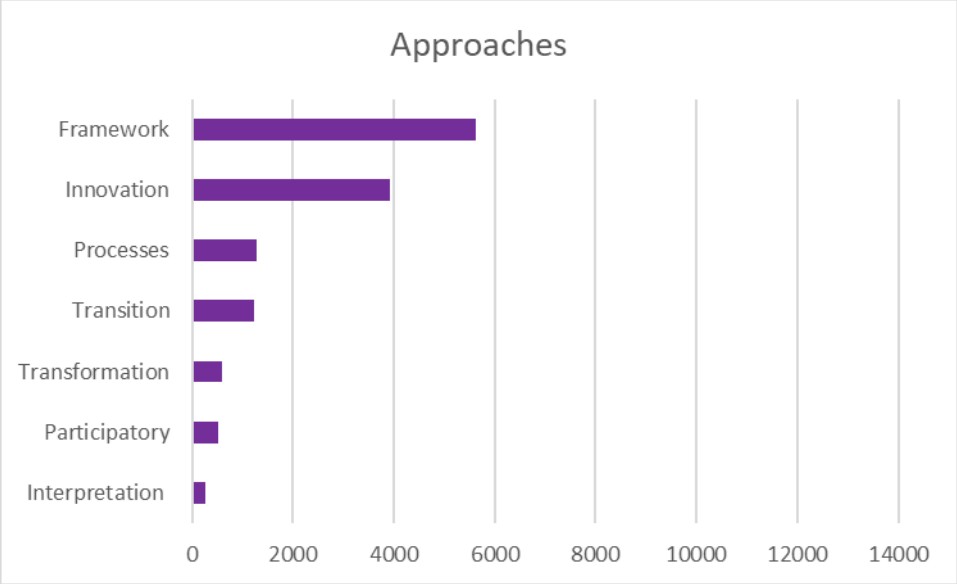


The eight INTER-X keywords reveal different relevant aspects. One is that some maintain the identity of the constituting elements without creating a new entity (as in the cases of Interface, Interaction, Interconnection and Interdependence). Others are quite the opposite, suggesting the mixing of original elements into the emergence of a new entity (as in the cases of Integration, Intertwine and Integrity). In the case of Intersection, it could be argued that both situations could occur maintain constituting elements, or generate a new being.

5.2.5 Approaches

Figure 5.8 consider the frequency of keywords found in the sample that are usually associated to approaches to S&SX, including: Interpretation, Participatory, Framework, Processes, Transformation, Transition and Innovation.

Figure 5.8- Frequency in the absolute use of keywords of the eight Approaches category

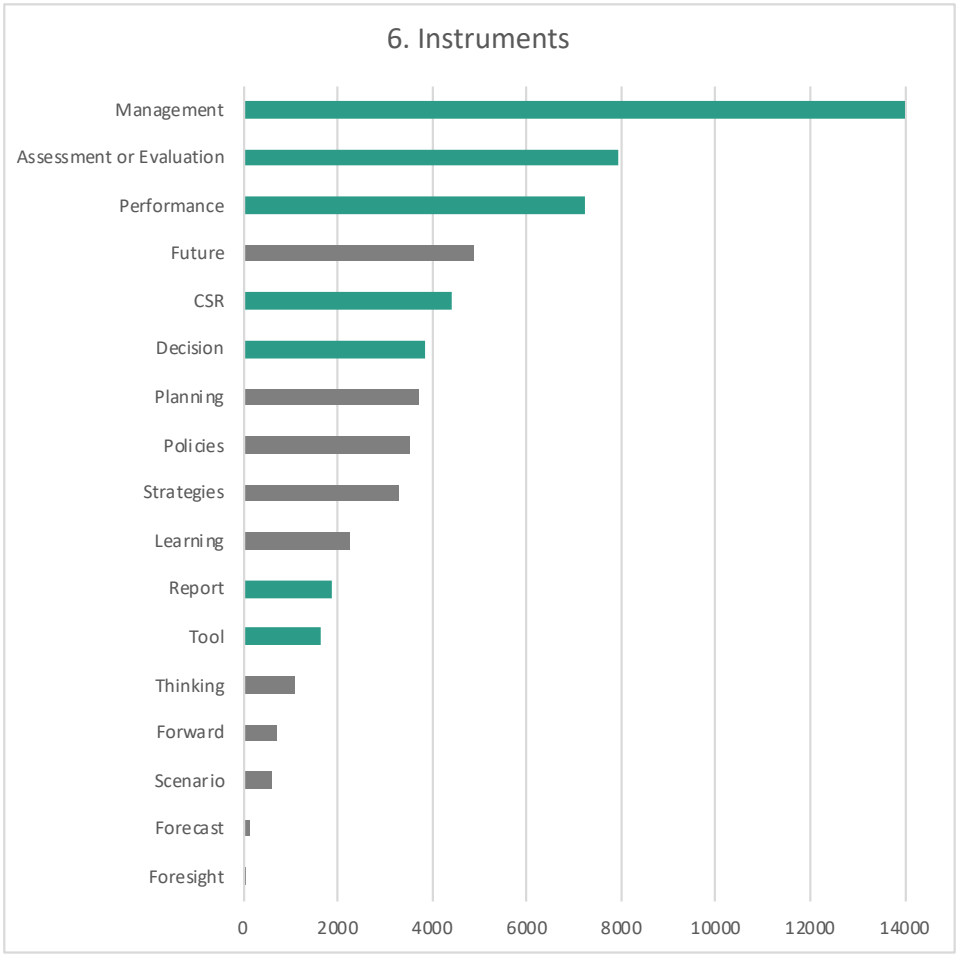


Results show that the most frequent keywords are Framework and Innovation. This pattern can be observed for most of the topics analysed (sectors and perspectives). These are interesting results. On one hand it shows a recognition that S&SX establish frameworks for actions, and that many engage innovations. But on the other hand, it shows what appears to be a low interest placed on transition processes for S&SX, as well as on participative change and transformative processes, and a relatively low concern with exploring possible different interpretations of sustainability. This can reveal that the sense of urgency that justifies a whole body of literature on transformative actions and transition processes for sustainability.

5.2.6 Instruments

Management, Assessment or Evaluation and Performance are the most frequently used keywords (Figure 5.9) representing instruments used in S&SX. As mentioned above, this suggests an action-oriented and retrospective insight, particularly when compared to the frequency in the absolute use of Future related keywords represented in Figure 5.9. In fact, except for the word Future (in itself), most other keywords in Figure 5.9 suggest that the literature is perhaps placing a weak relationship of S&SX with future driven approaches.

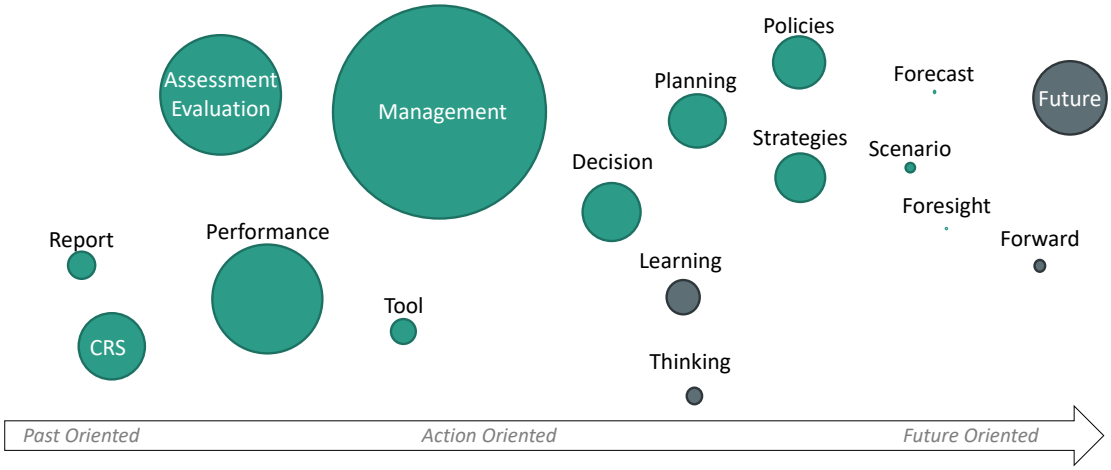
Figure 5.9 - Frequency in the absolute use of keywords of the ten action-oriented instruments



These results suggest that the practice, and the perceived concern with S&SX, based in the analysed discourse, seems to relay more on the assessment and evaluation of performance and management, mostly from an operational perspective. While the use of futures thinking instruments in clearly less frequent. It seems fairly paradoxical.

When placing the keywords, in Figure 5.9, representing action-driven and future-driven instruments, in a past and future horizon line, it is possible to observe that the most frequent keywords are located in the left hand side of the line in Figure 5.10, which corresponds to the past and short-term future zone of the horizon. As mentioned, management is the keyword with the highest occurrence in the vicinity of S&SX (Figure 5.10).

Figure 5.10 – Results by time frame focus (past to future)

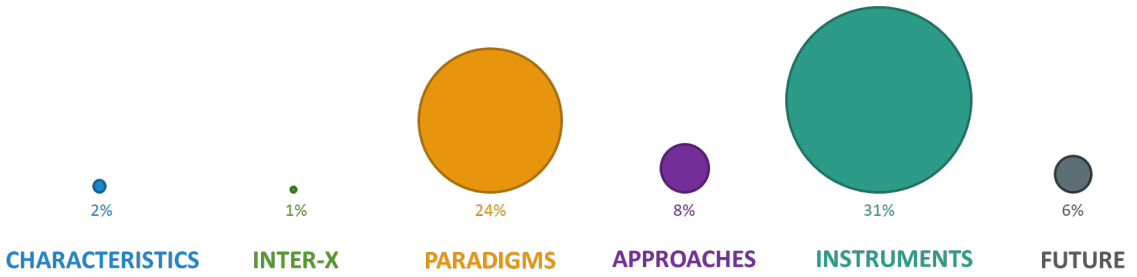


If S&SX is, assumably, about the future, then these results could be expected to be different. But, as shown, the content analysis reveals, according to these results, that in fact S&SX appears to be dominantly associated to management, assessment and evaluation of performance, mostly retrospectively, in the literature. Perhaps a good starting point to look into the future, as long as it does not become an end in itself.

5.2.7 Overall SPRAY's keywords

The review shows an enormous dispersion of keywords associated with S&SX used in the literature. These reflect different disciplinary practices and lexicons, or simply different understandings of S&SX.

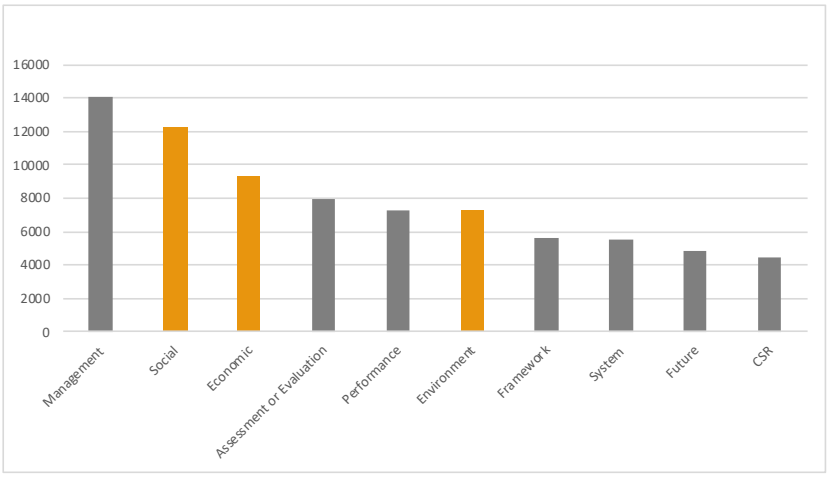
Figure 5.11 -Frequency of keywords summed by categories (detail of keywords by categories in Figure 5.2)



Interestingly, as represented in Figure 5.11, results show that the discourses and narratives used in the literature seem to be dominated largely by action-driven instruments and, to a less extent but still dominant, by the general Conceptualisation of S&SX represented by the 3 keywords in the TBL paradigm - social, economic and environment.

These results suggest that approaches and instruments used in relation to the S&SX seem to be essentially action oriented. While the keyword Future is frequently used (Figure 5.12) it is possible to note a much less prominent use of future oriented instruments and approaches in this analysis.

Figure 5.12 - Top ten keywords most frequently used from Table 5.1 (in yellow paradigm keywords)



Note that the most frequently used keywords are associated to the three conventional dimensions of S&SX – *Social, Economic and Environment*- (the most expressive in the TBL paradigm), with the keyword "social" being the most frequently used of the three (Figure 5.12).

This is quite interesting as the concept of sustainability is often claimed to provide greater attention to environmental issues, an assumption that does not seem to be confirmed by the achieved results. On the other hand, perhaps social is more popular because of the highest frequency of the Corporate related topic as in Corporate Social Responsibility.

Table 5.1 provides the frequency of the top 10 most frequently used keywords, and the top less used in the neighbouring of Sustainability and Sustainable.

The analysis on the frequency of the keywords supplements the great dispersion in keywords used to describe S&SX, already illustrated in Figure 5.11. The major difference in orders of magnitude can be seen specifically in this table, noting that S&SX was used 168.106 times, the most commonly studied word was used 14.109 times, and the less frequently used word was used 22 times.

Table 5.1 -Top ten most, and less, keywords frequently used

TOP TEN MOST

FREQUENCY	KEYWORD
14.109	Management
12.268	Social
9.306	Economic
7.943	Assessment or Evaluation
7.224	Performance
7.221	Environment
5.615	Framework
5.476	System
4.875	Future
4.408	CSR

TOP TEN LESS

FREQUENCY	KEYWORD
215	Ambiguous
204	Interface
142	Integrity
132	Intersection
121	Forecast
82	Intertwine
79	Wicked
32	Foresight
24	Interdependence
22	Interconnection

Results show that the keyword "management" is the most frequently used (shows 14.109 times near the 168.106 times S&SX shows – 8%), and interconnection is the less frequently used (shows 22 times near the 168.106 times S&SX shows - 0,01%).

This clear emphasis on management, evaluation, performance, and procedures, suggest a much greater concern among scholars with measuring and assessing *fait accompli* and less with preparing and creating resilience to face the future challenges inherently associated with S&SX. The less frequent use of keywords such as Foresight and Forecast, and also Scenarios and Forward (top 10 less in Table 5.1).

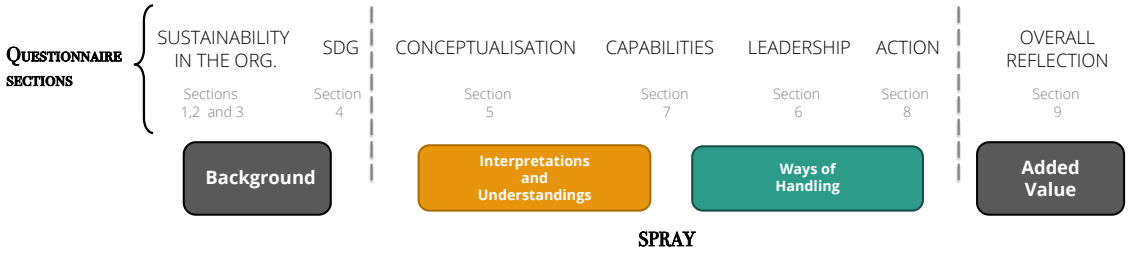
On the other hand, "ambiguous" and "wicked" are not that commonly used, which may be two keywords to characterize sustainability given the literature reviewed. In addition, six in ten of the Inter-X characteristics (see next section) are among the less frequently used keywords (such as for example integrity, intersection, intertwine, interconnection).

5.3 SPRAY's Results- Multi Perspective Questionnaire

The questionnaire is composed in nine sections (Annex 4.A and 4.B): (1) personal data, (2) identification, (3) sustainability in their organisation, (4) sustainable development goals (SDG), (5) Conceptualisation, (6) leadership, (7) capabilities, (8) action and (9) closing section.

Figure 5.13 presents the relation between the SPRAY's categories and the questionnaire sections, adding to "interpretations and understandings" and the "ways of handling" two components: the "background " and "added value".

Figure 5.13 SPRAY's categories relation to Questionnaire sections



60 answers were collected comprehending different types of organisations, the sections (1) and (2) were detailed in the questionnaire sample (Chapter 4). In this sub-chapter is presented the results from the remaining questionnaire sections.

The presentation of the results order follows the set out presented in Figure 5.13.

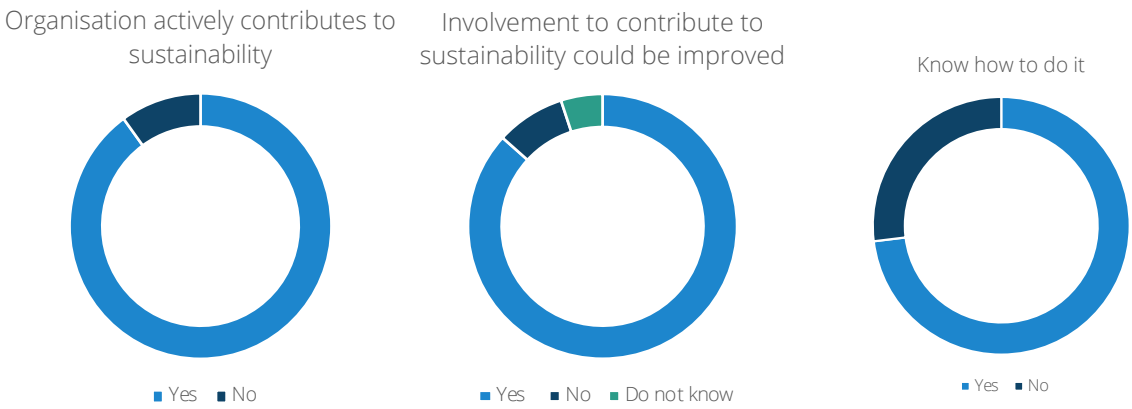
The results will be presented using the graphical representation of the data. As in the previous sample, the detail statistics for each of the categories analysed are presented on Annex 5.B, with some statistical indicators.

5.3.1 Organisation relation with Sustainability

Considering the 90% of organisations that affirm that are contributing actively to sustainability, only 8% sustain that such contribution does not need to improve (Figure 5.14).

Regarding 87% of the organisations that recognise the need to improve their contribution to sustainability, a substantial proportion (73%) believes to know how to do it, leading to an apparent gap between both issues (need to improve *vs*. how to improve). This result also raises the questions – what impedes to apply that knowledge in action? The constraints are more related to context or the organisation?

Figure 5.14 – Organisations contribution to sustainability



When asked to indicate how to improve their contribution to sustainability, four clusters emerged to group the different type of answers:

(i) *improving materiality* (21%) as carrying out projects or specific initiatives such as learning, monitoring or engagement;
(ii) *management issues* (32%) such as "creating an environmental management department" or "integrate sustainability into strategy";
(iii) *cleaner production* (29%) (zero waste, more efficient use of the resources, teleworking, …) and
(iv) *work in progress* (18%), moving target, always a progress to discover news approaches, habits, or ways of doing.

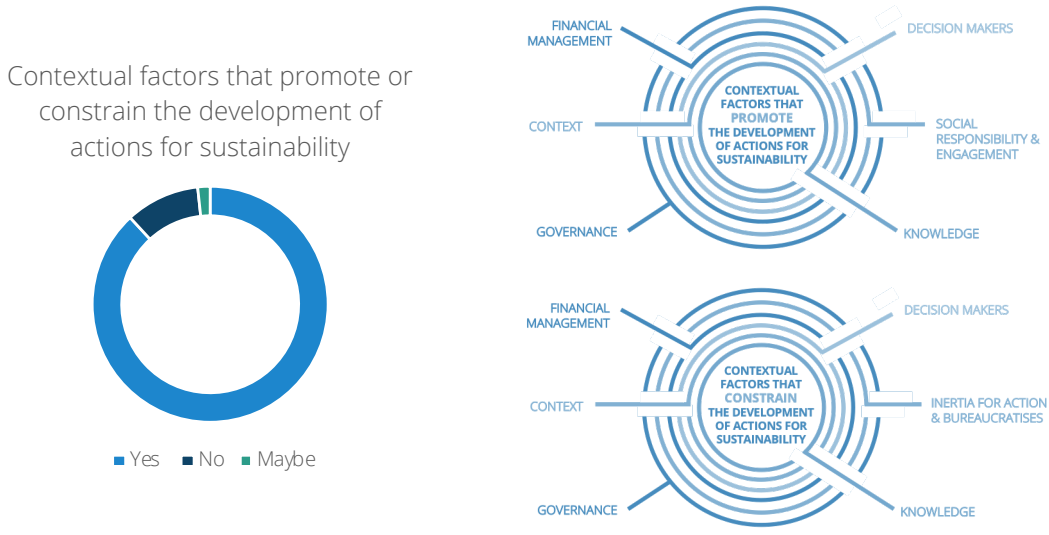
Note that this spectrum of responses is highly linked to management. It also demonstrates that the knowledge about improvements in how to contribute to sustainability is more anchored designing systems and processes that make the organisation more efficient.

Figure 5.15 - Organisation's focus approach to develop activities and actions that contribute to sustainability

Considering the activities and actions that contribute to sustainability, organisations were able to choose the option that suits them better in order to illustrate their focus when developing activities and actions that contribute to sustainability. The results (Figure 5.15) show nearly a tie between action and operationalisation (24%) and factor/variables relations (23%) (as in marketing, human resources, efficiency, technology, cost, ...), followed by future goals and objectives (20%). Overall, the sample is divided in a very balanced way, not being possible to point out to a clear trend or pattern.

The questionnaire also explored how contextual factors could influence organisations contribution to sustainability. Figure 5.16 presents, 88% of the sample considers that contextual factors influence the development of actions for sustainability.

Figure 5.16 - Contextual factors that promote or constrain the development of actions for sustainability



When asked about what are the main factors that promote or constrain the development of actions for sustainability, the organisations had the opportunity (open question) to describe and detail according to their contexts, clusters present the results, right side of Figure 5.16.

Notably, both clusters (factors that promote and factors that constrain the development of actions for sustainability) were almost the same. That is to say that were identified groups as "financial", "context", "governance", "decision makers" and "knowledge" as being both enablers and/or obstacles to the organisation's development of actions for sustainability.

In terms of the cluster's groups: "context", "governance" and "decision makers", the answers that compose them are more or less the same, as can be exemplified in the following points:

(i) Context elements - Pandemic, crisis, market conditions, strategic cycles;
(ii) Governance elements – European and world agendas, political factors, policies, governmental organisations, local entities culture;
(iii) Decision makers elements – Management mindset/ cultural values, leadership, willingness to undertake the new and investors requirements.

Nevertheless, regarding the "financial" and knowledge" groups the same label has different meanings.

Considering the financial factor in terms of promoting sustainability, the answers are related to improving the efficiency of processes and financial balance. On the other hand, in terms of constraining sustainability it as more to do with market factors that affect the level of investment available, or budgetary constraints.

More information about the importance of sustainability, the increased interest of the young population and more concrete evidence that the planet cannot take so many attacks are the answers that compose the cluster "knowledge" for promoting actions for sustainability. The lack of academic training in sustainability subjects and internal capacities on the organisation point in the opposite direction, restricting the development of actions for sustainability.

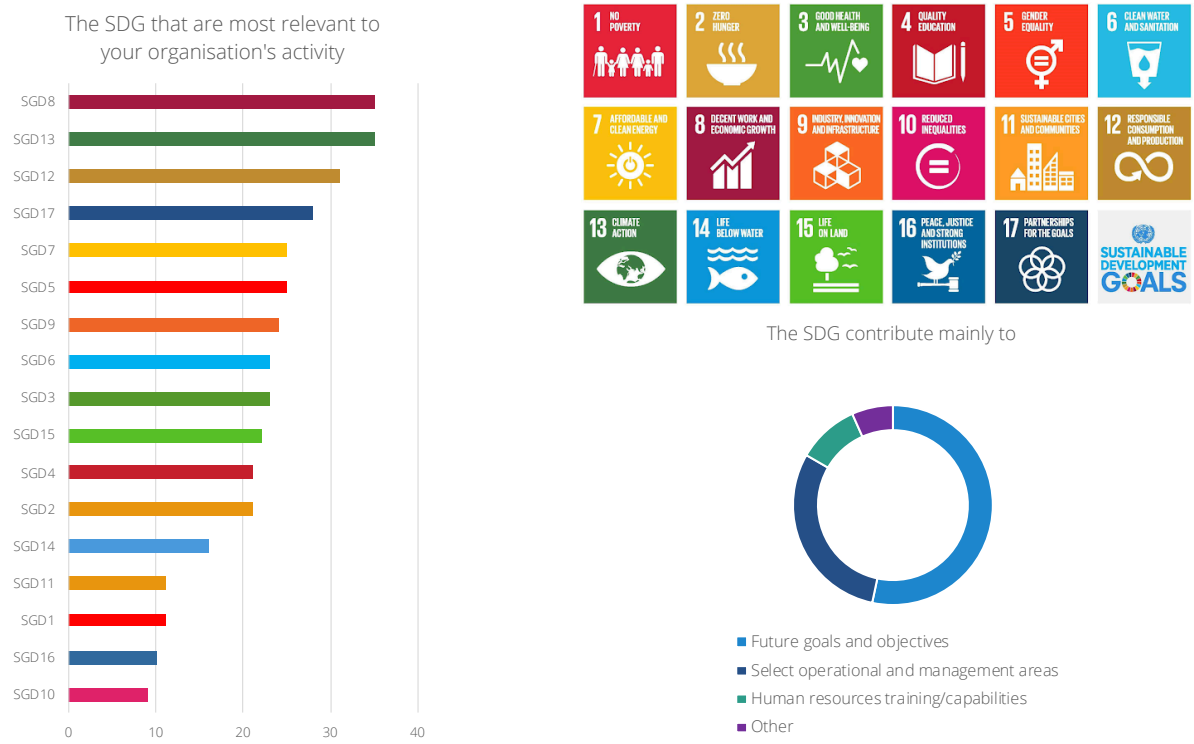
Finally, analysing the open answers there were picked up two additional factors, that are divergent from the previous clusters, being "social responsibility and engagement" as promoter factors, and "inertia for action and bureaucratises or bureaucratic immobility" as constraint factors.

5.3.2 Sustainable Development Goals

Regarding the organisation's relation with the SDG, and its contribution, the questionnaire results show that the sample considers that SDG 8 and 13 (both 9%) followed by SDG 12 and 17 (both 8%) are the SDG more relevant to their organisation.

The subsequent 8 SDG selected had a slight variance between 7% and 6% of the selection. Thus, it is possible to infer that the sample appear to have a balance contribution on the SDG.

Figure 5.17 – Organisation's relation with the SDG, and its contribution.



Concerning to what the SDG contributes to, the majority (53%) of the organisations believes that it has mainly contributed to future goals and objectives. In comparison, 30% declares that the SDG contribute more to select operational and management areas.

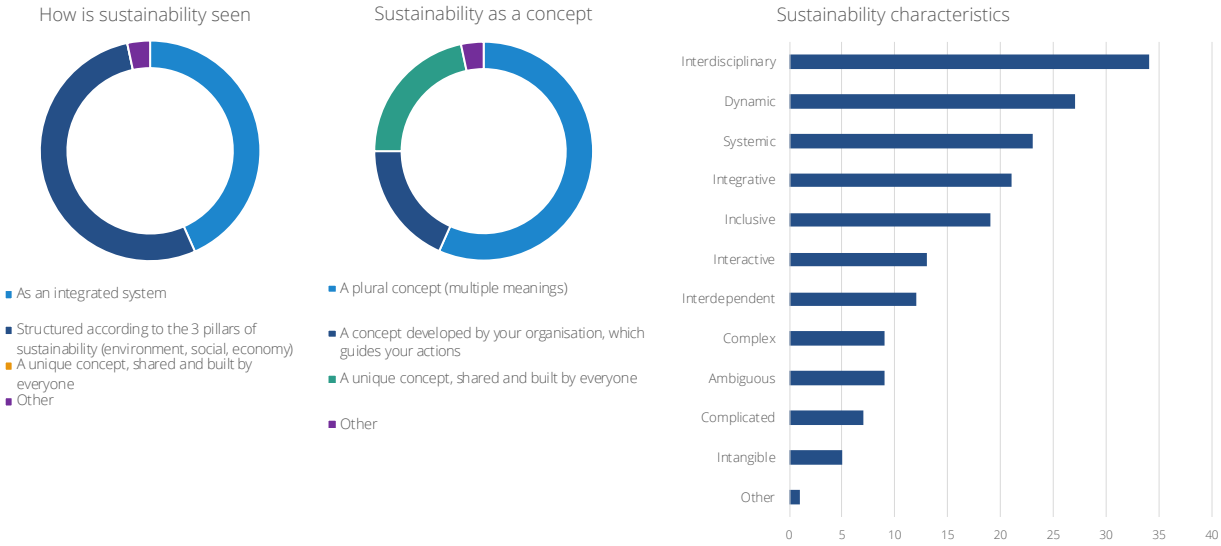
5.3.3 Conceptualisation

Making an effort to transpose the keyword analysis present on the SPRAY's framework into the questionnaire, this section tries to merge the "characteristics" and "paradigm" categories in the attempt to explore the "understandings and interpretations of sustainability" sphere form the framework.

In the first question, illustrated in Figure 5.18, organisations were asked how they conceptualize sustainability, showing an almost 50/50 percentage between a TBL paradigm structured in the three pillars, and sustainability as an integrated system. Nevertheless, TBL is slightly more incorporated (53%) (Figure 5.5). These results lead to a different the same outcome as the results from systematic literature.

Regarding the organisation's approach to the concept, the majority (57%) adopts a plural concept, with multiple meanings, while 18% developed their own concept of sustainability and 22% stablish sustainability is a unique concept that is shared and built by everyone.

Figure 5.18 – Conceptualisation of sustainability in the organisations



Using the Characteristics and the Inter-X keywords, 12 options were given in the questionnaire, being each organisation only compelled to choose the 3 most relevant sustainability characteristics.

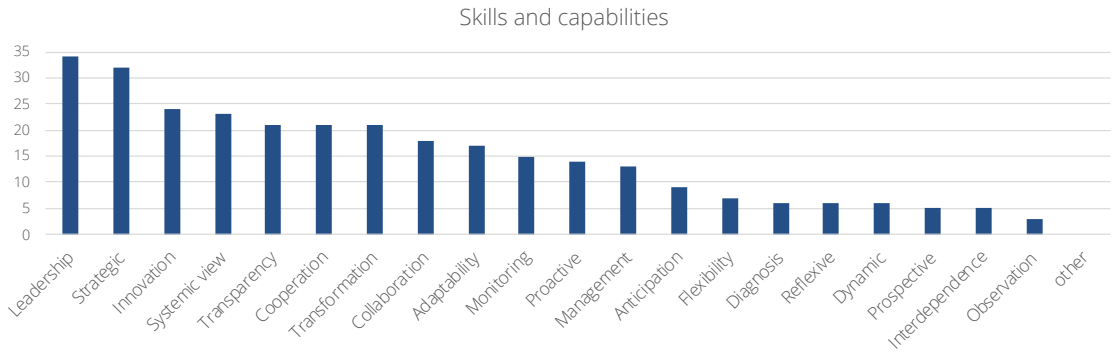
The results show mildly differences when compared to the systematic literature review (comparing Figure 5.6 and Figure 5.7 with the Figure 5.18 right side). While in the literature the most used characteristics were complex, dynamic and resilience, the results from the questionnaire picked up interdisciplinary (19%), dynamic (15%) and systemic (13%) as the more selected characteristics, showing that the literature review is not consistent or a reflection of the experience of the questionnaire-responding organisations.

5.3.4 Capabilities and Leadership

The questionnaire offered the organisations with a list of the capabilities supported in the literature review, where it was asked to select the 5 most relevant for developing activities in the scope of sustainability (Figure 5.19).

In terms of results, Leadership (11,3%) was the most selected capability followed by Strategic (10,7%), Innovation (8,0%) and Systemic view (7,7%), being very interesting to see a representation of each Mousavi & Bossink (2017) areas of competence (Chapter 2).

Figure 5.19 - Most relevant capabilities for developing of activities in the scope of sustainability

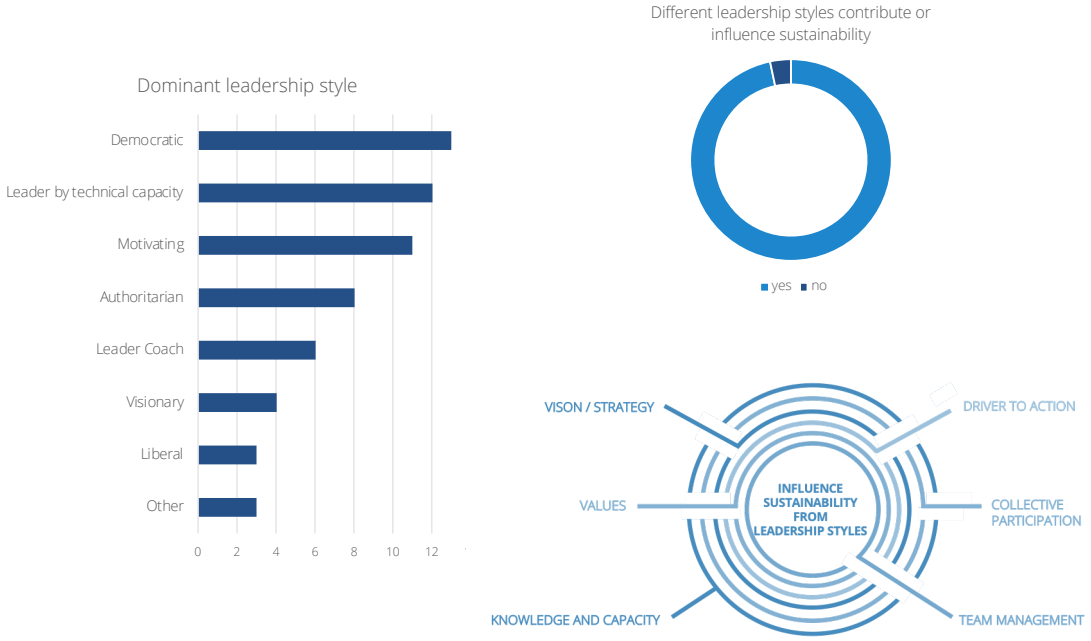


As for the leadership questions, a disclaimer needs to be made. These questions were introduced, in the questionnaire, previously to the ones about capabilities, which could have influenced (or not) the results about the selection of leadership as main skill and capability.

Three questions were presented when looking into the leadership of the organisations: (i) what the dominant style of leadership in the organisation is, (ii) if different leadership styles contribute or influence sustainability, and (iii) how it contributes or influence sustainability.

The dominant style of leadership of the sample was democratic (22%) followed by leader by technical capacity (20%) revealing a more classical approach to become a leader. Moreover, 97% of the organisations support that different leadership styles contribute or influence sustainability.

Figure 5.20 - Style of leadership in the organisation, and its influence on sustainability



When inquired about how leadership styles influence sustainability, the organisations were provided the space to detail their view and reality, being possible to summarize their answers in by 6 clusters:

- *Vision and strategy* – the leader establish the way of being, commitment, vision, dynamics and long-term thinking.
- *Values* – the leader is aware and believes that the organization's values are aligned with sustainability.
- *Knowledge and capacity* – the leader provide resilience in responding to the multiple and diverse challenges, searching for solutions, and improving the work performed. Knows and shares knowledge of the sustainability value.
- *Driver to action* – the leader has the ability to mobilize resources and ideas encouraging proactive action, the focus is on implementing the ideas to promote organizational growth.
- *Collective participation* – the leader motivates the collective participation, recognizing value on different visions, policies and ways of acting, creates space for inclusion, engagement, participation and sharing.
- *Team management* – the leader cares about engaging and implementing meaningful improvements, the focus is on creating results with team effort, gets more involve the staff, and has the capacity to motivating and influence others. Finally, this style internalizes and takes team responsibility as their own.

It is important to highlight that the three last styles focus on how the leader relates to the people or specific to their team and could co-exist in the same leader.

5.3.5 Developing actions for sustainability

As for the results of the questionnaire obtained on this issue, this section reiterated the relationship of the organisation's activity with sustainability, and consistent with the previous data collected, the organisations described how is the sustainability integrated within their organisation. Therefore, as presented in Figure 5.21, 42% stands that sustainability is part of the organisation's DNA (from the definition of the organisation's vision and strategy). Half of the sample is divided between sustainability being developed in parallel with the organisation's core actions (25%) and being incorporated into the organisation's planning and management (23%).

Figure 5.21 - Sustainability integration in the organisation

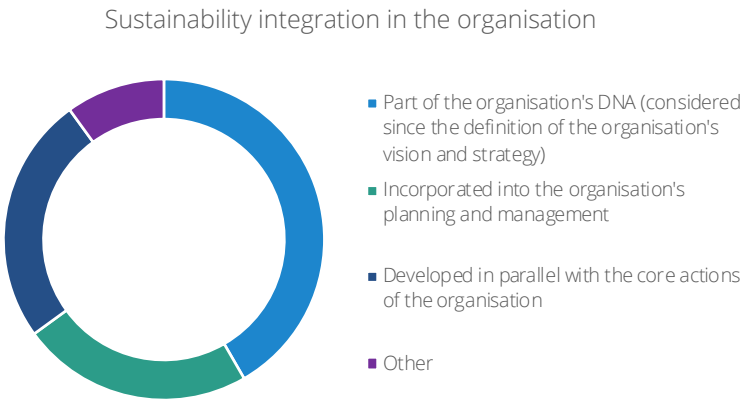


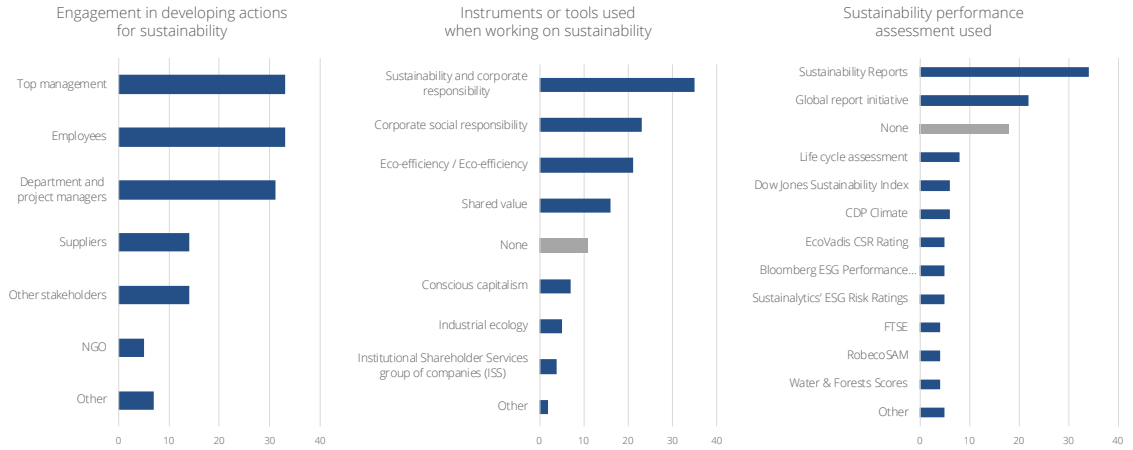
Figure 5.21 shows that only 10% of the sample points out lowers' integration levels, the next paragraphs explore the organisations' instruments.

When developing actions for sustainability, three themes were examined: (i) the level of engagement, selecting different types of actors; (ii) the instruments or tools that support approaches to develop sustainability and because of the literature review (results in section 4.5.2- Instruments) a more emphasis on instruments and (iii) the tools that are used to sustainability performance assessment and the key lessons from that process.

The results presented in Figure 5.22, indicate that the organisations tend to engage more with the internal actors themselves, top management and employees (in *ex aequo* with 24%) and the departments and project managers 23%. The interesting factor was the 5% that represents the "others" contains both "only administration" and "all stakeholders form the business cycle" including "do not know".

In terms of instruments or tools that support approaches to develop sustainability, the most common in the sample were Sustainability and corporate responsibility (28%), CSR (19%) and Eco-efficiency / Eco-efficiency (17%).

Figure 5.22 - Engagement and Instruments used in in developing actions for sustainability



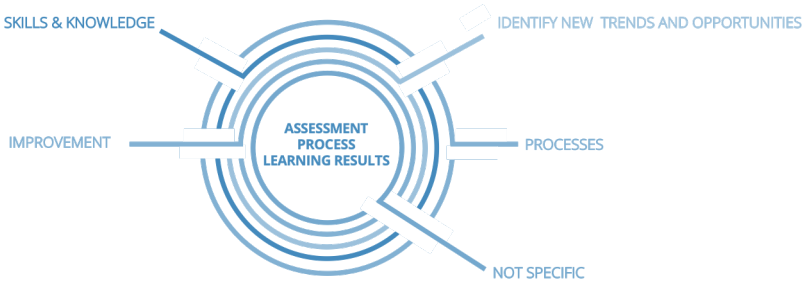
Regarding sustainability performance assessment, 27% of the organisations do sustainability reports, which 17% also practices global report initiative, and only 14% identify that do not practice any kind of sustainability performance assessment.

The last question of this questionnaire section was "What are the learning results that you get from the assessment process", and the responses to those open questions were split into five clusters (Figure 5.23):

- *Skills & knowledge* (18%)- that includes improve skills, abilities, know-how, sharing good practices, agility, adapting to the context of the organisations
- *Improvement* (20%) - identification of areas of improvement, with a monitoring and learning process. The willingness to do better leads to verification of sustainable growth and satisfaction of the progress achieved.
- *Identify new trends and opportunities* (22%)- Anticipating trends, identifying gaps and critical points and adapt the focus on the essential drivers of change creates guidelines, and is most useful in Long-term planning and risk refinement
- *Processes* (8%) - sustainability performance assessment as part of organisational processes such as evaluation, monitoring, benchmarks, ...
- *Not specific* (12%)- this clusters grouped answers that were very unclear such as "Natural Evolution" or "Well-being and sustained growth".

Twelve organisations (20%) do not know the learning results from the assessment process.

Figure 5.23 - The learning results from the assessment process

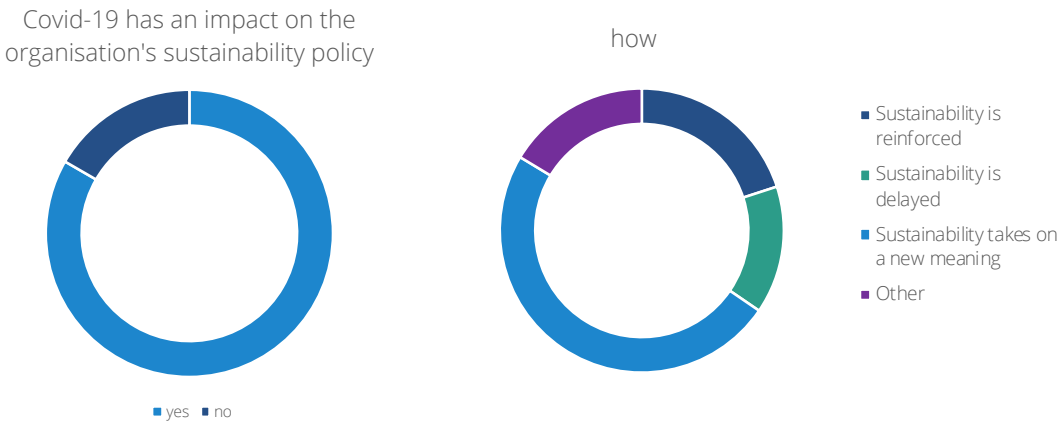


5.3.6 Reflexion – Questionnaire Closing section

The final section of the questionnaire tried to capture the resilience of the organisation living in pandemic times, inquiring on the recognised add value of sustainability and if these questions address familiar themes to the organisation.

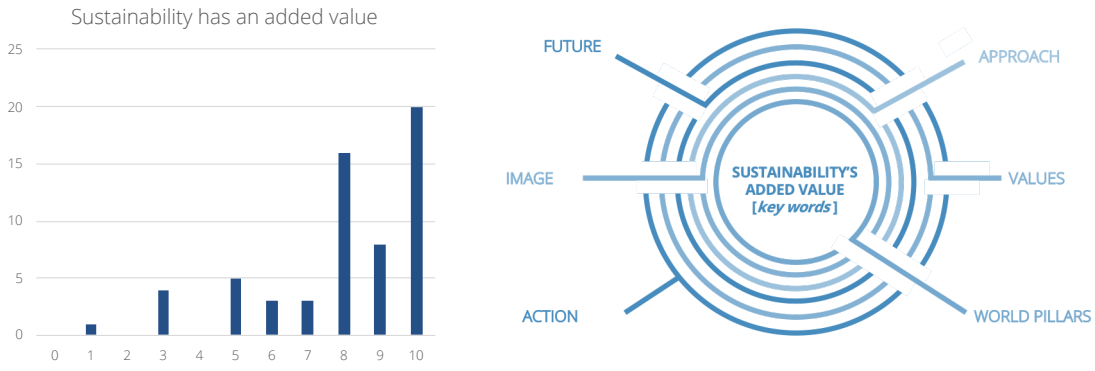
Regarding the Covid-19 impact on the organisation's sustainability policy (Figure 5.24), 83% of the sample affirms that this pandemic had an impact on their organisation's sustainability policy, but when inquired about why, organisations differ on opinion. 49% of the organisations considered that Covid-19 led to "sustainability takes on a new meaning" while 20% declares that "Sustainability is reinforced" after facing such a challenging and different times.

Figure 5.24 - Covid-19 impact on the organisation's sustainability policy



A significant part of this questionnaire intended to learn about the added value of sustainability for organisations. When questioned about the sustainability's added value, organisations were provided with a scale to rate from 0 (no added value) to 10 (maximum value added) and 73% of the sample gave a score between 8 and 10 (Figure 5.25).

Figure 5.25 - The sustainability's add value

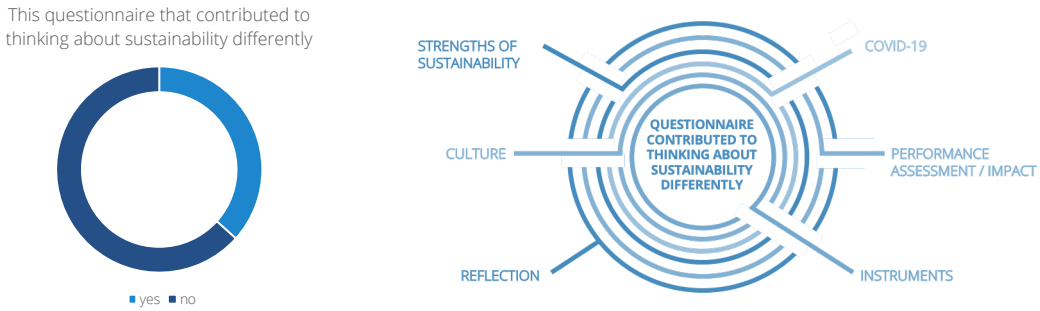


After the ratting, the sample was compelled to use three keywords that best identify such added value. The results were wide-ranging:

FUTURE – that, besides future, includes development, eyesight, focus, growth, legacy, long-term, preparedness for the future, prospective, strategy, vision, and permanence
IMAGE – consider attractiveness, brand equity, client expectation, customers, credibility, image, positioning, recognition, reputation, visibility, and outreach.
ACTION - implicates activities, application, assessment, evaluation, monitoring, improvement skills, productivity, efficiency, sufficiency, achievement, and surplus.
APPROACH – sustainability as an organisation approach to do things, as a factor of differentiation, distinction, balance, flexibility, improvement, innovation, knowledge, leadership, motivation. Including engagement approaches: creating a balance between stakeholders, cooperation, social involvement, processes of shareholder selection.
VALUES - absorbing sustainability values: commitment, continuity, awareness, purpose, responsibility, trust, value, transversality, quality, transparency.
WORLD PILLARS - this includes the more overarching keywords: climate, health, human, humanity, nature, well-being, and economy (including market, business, costs vs results, profit, economic success, naturally based economy).

The questionnaire final question concerned the contribution of this questionnaire to the respondents thinking about sustainability in a different way, where 37% of organisations affirmed agreed to such statement (Figure 5.26).

Figure 5.26- The contribution of the questionnaire to think about sustainability in a different way



For those that considered that this questionnaire contributed to thinking differently about sustainability, it was still asked "in what way" did it make a difference. The sample answers were grouped in 6 key points: (i) systematised the strengths of sustainability; (ii) allowed to identify culture and philosophy about our practice; (iii) promote a reflection on what we can do to increase sustainability, and think about how is possible to work better on sustainability (iv) the covid-19 impact on the organisation's sustainability; (v) the added value and what is learned from sustainability assessments, and the suggestions on measurement; and (vi) the dependence on instrumentalisation, and the strong activity planning.

5.4 SPRAY's Results - Case Studies Perceptions

In this SPRAY's applicability also explores the perceptions of three different organisations about the plurality of sustainability. The three cases selected (Chapter 4) were an NGO – Instituto Marquês de Valle Flôr (IMVF), an agriculture company – Esporão and a start-up Natural Business Intelligence (NBI).

The aim of collect insights from cases is transcend how plurality is translated to the practice in the organisations, adding the focus is not only on the organisations but specifically about an initiative (project/ plan/ mission/….).

The data was collected via two sources the questionnaire and a complementary semi-structed interview (Chapter 4). Results presentation is structured in the four themes (Figure 5.27), (i) explores the organisation relation with sustainability, (ii) and (iii) are supported by SPRAY's framework, and (iv) explores the gains are about the lessons learned and the recognised add value of sustainability.

The questionnaire results from the three cases are presented on the Annex 5.C.

Figure 5.27 – Case studies themes of analysis

5.4.1 Sustainability in the Organisation

The questionnaire results are unanimous, and the three cases affirm that they actively contribute to sustainability. Moreover, they recognise that sustainability is a part of the organisation's DNA and is considered since the definition of the organisation's vision and strategy.

The three cases consider that about sustainability, there is always room for improvement, and they also know how to do it:

- IMVF consider seeking to diversify funding sources and improve communication with key stakeholders in Portugal and in the countries where they operate.
- Esporão believes that they need to improve energy management and greater social involvement.
- And NBI through materiality, carry out projects with a real impact on the real economy and with clear indicators on the socio-ecological benefits associated with each project's outputs.

These answers also reflect their heterogeneity, in terms of concerns and the day-to-day issues that are completely different context in territories, scale and maturity.

Regarding how these answers are incorporated in the initiatives, is evident that sustainability is a part of the organisation's DNA, while in IMVF is more likely to be a value that it is taken into consideration when developing actions and activities, and in Esporão and NBI is more likely to be an explicit pillar in all developed actions and activities.

Sustainable Development Goals

The three cases consider that SDG contributes mainly to select operational and management areas. However, neither contemplate the SDG as a goal or objective on the developing the initiatives, although it is possible to establish contributions to the objectives, goals or indicators from the SDG.

Table 5.2 - The SDG selected as the most relevant to the IMVF, Esporão and NBI

IMVF		Esporão		NBI
SGD 1	SGD 10	**SGD 2**	SGD 9	**SGD 2**
SGD 2	SGD 12	SGD 3	SGD 12	**SGD 13**
SGD 4	**SGD 13**	SGD 6	**SGD 13**	SGD 14
SGD 5	SGD 16	SGD 7	SGD 15	SGD 15
SGD 6	SGD 17	SGD 8		

Regarding the SDG that the organisations selected has the most relevant to their activity, in Table 5.2 it is shown the three cases selection. The SDG are more highlighted as the number of selections.
The three of organisations selected the SDG 2- zero hunger and 13 – climate action. Table 5.2 also shows that Esporão has in common with IMVF the SGD 12- responsible consumption and production, and with NBI SGD 15- life on land, finally IMVF and NBI also share the selection on SDG 6 – clean water and sanitation

As previously was mention, the impact assessment studies of IMVF project establish a direct contribution on SDG 1,2,5,8,12,13,14, 15, 16 and 17, beside the selection in questionnaire.

5.4.2 Interpretations and Understandings

Three topics, discussed in the cases-studies organisations and their initiatives, were (i) conceptualisation of sustainability, (ii) capabilities and (iii) leadership:

Conceptualisation

When selecting the three sustainability most relevant characteristics, the three of them choose Dynamic, IMVF completed the answer with Interdependent and Interdisciplinary, NBI also choose Interdisciplinary and added Systemic, Esporão also choose Systemic and additionally Interactive.

ID	Name	IMVF	Esporão	NBI
CONCEPTUALISATION	HOW IS SUSTAINABILITY SEEN	As an integrated system	As an integrated system	As an integrated system
	SUSTAINABILITY CHARACTERISTICS IN THE ORGANISATION	Interdisciplinary	Systemic	Systemic
		Dynamic	Dynamic	Dynamic
		Interdependent	Interactive	Interdisciplinary
	AS A CONCEPT, SUSTAINABILITY IN THE ORGANISATION IS	A plural concept (multiple meanings)	A unique concept, shared and built by everyone	A plural concept (multiple meanings)

Regarding conceptualisation, in the three organisations sustainability is seen as an integrated system. IMVF and NBI consider sustainability a plural concept (multiple meanings), but in Esporão they built and share a unique concept engaging everyone in the process.

In 2015 Esporão report (p.68), there is a question: what does mean "sustainability" to each of us? among the various testimonies the CEO statement is:

> *1. It means sharing and being transparent about the work done and improvements to be made.*
> *2. It made it possible to systematize and learn more easily where we are and where we intend to go.*
> *3. Sharing information and asking interested parties to be interested contributing feedback to improve our activity and relationship with the society.*

In the interview it was asked if he hold the same opinion, the CEO added that he thinks that sustainability also has to do with the perspective of building a business that has more chances, more probabilities of continuing, more resilient business and more capable of being its activity in the medium and long term.

Capabilities

In the questionnaire it was inquired about the 5 most relevant skills and capabilities for the development of activities in the scope of sustainability. In Table 5.3 is listed the answers from the three organisations and linked when some capabilities were replicated.
Is possible to see that Esporão and NBI are more aligned in their selections, but the three of them selected at least one of the capabilities of each category detection, apprehension and reconfiguration (from the frame that upholds the capabilities approach in this research, in Table 5.3).

Table 5.3 - The capabilities selected as the most relevant to the IMVF, Esporão and NBI

IMVF	Esporão	NBI
Proactive	Systemic view	Systemic view
Management	Cooperation	Cooperation
Collaboration	Transformation	Transformation
Leadership	Leadership	Strategic
Adaptability	Diagnosis	Adaptability

About capabilities, NBI does not distinguish the relevance in sustainability or the start-up. In the interview, NBI explains the importance of a systemic view and strategic thinking as core capabilities to the team. The kind of projects that NBI starts to develop is very much based on a more strategic approach. It is a lot about trying to anticipate developing that organisation and project development, emerging the importance of an operational vision.

Regarding the initiatives, the results do not point to valorisation technical capabilities. The three cases gave more importance to social capabilities, team players, communication skills, transparency and personal values compatible with the organisation values. The cases pointed out that when faced or challenged with the lack of technical capabilities it could be resolve with additional training.

Particularly in the IMVF case, the project approach was very dependent on communication and trust relationships between the technical team and the beneficiaries. The benefits of the investment on this approach were seen in the early moments and remarkably contributed to problem detection directly related to diagnosis capabilities.

Leadership

Characterizing the leadership style in each organisation conduct to three different styles:

- IMVF - Leader by technical capacity,
- Esporão -Democratic, and
- NBI -Visionary.

The three organisations considered that different leadership styles contribute or influence sustainability, and when inquired about how leadership styles influence sustainability, these are their answers:

The democratic and the motivator or even "coach" usually obtains greater engagement from the employees.
The authoritarian has the opposite result to the previous ones.
Technical capacity leadership encompasses some of the previous advantages; and in some way the technical ability helps to achieve the visionary in some moments.
IMVF

Must be part of the company's values and ambitions and therefore its leaders
Esporão

for the most conservative or innovative way in which they address sustainability issues at the strategic and operational level, as well as the ability to mobilize resources and ideas with an impact
NBI

The case with the leadership as a most emphatic factor was Esporão. The transformation to biological agriculture was grounded on communication and trust relationships. However, the driver to unlock adversity to that transition was the "leader", the motivator, encouraging for all fit as agents of change. It was the top-down completely aware that it had to be bottom-up.

5.4.3 Ways of Handling

In terms of instruments, the three organisations selected that Global Report Initiative are used in their Sustainability Reports (Table 5.4). Esporão did not select any of the instruments or tools used to work on sustainability, IMVF resort to CSR and Shared Value initiative. NBI besides Shared Value, added Nature-Based Solutions, Biomimica, Sciemce-Based Targets.

However, NBI still does not have a history of activity to develop them. Nevertheless, NBI showed up more familiarity and knowledge with the instruments that enable sustainability and show the intent to regularly use Ecosystem-based Approaches to Climate Change Adaptation, or Ecosystem-based Adaptation (EbA).

Table 5.4 - Instruments and tools used in the organisations for sustainability

	IMVF	Esporão	NBI
Instruments or tools used when working on sustainability	• Corporate social responsibility • Shared value • Sustainability and corporate responsibility	• None	• Shared value • Nature-Based Solutions, Biomimica, Sciemce-Based Targets
Aspects / indicators used i for sustainability performance assessment	Global report initiative	Global report initiative	Global report initiative
	Sustainability Reports	Sustainability Reports	Sustainability Reports
	Life cycle assessment		Ecosystem-based Approaches to Climate Change Adaptation, or Ecosystem-based Adaptation (EbA)

Another topic developed in this section is the engagement level when developing sustainability actions (Table 5.5). The organisations are inclusive, integrating Top management (Executive Management or Administration) and Department and project managers, but only IMVF includes the employees.

Table 5.5 - Who organisations include when developing actions for sustainability

IMVF	Esporão	NBI
• Top management (Executive Management or Administration) • Department and project managers • Employees	• Top management (Executive Management or Administration) • Department and project managers	• Top management (Executive Management or Administration) • Department and project managers

Fowling up this question, the organizations provided more details, follow below the summaries of the points explored in the interviews.

In NBI, the opportunity for joint individuals in projects brought the structuring of an organised group that offers competences. Most of the team already had capitalised experience in businesses and projects that link the business strategy to the potential and risks inherent to biodiversity and ecosystem services, in the other words, projects rooted in nature that create a more resilient business.

From that process, the actors that constitute the start-up are four experts in ecology and biology, one specialist in management, a background on forest engineering, and a senior specialist in management.

In Esporão, as explored in the leadership topic, the initiative involved all the actors from the company, including their suppliers. The CEO had an important role as an agent of transition since he was the primary driver to transit to biological agriculture. Nevertheless, he knows that the process needs to count with a shift of behaviours from everyone, particularly the farmers. Because this transformation is anchored on values and belief systems, communication, and transparency were the key factors.

Regarding the IMVF project, the actor's engagement was the central point of this initiative.
Many entities were involved in this project, as the IMVF project leader and project coordinator was composed of a technical team based in Bissau. In the rehabilitation territory, the beneficiaries (community and farmers) were supported by a team of hydrology and hydrological resource experts and supported by a team of activity facilitators, two local NGOs with strong ties with the community.
The project was highly dependent on a trust relationship between all the actors due to the differentiating approach that the project proposed - not paying beneficiaries the labour tasks. On the one hand, the promoters were dependent on accomplishing the tasks by those who would not be paid. On the other hand, the beneficiaries need to have confidence in third parties that demand brutal physical effort.
Note that the labour work of this rehabilitation requires the construction of dikes without the help of any transport or construction machinery, since it was an island full of bodies of water (river, sea arm, channels, brooks,...).

Interestingly the project was replicated in other regions, and it did not always work, namely, in Quinera, the communities refused to work without being paid.

Overall communication and trust are the critical and common factor of this completely different organisations and initiatives. All cases emphasize that in the interviews, even NBI highlighted that when talking about the team and casting new members.

5.4.4 Added Value - Gains

This final section is composed of the reflections, mainly relating resilience and lessons learned of the initiatives, highlighting the added value attributed to sustainability, and how sustainability makes organisations more resilient, especially in the adversities of pandemic challenges. Finally, it is considered the differentiator and innovative aspects of each case.

When asked to rate the questionnaire from 0 to 10, the sustainability added value for the organisation, IMVF and Esporão rated with 8 and NBI with 10.
Nevertheless, these are very high and expected scores have completely different meaning for each of them.
IMVF translates the added value in productivity, surplus and Costs vs Results a perspective more focus on efficiency and efficacy.
Esporão offered a completely different understanding. They choose Brand Equity, Balance between Stakeholders, Long term, as the three aspects that translate sustainability's added value, giving a financial perspective but anchored on reputation and value. Besides, they consider the stakeholder's engagement and the future of the company.
Meanwhile, NBI summarises the added value in: "Naturally Based Economy" understanding the value of sustainability as an approach to develop an action.

Relating resilience of the organisations with the adversities of pandemic challenges, in the interview was explored what was the role of sustainability in that. In the other words, how be more sustainable and actively contribute to sustainability help to be resilient.

Regarding Covid-19, NBI does not had a history before the pandemic, nevertheless they shows intent to apply bio-economy as a resilient factor for a crisis, particularly pandemics, offering a structure that allows approaching this kind of problems, but at the same time give degrees of freedom that allow to create and build a methodology to act on future problems, creating possible paths to the issues that can already be foreseen.

Overall NBI shows a sense of urgency and mission regarding sustainability, reviling a deep knowledge of sustainability as a complex system, with a major focus on the future (short and long term).

Esporão, more focused on the transition process, points out that the major lesson is the need to ensure that the people who are leading must be passionate and motivated and with the drive to do, a shareholder guideline document it is not enough to transform a business. It is more about creating a space that promotes non-conformity, change and creativity, making an effort to do better and not necessarily more. That advancement depends on the knowledge, conducts to believing and putting our hearts on the projects they develop.

The pandemic had a large impact on revenue, and it is possible to anticipate difficulties in terms of performance, in terms of strategic development, growth, projects. Nevertheless, the company showed a resilient capacity facing this pandemic challenges. In the interview, when confronted if that resilient capacity is related to how the organisation embraces sustainability, the CEO answered that is more related to "(...) *culture and the values that exist, which are from the beginning there was no hypothesis in people's minds other than that we are all together, the effort when asked will be asked of all, in equal proportions and*

there was a very great relationship of trust between people very early on (...)". Again, relationship and trust are key factors.

Esporão mentions the culture and values as the main factor for being resilient facing this pandemic, clearly, that includes sustainability, since it is part of their DNA, but the major focus is on people. Humanism, social values, environmental values are all core values of sustainability and have a great role facing a pandemic problem, that directly affects people's lives, and could turn against the business because it could break with what is the relationship and all the work that had been built with people. So, it was apparent that this would be a great opportunity for the organisation to reinforce their values.

Finally, IMVF picture another factor to take into account in sustainability transitions: "do not be afraid to do different". In a territory that are used to receiving help from NGO's IMVF took a completely different approach, investing part of the budget in actions to reinforce relationships, betting on building bonds of trust with all parties and for that, did not pay the labour from the farmers, since they already received support in several matters (construction material, seeds, and knowledge to rehabilitate, farm and management the crops).
As a result, besides the crops are rehabilitated, and the communities are with much better living conditions, particularly regarding feeding, the project had an impact of changing mentalities and attitudes in projects to help communities in Guine-Bissau. Investing in relationships brings accountability and is crucial to gather information and create more robust solutions engaging the community.

5.5 Key Findings

In this section is summarised the results, of the three sources early presented, through cognitive maps.

The objective was to capture the diversity of information, thoughts and ideas that emerge from the results, and summarise central ideas to support the identification of critical factors for sustainability and sustainable development

The presented cognitive maps (Figure 5.28) have a circular shape and comprise three different contents:

- The first ring (from the centre) presents the core themes that guide the data collection and structed the data presentation in this chapter in each source of collection.
- The second ring (in middle) provide the more relevant data, numbers and information that is earlier presented
- The third ring presents the findings grounded from the data, uncover themes and underline topics explored in the literature review (Chapter 2)

To guide the reading of the maps and provide insight from the process of formulation is presented an example:

- First circle - cognitive map results from the literature

After the conducted content and discourse analysis of almost 1300 peer-reviewed publications (sub-chapter 5.2)

- First ring – core themes, example "Instruments"

Regarding the presented data in section 5.2.6 Instruments

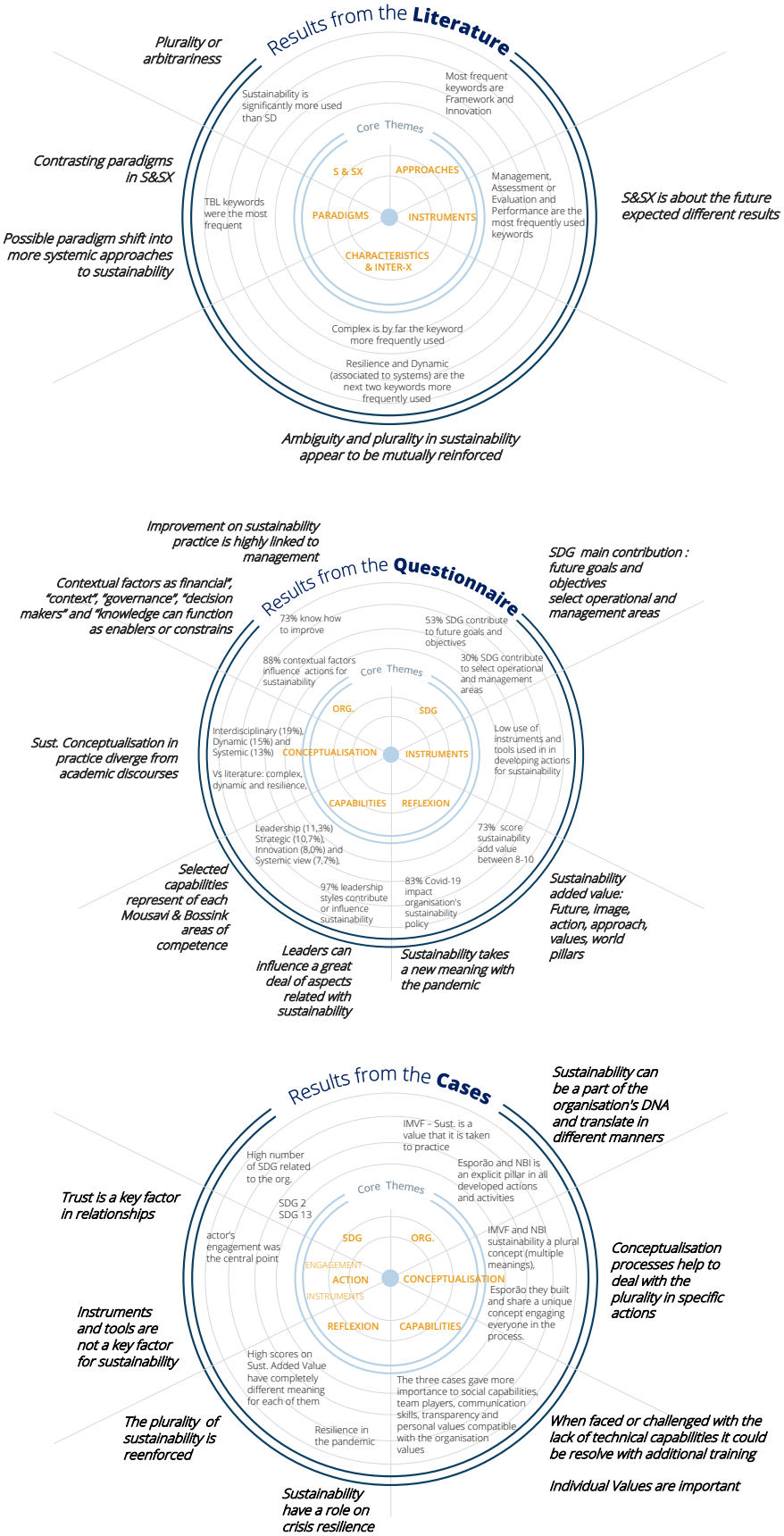
- Second ring – results from Instruments

"Management, Assessment or Evaluation and Performance are the most frequently used keywords", as shown in Figure 5.9

- Third ring – central ideas grounded from the data

As discussed futher, "if S&SX is, assumably, about the future, then these results could be expected to be different".

Figure 5.28 - Summary of SPRAY's results- Cognitive maps



This process of synthesising the findings and identify central ideas, translated on cognitive maps, allowed to uncover connecting points from SPRAY's results that were treated separately (according to data source).

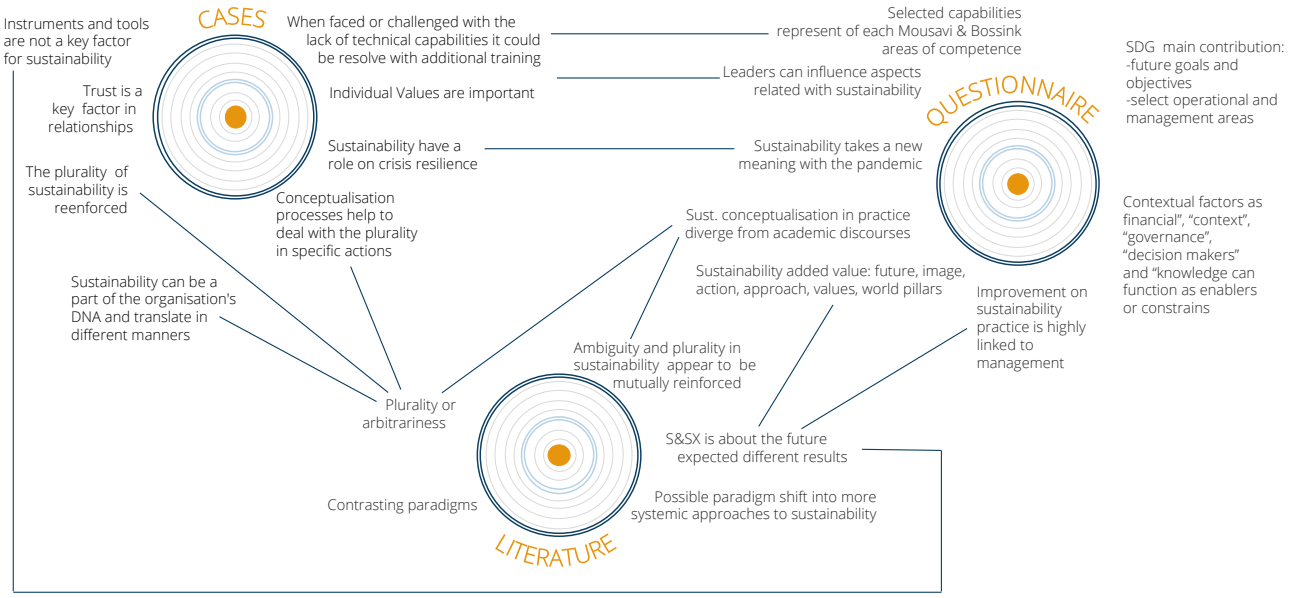
Following the same example "if S&SX is about the future" the results that emphasise instruments related to day-to-day or past activity were not expected.

It connects with questionnaire results that reinforce sustainability and future linkage.

The questionnaire results, regarding to the organisations know how to improve sustainability reveals a spectrum of positively linked responses to management, showing the same trend.

Additionally, this idea connects with the undermining role of the instruments and tools expressed by the interviewed three organisations.

Figure 5.29- Relation between the findings



The results point towards the following main findings:

- Results appear to confirm plurality in S&SX despite some arbitrariness in its use.
- It is possible to recognize that plurality is based on the optics of different disciplinary fields and contexts of application, conceptualisation in practice diverge from academic discourses.
- Ambiguity and plurality in sustainability appear to be mutually reinforced
- Recognizing sustainability as ambiguous, complex, integrated, and even the need to approach it systemically, appears to be quite challenging.
- Possible paradigm shift into more systemic approaches to sustainability.

- Interpretations and Understandings appears to be more related to values than skills.
- Results reenforces the areas of competence that grouped relevant capabilities.
- The capabilities that seem to be more valued are related with interpersonal relationships, individual values have relevance.
- Diminished importance was given to the instruments.
- The instruments time frame focus in S&SX is still dominated by the assessment, evaluation and performance of past actions and of short-term actions engaging management (the top most keyword).
- An assumption of S&SX as a future based concept is paradoxically apparently contradicted by these findings - core concepts that would be expected to be more frequent in the literature (such as wicked, systemic, foresight and strategies) are yet used in a limited way.
- Contextual factors such as "financial", "context", "governance", "decision makers" and "knowledge" can function as enablers and constrains.
- The SDG is view as a reference and can help organisations to set future goals and objectives and select operational and management areas.
- Improvement on sustainability practice is highly linked to management, although Leaders can have an influence role.
- Even when the add value of sustainability is highly recognizable its translations could have an infinity of meanings, reenforcing how context specific is the concept.
- Sustainability takes a new meaning with the pandemic, and have a role on crisis resilience.
- The perceptions of the added value of sustainability are also plural.

5.6 Significance of Findings through Sense Making Methodology

To provide guidance to structure the findings to a meaningful way to address sustainability this research used sense making methodology.

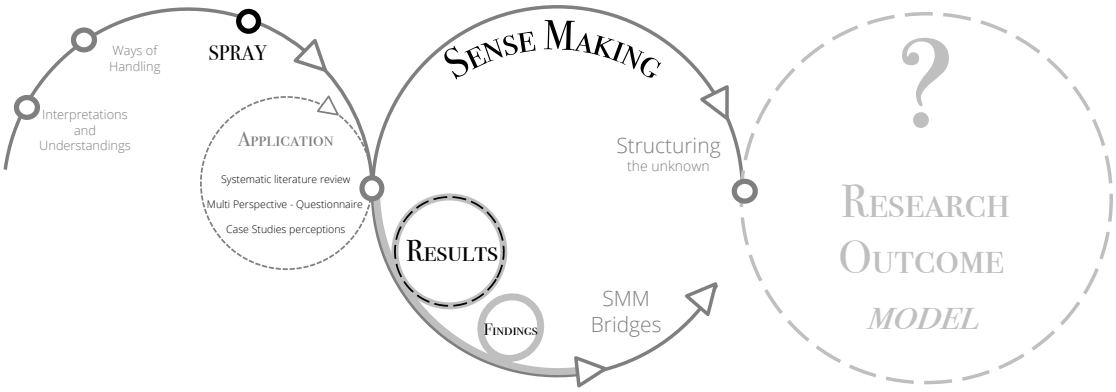
> "*Some people call Sense-Making a theory, others a set of methods, others a methodology, others a body of findings*"
> (Dervin, 1992:61)

Several authors have contributed to the development of sense making theory. "Sense-Making" is advocated by Brenda Dervin (Dervin & Nilan, 1986), and "sensemaking" championed by Karl E. Weick (Weick, 1995).

Because of the similarity in terminology and to remove the possibility of confusion, Dervin's and Weick's approach justifies an overview in Annex 5.D that specifies the main features on both methodological approaches.

Sense making the methodology used to shape a model for strategic contributions for sustainability from the connection of the findings grounded from the data with the literature reviewed (Chapter 2).

Figure 5.30 - Sense making usage in this research



The two approaches were adopted in this research, Dervin's Sense-Making Methodology (SMM) offers a methodology that is considered in data analysis, since it is used to understand the relationship between communication, information, and meaning.

The Weick's approach is used as the process of structuring the unknown to build a frame for strategic contributions for sustainability. Weick's approach constitute ontological, epistemological, and methodological claims that are pillars to shape a model for strategic contributions for sustainability.

In this research the terms are used following this logic:
"sense making"- universal meaning
"sense-making"- usually next to "methodology" and referencing Brenda Dervin meaning
"sensemaking"- referencing Karl E. Weick meaning

5.7 Chapter conclusion

This chapter presents the results and findings from the use of SPRAY's in three different applications: (i) scientific literature, a systematic literature review was conducted (content and discourse analysis) of peer-reviewed publications (ii) collect reflections on sustainability, a questionnaire was applied to a pool of different organisations (iii) a case study analyses was developed resorting to in-depth interviews.

The multiple-method of conceptualisation and cognitive mapping (described in Chapter 3) to approach the data was rooted on the dimensions and domains of the research. That allow to contextual the analysis of the data and to keep it strongly aligned with the objectives and aim of this investigation.

The combined data collection from literature and from organisations provide a generalisable and comprehensive data, helping to:

- generate a picture of plurality
- gave a level of perception of sustainability paradigms
- build a richer understanding of the various modes of integration sustainability
- identify how organisations operate and process information related to sustainability
- establish relations between organisations' capabilities and sustainability strategies
- learn from experts' thoughts contextual factors that conditionate sustainability
- deeper recognition of how sustainability is perceived within a range of different organisations

The findings from SPRAY's Results and other elements from the literature review offer the insights and key elements to be considered in a model for strategic contributions for sustainability. Sense Making Methodology help to construct the bridge to identify the critical factors of such a model, and Weick's approach guided the design of the roadmap for strategic sustainability transitions, aligned with the research's epistemological principles-interpretivism (Chapter 3).

These key elements generated by sense making the findings are presented on the next chapter.

Chapter 6

RESEARCH OUTCOME - ROSETA

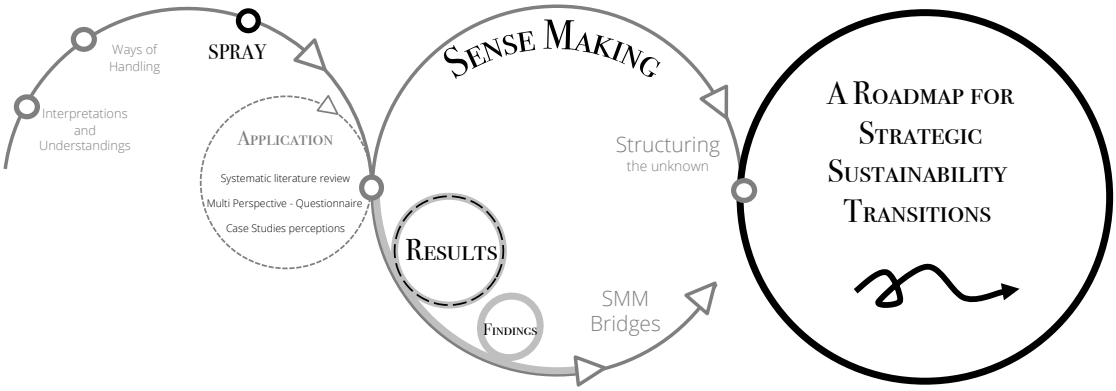
6.1 Introduction

In this chapter results, processes and tools used to data analysis are connected together using Sense Making Methodology.

From an inductive approach, the literature reviewed from chapter 2 and the key findings, presented in Chapter 5, have shaped a model for strategic contributions for sustainability. The foundational elements to develop a Roadmap for Strategic Sustainability Transitions are detailed.

Finally, ROSETA (**R**oadmap f**O**r **S**trat**E**gic Sustainabili**T**y Tr**A**nsitions) is presented, it is provided a description of ROSETA characteristics and components.

Figure 6.1- Chapter 6 Research Outcome - ROSETA summary



6.2 Development of a Roadmap for Strategic Sustainability Transitions

In the literature is possible to find innumerable models that try to explain the best way of development interventions for sustainability, describing its critical factors by proposing frameworks with several dimensions. In fact, it could be argued that the literature is already saturated with these models and frameworks.

Still, there were not found, in the time framed when the literature review was conducted, models that systematized comprehensively fully toughly in the collected results from SPRAY's framework.

Considering that the main aim of this thesis is to identify and conceptualize the critical factors to ground a strategic sustainable management approach for organisations, this section explores the foundations to develop a Roadmap for Strategic Sustainability Transitions.

These foundations were determined by transforming the findings in central ideas using SMM, and a set of principles that were absorbed by this research journey.

These two elements are presented in the following sections, central ideas include the acknowledge:

- Plurality of S&SX and its arbitrariness
- Ambiguity and plurality appear to be mutually reinforced
- Sustainability is a wicked problem
- The dispersion in contrasting paradigms, influencing theory and practice
- That fragmented knowledge challenges systemic integration
- Concreteness and integratedness seem hard to be mutually viable
- Capabilities are a determinant factor to interpretate and understand Sustainability
- Sustainability instruments are useful, yet not essential
- Sustainability practices is highly linked to management and decision making

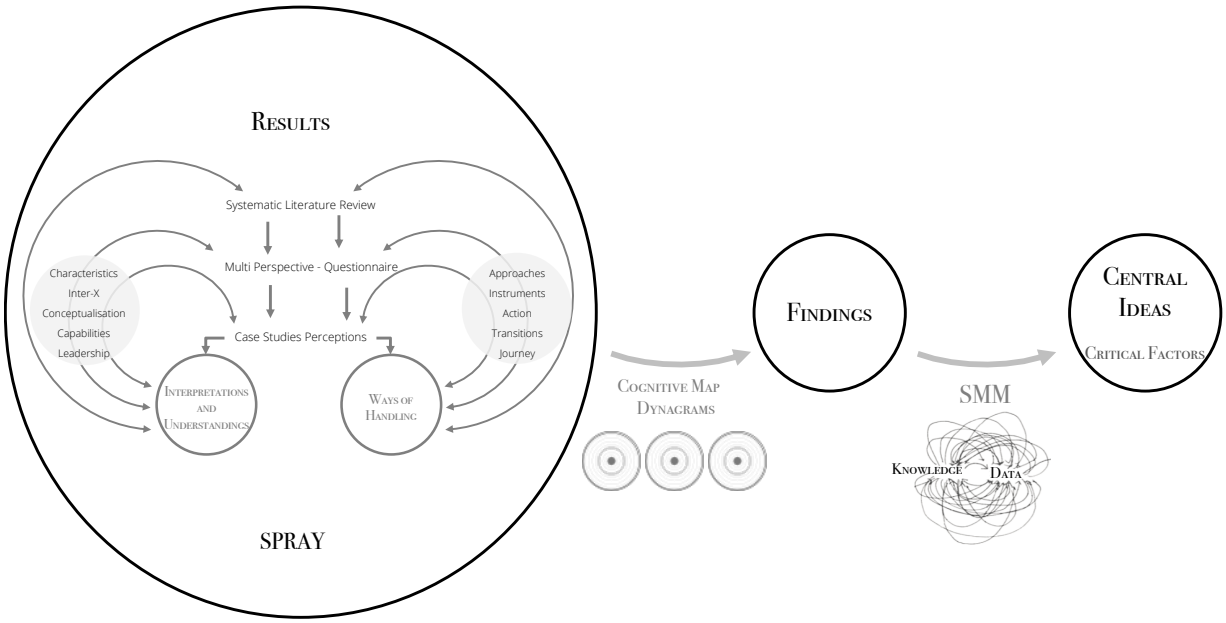
The principles that provide the model' s conceptual framing include:

- Conceptual Structure of the research
- 'Universal Model' for sustainability is not coherent with plurality
- Decision Making' mental models need guidance

6.2.1 Central Ideas

Reviewing the origin of the central ideas, Figure 6.2 presents the process of data analysis.

Figure 6.2- Process of data analysis



The key findings are an inter- and transdisciplinary collection of results that created the need to understand relevance contribution to viability and tangibility. Using Sense Making Methodology, central ideas aim to translate critical factors to take into account to develop a model that helps to formulate strategic sustainability transitions.

Because part of this central ideas come directly from the first application of SPRAY, some are already published in Lima & Partidário (2020).

Plurality of S&SX and its arbitrariness

As previously mentioned, the literature review uncovered the understanding of sustainability and sustainable development reporting to the concept's origins and three types of perceptions (Yolles & Fink, 2020), they are very useful to characterise the focus of the contribution and also a clear way to translate the plurality in S&SX.

These three types are described as (i) positive views grounding sustainability with future and organisational aspects related to growth, (ii) negative views that pointed out Sustainability is a null concept, unclear and undefined, and (iii) views make positive net contributions to viability and the development of the larger supersystem (ibid).

Multiple interpretations of S&SX are confirmed by the dispersion of identified keywords in the different categories analysed and results from the data collected from the organisation. It is possible to assume that even if was adopted more keywords in the review or in the questionnaire this dispersion pattern might persist.

This dispersion not only occur in S&SX characteristics but all over the discourses in the questionnaires and the cases, as in when expressing the added value of sustainability or translating how sustainability can be a part of the organisation's DNA in completely different manners.

Yet, this dispersion may reflect some level of arbitrariness in the use of S&SX. As discussed in the literature S&SX are sometimes perceived to be more of a political and social actors' play game (Gray, 2010 and Avelino and Grin, 2017), often captured to distract attention from the real problems, almost used as a marketing front page or a cover to hide yet continuing conventional agendas.

The major challenges, difficulties and concerns acknowledged in the literature seem therefore to settle around the little consensus on what is S&SX, but also on how to handle it in relation to approaches and instruments. It also reveals the difficulty in finding common patterns that can help to explain the different perspectives inherent to sustainability. But the plurality seems to be strongly associated to how the optics of different disciplinary fields apply to the understanding, interpretation and the handling of S&SX.

Therefore, it is possible to recognize plurality in the meaning of S&SX.

Ambiguity and plurality appear to be mutually reinforced

Central to this research picture of the plurality of sustainability stands how the plurality and ambiguity of S&SX could be closely connected.

It appears plurality provides for ambiguity, but on the other hand ambiguity also provides for plurality. These two attributes of sustainability - ambiguity and plurality – undoubtedly create vagueness. It comes from the use of the concept in a variety of contexts, different learning schools with the inherent disciplinary terminologies and dynamics, but also from different ways of handling the concept and forms of action that shape its practice, as results achieved reveal.

It is perhaps easier to say that ambiguity and plurality can be overwhelming and complicated. This interconnection, in the sense that both ambiguity and plurality mutually reinforce each other, do not need to be seen as complicated, but should be more as part of the complexity inherent to sustainability, as a wicked problem, acting as a challenge to creativity.

It is possible to conclude that ambiguity and plurality may both be needed and inherent to S&SX, stimulating recognition of the intertwining of different embedded systems. In short, the ambiguity and the loosely structure claimed by scholars as being associated with sustainability is, perhaps, more of an opportunity to has flexibility to capture a vast latitude of contexts. It requires system thinking in recognition that S&SX are so complex that it may be better dealt with as wicked systems and problems.

Sustainability is a wicked problem

One of the literature review inferences is the need to recognize, and accept, S&SX as a wicked problem, which demands new forms of dealing with S&SX. This requires an approach similar to complex problems – learn with examples, share stories but avoid recipes.

To shift perspective, and find new ways of handling with such, apparently impossible to solve, problems, reveals the need to explore new ways of approaching and handling the problem. The answer may rest on the opportunity to find, adopt and multiply new ways of thinking and approaches.

In order to deal with sustainability as a wicked problem, it is possible to conclude that the best strategy is to adopt the learnings from complexity sciences and begin with a simpler, without being simplistic, and common understanding of the problem.

Adding to that the recognition of S&SX plurality is also imperative, working towards sustainability demands establishing boundaries, that limit sustainability in space and time (context and concrete situation) for a certain group of actors, in order to have a workable problem that enable taking immediate action.

Strategies from wicked problem theory (Andersson and Törnberg, 2017) that can be of benefit to deal with sustainability include the need to recognize that: (i) problems are time and space (context) specific, and (ii) there are no simple or unique solutions. Though, there are dependent actors with multiple perspectives capabilities.

Dispersion in contrasting paradigms, influencing theory and practice

As reviewed in chapter 2, in the S&SX literature is perceptible two contrasting paradigms as extremes in a large spectrum of variable geometry. On one extreme there is TBL (Elkington, 1998), recognisably the most popular paradigm influencing theory and practice in S&SX. On the other extreme there seems to exist a paradigm representing more complex, systemic and integrated approaches to S&SX (Gibson, 2006; Hacking & Guthrie, 2008; Partidario et al, 2010), and the recognition of sustainability as a wicked problem (Andersson & Törnberg, 2017).

While not crystal clear, but, in the literature on S&SX, based on weak signals that could reflect a transition through these dominant paradigms, it appears there is a trend from a TBL approach to a more integrative mindset.

On one hand the literature recognizes complexity in sustainability, also suggesting it as a wicked problem. On the other hand, the literature acknowledges that the understanding of sustainability based on the separation of social, economic and environmental dimensions do not necessarily reflect conditions of sustainability.

The data collected supports this variance not only in divergent results from different data sources, but also within the same source. For example, questionnaire results showed an almost 50/50 percentage between a TBL paradigm structured in the three pillars, and sustainability as an integrated system.

Fragmented knowledge challenges systemic integration

Conventional decision-making practices and results failed to address interconnections among key development decision factors, particularly factors linked to the three elements that structure the TBL concept, which may be variously described as "economy, environment, and society" or "equity, ecology, and economy", or "planet, profit and people". Many approaches to sustainability still describe the interconnections as a "triangle" of social, economic and ecological considerations separately, a "three-legged stool", or overlapping circles in a Venn diagram, and then struggle with how to integrate the separate findings.

One of the findings from the data analysis is that TBL represents a dominant fragmented approach to sustainability, after twenty years is still dominant in the discourse, in conceptualization and in practice.

This finding is based on the results achieved with the most frequently used keywords associated to TBL: social, economic and environment. Interestingly, among this three conventional dimensions social appears to be most frequently used, followed by economic and only then the environment. These results contradict some perceptions that environment is more favoured in sustainability than social or economics.

According to Gibson (2006), the effective integration of the major interdependent considerations in sustainability find difficulties because of the established capacities, and the excellence of, but fragmented, knowledge of experts trained separately in social, economic and environmental fields

Such knowledge and fragmentation reflect a lack of systemic and integrated thinking and approaches and could largely be considered the main reason for the difficulty in integrating separate findings.

Concreteness and integratedness seem hard to be mutually viable

Although the previous analysis TBL concept contributed significantly to the S&SX debate exactly because it enables simplification and manageability. The biggest merit of the TBL in its early days is that it offered a simpler and concrete approach to understand S&SX, even though deconstructing sustainability, enabling a wider group of scholars and practitioners to accept the concept.

But has the previous central idea pointed out, the downside has been the lack of a systemic and integrated view, promoting the popularization of silo thinking, shortening its integratedness (Hacking & Guthrie, 2008). And perhaps this also has contributed to an increased ambiguity and vagueness in a concept that is essentially integrative.

Maybe this has also been instrumental in the emergence of the sustainable development goals (SDG) (United Nations, 2015) which now shows as a strong alternative to the TBL in creating concreteness and defining the meaning of S&SX, while recognizing a wider scope. The SDG are now an objective and concrete way of deconstructing sustainability in 17 different but interrelated dimensions. The United Nations speaks even of the indivisibility of the SDG (United Nations, 2015), further explored by Le Blanc (2015).

However, the practice is revealing difficulties with this integrated and systemic view. The ways to approach sustainability are still blurred under discussions on effectiveness, applicability and measurements (Nilsson and Persson, 2017; Paya, 2018; Tsvetkova, 2014).

Attention to its actual implementation is being predominantly limited to the adoption and management of targets and indicators, sometimes shortened to one or just a few goals, particularly in relation to concrete actions that translate sustainability into practice (Engert et al., 2016; Galbreath, 2009; Hahn & Kühnen, 2013). As SPRAY's results showed, that SDG contributions are mainly on the definition of future goals/ objectives and helping to select the operational and management areas that are central to S&SX.

Capabilities are a determinant factor to interpretate and understand Sustainability

The capabilities that allow to integrate, create and (re) configure competencies, internal and external, are an essential part in the discussion of development processes and demonstration of transition to sustainability. And that have an effect on the organisation's strategy for sustainability.

The competences that were highlight with the greatest contribution to transition processes that consider the fundamental attributes of sustainability are: strategic and systemic vision, anticipation, resilience, flexibility, accountability, innovation, integrative thinking, cooperation, collaboration and transparency.

The results of the cases reinforce the importance of leadership. Yet, the cases unanimously emphasise the compatibility of individual values to the organization and trust are more vital factors. Sending a message that individual values and interpersonal relationships are more valued than any technical competence can be developed or trained later.

Nevertheless, the idea of capabilities as an essential part in the discussion of sustainability is reinforced. Especially by the results of the questionnaire, that shown that capabilities are a factor that strongly condition development and contribution to sustainability

Sustainability instruments are useful, yet not essential

Many of the Sustainability Instruments are largely used, but not necessarily in a strategic manner.

The analysis on instruments time frame focus in S&SX showed an apparently paradoxical result. An assumption of S&SX as a future based concept is contradicted by the dominance of instruments on assessment, evaluation and performance (past oriented) and of short-term actions engaging management (present oriented).

Still, instruments with time frame focus on present and pass can be useful for strategic and future oriented approaches, since they provide knowledge and information that are usually basilar and structural to formulate strategies and design prospective planning.

Nevertheless, results collected from the organisations give diminished importance to sustainability instruments.

Sustainability practice is highly linked to management and decision making

The results on the contextual factors that conditionate the development of actions for sustainability pointed to common factors that can both function as enablers and constrains. Decision makers, governance and knowledge are some of that factors.

That is also reenforced with additional data regarding the improvement on sustainability practice, the majority of the results linked with management issues, and the examples of how leaders can have an influence role in team management.

6.2.2 Set of principles

A set of principles was considered in developing a Roadmap for Strategic Sustainability Transitions, conditioning its development. These principles include the conceptual structure of the research and principles concerning the type of model that is compatible with the central ideas.

Conceptual Structure of the research

This thesis has its foundations on understanding the different meanings of sustainability (plurality) with an attempt to clarify paths of significance and how they can contribute to other ways to act towards it, mainly in the organisational sphere.

And although it is recognize that an inter-and transdisciplinary is an essential research approach to address complex sustainability problems from a "science with society" perspective instead of the traditional approach of "science for society" (Muhar, Visser, & Van Breda, 2013), this research was not developed on experiences from large collaborative project.

This investigation took a more philosophical approach on the concept of sustainability, navigating into the interactive rationales of sustainability as a reflection of its epistemic patterns of knowledge or cognitive information. Thus, the model proposal is centred on processes of thinking. The guidance provided is centred in cognition, reasoning and decision-making.

"Universal Model" for sustainability is not coherent with plurality

When looking for more integrated ways of approaching or measuring progress towards S&SX it is important to recognize, as showed in the work of Espinosa and Walker (2011), that a "universal model" for sustainability is not coherent with the acceptance of plurality justified by contextual variations and interpretations.

Therefore, a requirement for the proposed model is flexibility to accommodate the contextual variations and interpretations of sustainability.

Decision Making' mental models needs to integrate other rationales of thoughts

Performance is held to depend on peoples' mental models of how causes affect the outcomes observed in specific domains. Decision-making studies have demonstrated how managers benefit from more accurate mental models by gaining higher-quality heuristics and better performance (Palmunen, Lainema, & Pelto, 2021; Tomlin, 2021).

Considering that a mental model is an individual's internal conceptual understanding of a given problem, including cause-and-effect relationships between actions and results (Jones, Ross, Lynam, Perez, & Leitch, 2011). Eliciting mental models is useful for helping to understand complex interconnected elements of a system and influence peoples' performance on creative problem-solving task (Guerrero, Jones, Ross, Virah-Sawmy, & Biggs, 2021; Jones et al., 2011).

Consequently, the conceptual model that this research presents is structured in rationales of thought to enhance the integration of sustainability into strategic decision-making.

6.3 ROSETA-Roadmap for strategic sustainability transitions

The ROSETA main objective is guide organisations enhancing their strategies to promote a transition to more sustainable management practices. This model does not provide guidance for application of methods or methodologies, instead offers coordinates to guide the formulation and implementations of strategies for sustainability transitions. In other words, it is not intended to be a process of "how to do ..." or "how to incorporate...", but rather critical elements to be integrated in the formulation and implementation of a strategy for sustainability.

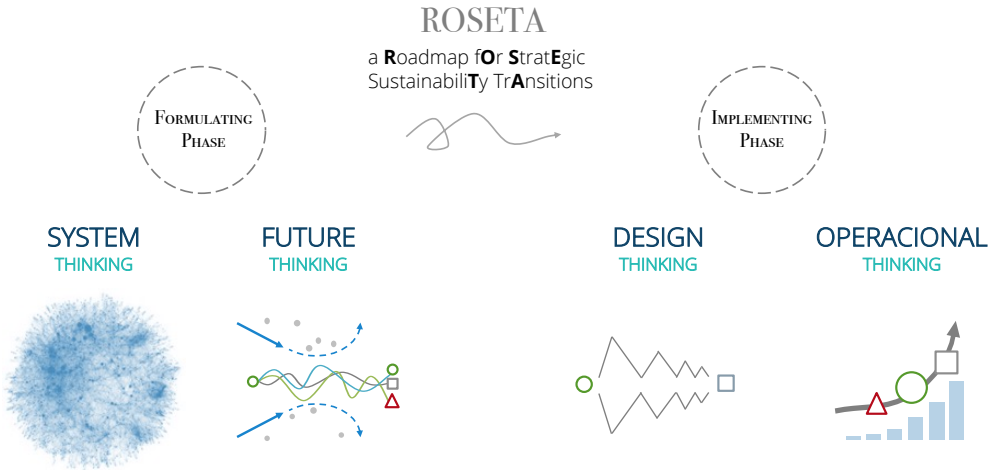
ROSETA (**R**oadmap f**O**r **S**trat**E**gic Sustainabili**T**y Tr**A**nsitions) name is inspired after the compass rose and Rosette Stone. The compass rose represents the four fundamental senses (cardinal points) and is very useful to indicate directions. While the Rosette Stone was crucial for the modern understanding of Egyptian hieroglyphs, representing the help to translate the findings in more useful knowledge.

ROSETA strive to embrace sustainability's plurality thought the critical factors, thus is grounded on the integration of rational of thoughts. These rational of thoughts should be incorporated in processes of formulating organisational strategies and their implementations, following the two important phases of strategic management (Mintzberg and Waters, 1985).

In the formulating phase, ROSETA encompasses the inclusion of System Thinking and Future Thinking in organisational process of strategy development. In the implementing phase ROSETA considers the incorporation of Design Thinking and Operational Thinking in organisational process to plan the strategy implementation.

By including System Thinking and Future Thinking as well as Design Thinking and Operational Thinking, on these two phases, ROSETA opens the potential for tangible transitions for strategic sustainability journeys.

Figure 6.3 - ROSETA - a **R**oadmap f**O**r **S**trat**E**gic Sustainabili**T**y Tr**A**nsitions



6.3.1 Elements of ROSETA

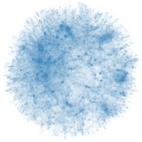
As mentioned, ROSETA is composed of two phases, each one with two thinking rational, respectively. Its detail is provided on this section relating them to the central ideas from SPRAY's results (Chapter 5) and the three areas of competence of the capabilities (Chapter 2).

ROSETA is not a process, neither a tool, so there is no sequential order of applying the elements, although Mintzberg and Waters (1985) suggests that strategy formulation is previous than implementation, nevertheless, more contemporaneous and more innovative processes of strategic development consider a continuous feedback loop between formulation and implementation.

Also, both phases' elements do not have a specific order between them, the most important is the integration of the two rationalities in each phase.

6.3.1.1 Formulating Phase

This phase is composed by rationales of thought essential in formulating the strategy to transition to more sustainable management practices: System Thinking and Future Thinking.



SYSTEM THINKING

System thinking helps in conceptualisation discussions addressing interconnecting the internal strategic features of an organisation with its external environment. Connecting the internal strategic features of an organisation may include its distinctive competences, fundamental resources, its structure, its strengths and weaknesses.

That process of conceptualisation discussions creates the space to discuss sustainability's meanings and characteristics (as complexity) and its integration in the organisation.

Contributions of System Thinking

The ROSETA System Thinking element allows the organisation to incorporate on its strategy formulation intra and inter relationships between the different parts of the system (e.g. actors, resources, territories, players, networks), creating a big picture of the systems in which the organisation operates.

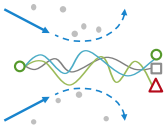
Contributes as well to acknowledge the different parts of the system, monitor the unexpected, be aware of the feedback loops and flows between the different parts of the system. Tools and instruments that focus on past performance can be useful, with strategic purpose, to construct a better picture of the system(s).

Understanding feedback loops allows the organisation to gain perspective of causalities, generating sense of opportunities or challenges to come, and create representations (maps) of the organisation's system.

Relevant capabilities

The following relevant capabilities are needed for a successful integration of ROSETA System Thinking element in the strategy formulation:

DETECTION	APPREHENSION	RECONFIGURATION
Monitoring, and reflective	Observation	Innovation, transformation and dynamics
	Systemic view and interdependence	Leadership, cooperation, collaboration and transparency



FUTURE THINKING

When Thoughts are centred in Future, future thinking helps to nest drivers of change, and societal challenges and resilience are debated. It stimulates strategic dialogue, widens the understanding of what is possible, strengthens leadership, and informs decision-making.

Contributions of Future Thinking

Future thinking considers that the future is open, it is not fix, that has the same roots on sustainability conceptualization as a moving target.

Thus, the future is fuzzy and not predictable, consequently it is not possible to know the future, only glimps of it. The knowledge of the Future is imperfect, so the constructions of possible futures are supported on the perceptions and mental models that influence what is possible to know.

Future thinking also helps to understand that the future is fast and slow, there are elements that are in a constant change and others which are rather difficult to detect change.

Relevant capabilities

The following relevant capabilities are needed for a successful integration of ROSETA Future Thinking element in the strategy formulation:

DETECTION	APPREHENSION	RECONFIGURATION
Monitoring, diagnosis and reflective	Observation	Innovation, transformation and dynamics
Anticipation, and Prospective	Systemic view and interdependence	Leadership, cooperation, collaboration and transparency

6.3.1.2 Implementing Phase

DESIGN THINKING

Design thinking has showed value to deal with wicked problems such as sustainability.

Its philosophy to solve problems is that experimentation embraces the error for progress, which leads to potent innovation.

Contributions of Design Thinking

Design Thinking is an iterative process in which we seek to understand the final result. It revolves around pinpointing problem(s) and highlight opportunities for innovation, welcoming creative ideas.

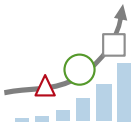
Design Thinking contributes to the process of questioning. It includes questioning the problem, the assumptions and the implications. Design Thinking is particularly useful in tackling problems that are ill-defined and complex, by re-framing the problem.

Design Thinking also involves ongoing experimentation: sketching, prototyping, testing, and trying out concepts and ideas to finally arrive at the implementation phase translating the vision to practice.

Relevant capabilities

The following relevant capabilities are needed for a successful integration of ROSETA Design Thinking element in the implementing formulation:

DETECTION	APPREHENSION	RECONFIGURATION
Monitoring, diagnosis and reflective	Observation	Innovation, transformation and dynamics
Proactive, management and operability	Flexibility and Adaptability	Leadership, cooperation, collaboration and transparency



OPERATIONAL THINKING

Operational thinking gives the strategy a concrete shape, and in this case, Sustainability also gets a concrete meaning and tangibility.
This rational of thought make real inputs and positive net contributions to viability.

Contributions of Operational Thinking

Requiring a deductive logic, Operational Thinking focus on process and results, continuously conscient of improvement.

Operational Thinking solution to almost any problem is creating, enhancing, or streamlining a process.

The main contribution of Operational Thinking is concrete and practical take place abstract and vague.

Relevant capabilities

The following relevant capabilities are needed for a successful integration of ROSETA Operational Thinking element in the implementing formulation:

DETECTION	APPREHENSION	RECONFIGURATION
Monitoring, diagnosis and reflective	Observation	Innovation, transformation and dynamics
Proactive, management and operability	Flexibility and Adaptability	Leadership, cooperation, collaboration and transparency

6.4 Chapter conclusion

The ROSETA (a Roadmap for Strategic Sustainability) main objective is enable organisations enhancing their strategies to promote a transition to more sustainable management practices. Its development considers the critical factors that grounded in the development of the research and reasoned with the help of Sense Making Methodology.

ROSETA is a multi-level approach guiding the integration of four rationales of thought: Systems Thinking and Future Thinking (in Strategy Formulation Phase) Design Thinking and Operational Thinking (in Strategy Implementation Phase). Although both phases can be used separately, the ROSETA potential gains when both phases are used.

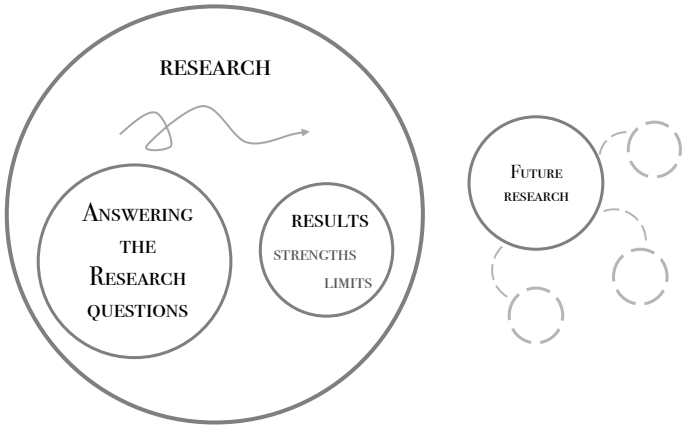
Transitions to more sustainable management practices need to close the gap between strategy formulation and implementation of the strategy which is also a contribution of ROSETA.

Chapter 7
conclusions

7.1 Introduction

This concluding chapter highlights how this study answers the research questions as well as potential paths for further research after presenting the research foundations, achievements, and potential limits of this study.

Figure 7.1- Chapter 7. Conclusion summary



7.2 Research Overview

7.2.1 Research Foundations

This thesis has its foundations on understanding the different meanings of sustainability (plurality of meanings) with an attempt to clarify paths of significance and how they can contribute to other ways to act towards it, mainly in the organisational sphere.

Finding a meaningful way to comprehend sustainability as a concept, was the first step, and required an in-depth understanding on how is addressed sustainability and sustainable development (or other applications of sustainable) meanings (Aarseth, Ahola, Aaltonen, Økland, & Andersen, 2017; Avelino & Grin, 2017; Bansal & DesJardine, 2014; Bebbington, Russell, & Thomson, 2017; Bolis, Morioka, & Sznelwar, 2014; Filho, 2000; Gray, 2010; Hjorth & Bagheri, 2006).

Embracing pluralism (Leuschner, 2012; Sneddon et al., 2006) provided a way out of the ideological and epistemological straitjacket that deter more cohesive and politically effective sustainability interpretations. Considering pluralism for the analysis and normative construction of sustainability, helped to explore the attributes of sustainability and its conceptualisation.

Yet, the focus of this work was to achieve concreteness in making strategic sustainability management more feasible towards a more integrated Sustainability transitions. And, the research on sustainability transitions proposes fundamental changes in societal systems' organisation to overcome persistent societal challenges and allowing systems to become more sustainable (Loorbach, 2010; Rotmans & Loorbach, 2009; Schäpke, Omann, Wittmayer, van Steenbergen, & Mock, 2017; Vandevyvere & Nevens, 2015; Wittmayer, Schäpke, van Steenbergen, & Omann, 2014).

This research built on sustainability transitions and transdisciplinary transition management to allow connecting strategy with sustainability practices in coherent, holistic, and systemic way. The objective of doing so had two fronts: a) increase the strategic benefits by creating a strategic relevant approach and, b) enhancing organisations' capabilities to achieve sustainable management practices.

7.2.2 Framing Sustainability Plurality – thesis outcome

Therefore, the conceptual framework SPRAY (Sustainability's PluRAlitY) was adopted to picture plurality of sustainability (Lima & Partidário, 2020). Following a grounded theory research strategy, a conceptual framework - was drafted, which respects the flexibility and emergent nature of the qualitative and quantitative characteristic of this research.

The conceptual framework was developed to picture plurality of sustainability. SPRAY drives and structures the analysis around identified characteristics and multiple attributes of sustainability in research's applicability.

SPRAY, as multi-method application, structure data collection in the following applications:

(i) To look into the scientific literature

A systemic literature review was conducted (content and discourse analysis) of 1.292 peer-reviewed publications.

Thirteen different topics were selected to analyse how sustainability and sustainable development were used in the literature. These topics include 8 sectors: Urban, Energy, Transports, Land use, Agriculture, Forest, Ocean, and Supply chain, and 5 perspectives: Business, Corporate, Community, Science, Education. The 100 more relevant articles for each topic, were considered, due the 8 overlapping papers the sample did not complete 1300 peer-reviewed publications.

(ii)To collect reflections on sustainability

A questionnaire was applied to a pool of different organisations, it was collected 60 questionnaire responses.

The questionnaire was answered by all kind of organisations (academy, consulting public administration, companies, industries, NGOs and others), from technical staff to senior staff, to top management (including executive management or administration).

Most of the sample organisations have activity in Portugal (80%), although most are not Portuguese organisations. As for their contribution to sustainability, 90% of the sample considers that actively contribute to sustainability

(iii) To gather perspectives of a sustainability journey

A case study analyses were developed resorting to in-depth interviews, 3 cases were studied.

The three cases selected were an NGO – Instituto Marquês de Valle Flôr (IMVF), an agriculture company – Esporão and a start-up Natural Business Intelligence (NBI).

These three cases share activities on the agriculture sector, and that was a relevant point in its selections, because that is the economic sector with more dependence of natural resources, and it enables a deeper understanding of sustainability.

7.2.3 Central Ideas from the collected data

The review of the literature on diagrammatic reasoning led to the use of thematic coding, cognitive maps and dynagrams allowing identify the central ideas from SPRAY's results (Eden, 1988, 2004; Eppler, 2006).

The SPRAY's significant findings and central ideas were related in nine topics:

- Plurality of S&SX and its arbitrariness
- Ambiguity and plurality appear to be mutually reinforced
- Sustainability is a wicked problem
- Dispersion in contrasting paradigms, influencing theory and practice
- Fragmented knowledge challenges systemic integration
- Concreteness and integratedness seem hard to be mutually viable
- Capabilities are a determinant factor to interpretate and understand Sustainability
- Sustainability instruments are useful, yet not essential
- Sustainability practices is highly linked to management and decision making

The principles that provide the model' s conceptual framing include:

- Conceptual Structure of the research (Muhar, Visser, & Van Breda, 2013).
- "Universal Model" for sustainability is not coherent with plurality (Espinosa and Walker, 2011).
- Decision Making' mental models need guidance (Palmunen, Lainema, & Pelto, 2021; Tomlin, 2021).

From an inductive approach, the findings and knowledge from literature has shaped a model for strategic contributions for sustainability.

The discussion and the rational of the overall data collected is supported on Dervins' SMM, providing valuable insight to guide the construction of knowledge from the data (Dervin & Nilan, 1986). Weick's sensemaking is also use, its seven properties are expended as pillars to shape a model for strategic contributions for sustainability (Weick, 1995).

7.2.4 Emerging roadmap – thesis outcome

ROSETA stands for a Roadmap fOr StratEgic sustainabiliTy trAnsitions, its name is also inspired after the compass rose and Rosette Stone. Its main objective is enable organisations enhancing their strategies to promote a transition to more sustainable management practices.

ROSETA strive to embrace sustainability's plurality, thus is grounded on the integration of rational of thinking when a strategy to promote a transition to more sustainable management practices is design. And is composed by strategic path and implementation path (Mintzberg and Waters, 1985).

Strategy path is the journey of developing the strategy and includes as a rational system and future thinking. After is implementation journey, focusing on how the organisation can reach the objectives set, and integrates design and operational thinking.

Finally, ROSETA provide guidance to integrate four thinking rationales: System, Future, Design and Operational thinking. It establishes relations with SPRAY findings and with the three areas of competence of capabilities (detection, apprehension, and reconfiguration).

7.3 Answering the Research questions

This thesis explores the plurality of sustainability with an attempt to clarify paths of significance in the organisational sphere. The focus of this work is to achieve concreteness in making strategic sustainability management more feasible towards a more integrated Sustainability transitions.

The preceding chapters have explored key themes that have arisen from the theoretical and empirical, connecting with the beginning in this section is answered the research questions.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ1.1 How did sustainability acquire so many different definitions?	Chapter 2 and 6	Variety of contexts and transdisciplinary that sustainability is applied and used
	Chapter 2 and 6	Ambiguity of the concept

This thesis has its foundations on understanding the different meanings of sustainability (plurality of meanings) with an attempt to clarify paths of significance. The research point to main factors: sustainability transdisciplinary, and its ambiguity.

The literature supports that the term Sustainability is used across several disciplines and finds its way across a variety of contexts, which also contributes to the resulting variable geometry. Regarding to ambiguity are intertwining to plurality and both have a mutual reinforced relationship. The loosely structure conferred by the ambiguity offers an opportunity to sustainability be flexible to capture a vast latitude of contexts.

Nonetheless, ambiguity and arbitrariness drawn significant criticism to sustainability, some comments implying that it is an unsustainable concept due to its unconvincing, controversial or unclear nature and development, these views are classified as negative views of sustainability.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ1.2 Moreover, is it a blocking factor to discuss sustainability?	Chapter 2 and 6	There is no need for a common understanding of sustainability
	Chapter 2 and 6	Sustainability should be better dealt with as a wicked problem Embracing pluralism

This investigation presents facts that support the exist agreement on the fact that there is no need for a common understanding of sustainability, referenced authors emphasise the need to support the concept on real facts that show some valuable contributions in sustainable practice.

Under this thesis conclusion, sustainability should be better dealt with as a wicked problem, adopting the learnings from complexity sciences and begin with a simpler, without being simplistic, and common understanding of the problem. While recognizing plurality, working towards sustainability demands establishing boundaries, that limit sustainability in space and time (context and concrete situation) for a certain group of actors, in order to have a workable problem that enable taking immediate action.

Embracing pluralism, provides a way out of the ideological and epistemological straitjacket that deter more cohesive and politically effective sustainability interpretations. Considering pluralism for the analysis and normative construction of sustainability, will help to explore the attributes of sustainability and its conceptualisation.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ2 How to frame and gather evidence to picture sustainability's plurality?	Chapter 4	SPRAY - Sustainability's PluRAlitY

Finding a meaningful way to comprehend sustainability as a concept requires an in-depth understanding on how is addressed sustainability and sustainable development (or other applications of sustainable). Therefore, this investigation presents the conceptual framework SPRAY (Sustainability's PluRAlitY).

SPRAY tries to cover what translates the plurality of the concept, looking at both interpretations and understandings as well as ways of handling S&SX.

This conceptual framework was drafted following a grounded theory research strategy and respects the flexibility and emergent nature of the qualitative and quantitative characteristic of this research. SPRAY drives and structures the analysis around identified characteristics and multiple attributes of sustainability in research's applicability:

(i) to look into the scientific literature, a systematic literature review was conducted (content and discourse analysis) of peer-reviewed publications.

(ii) to collect perspectives on sustainability, a questionnaire was applied to a pool of different organisations.

(iii) to gather perceptions of a sustainability journey, a case study analyses were developed resorting to in-depth interviews.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ3 What are the main factors that enable and/or constrain sustainability?	Chapter 2	Capabilities and Strategies
	Chapter 5	SPRAY's Results

This research builds on sustainability transitions and transdisciplinary transition management to allow connecting strategy with sustainability practices in coherent, holistic, and systemic way. The objective of doing so has two fronts: a) increase the strategic benefits by creating a strategic relevant approach and, b) enhancing organisations' capabilities to achieve sustainable management practices.

Regarding contextual factors could influence organisations contribution to sustainability, through the application of the questionnaire, the pool of different organisations was able to identify some factors. That include:

(i) Context elements - Pandemic, crisis, market conditions, strategic cycles.
(ii) Governance elements – European and world agendas, political factors, policies, governmental organisations, local entities culture.
(iii) Decision makers elements – Capabilities, Management mindset/ cultural values, leadership, willingness to undertake the new and investors requirements
(iv) Financial factors - improving the efficiency of processes and financial balance, or investment available, and budgetary constraints.
(v) Knowledge/ awerness of the importance of sustainability
(vii) Social responsibility and engagement
(viii) Inertia for action and bureaucratises or bureaucratic immobility

Regarding to the 3 cases that were studied the communication and trust in relationships between actors is also a main factor that enable and/or constrain sustainability.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ4.1 How can a model guide the design of strategic sustainability journeys?	Chapter 6	ROSETA (Roadmap fOr StratEgic sustainabiliTy trAnsitions)

In the research is developed a model to enable organisations enhancing their strategies to promote a transition to more sustainable management practices - ROSETA.

ROSETA strive to embrace sustainability's plurality, thus is grounded on the integration of rational of thinking and is composed by strategic path and implementation path. Strategy formulation phase includes as a rational system and future thinking. The strategy implementation phase is focus on how the organisation can reach the objectives set and integrates design and operational thinking.

Research Questions	Chapter that contributes to answer the Research Questions	
RQ4.2 What are the critical factors for such a model?	Chapter 6	ROSETA foundations

The critical factors are ROSETA foundations from an inductive approach, the findings and knowledge from literature has shaped a model for strategic contributions for sustainability.

The review of the literature on diagrammatic reasoning led to the use of thematic coding, cognitive maps and dynagrams allowing identify key findings.

The discussion and the rational of the overall data collected is supported on Dervins' SMM, providing valuable insight to guide the construction of knowledge from the data to reasoning the central ideas from SPRAY's results. Weick's sensemaking is also use, its seven properties are expended as pillars to shape a model for strategic contributions for sustainability.

The SPRAY's significant findings and central ideas were related in nine topics:

- Plurality of S&SX and its arbitrariness
- Ambiguity and plurality appear to be mutually reinforced
- Sustainability is a wicked problem
- Dispersion in contrasting paradigms, influencing theory and practice
- Fragmented knowledge challenges systemic integration
- Concreteness and integratedness seem hard to be mutually viable
- Capabilities are a determinant factor to interpretate and understand Sustainability
- Sustainability instruments are useful, yet not essential
- Sustainability practices is highly linked to management and decision making

The principles that provide the model' s conceptual framing include:

- Conceptual Structure of the research
- "Universal Model" for sustainability is not coherent with plurality
- Decision Making' mental models need guidance

7.4 Research strengths and limits

7.4.1 Potential strengths

The potential strengths of the research process can be summarised as following:

- The research approach sustainability from the sustainability (epistemological) perspective, instead organisational or business perspective.
- The research process developed is replicable, and because of that is methodological.
- Two outcomes were developed, one two help to identify relevant findings - SPRAY, and a proposal for enhancing organisations' strategies to promote a transition to more sustainable management practices - ROSETA.
- A key strength of this research is the triangulation of sources information.
- SPRAY's flexibility in applications (1), SPRAY was modified, adjusted and applied, embracing the specifics of different sources.
- The findings are not the sum of the elements the data uncovered: they are a synthetic analysis of the main factors that help understand sustainability.
- The attempt to clarify paths of significance and how they can contribute to other ways to approach has its foundations on sustainability meanings and critical factors.
- ROSETA not determinist and opens space for discussion towards strategic sustainability transitions.

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(1) SPRAY Extend applicability

The dynamic assumed in this framework and the interrelations of all these aspects (categories and keywords) within context and purpose determine the achievement of results. Considering SPRAY nature and different approaches, this framework presents some useful insights for how organisations understand sustainability and how to apply it in their actions, projects, leadership, etc. On the other hand, SPRAY also can help define goals and objectives to integrate into sustainability understanding for individuals or organisations.

So, although it never was applied (and consequently never tested) for other purposes, it seems likely that SPRAY can be applied to a broader context.

SPRAY is also flexible in terms of different level of detail and might be applied at various scales – from individual to household, to companies, territories and all kinds of organisations. Although the nature of this type of approaches is slightly different from that aimed to analyse, some relevant dimensions could identify as being potentially applicable
used in both planning new development activities and assessing the contribution to sustainability made by existing values, strategies, projects and activities.

7.4.2 Potential Limitations

The potential limitations of the research process can be seen as the followings:

- Transitions is a wide field of knowledge and this research focus on linking strategies and capabilities to transitions.

- This study was applied on small samples, while enough data was generated to construct the needed content, the size of the sample relevance can be subject to criticism.

- Interpretivism approach is subjected to a great level of subjectivism, that conditionate findings and conclusions. And that is why methodologies such as SMM were used.

- The bias is not only provided from the author but also from the participants, particularly regarding how they saw and perceived the provided data. Triangulation of sources information seeks to reduce this matter.

- The research took a more philosophical path than operational path, nevertheless, is subscribed in the Engineer and Management scientific field.

- The literature explored in the systematic literature review is prior to Covid-19, whereas the questionnaire and interviews were run during Covid-19 outbreak. The results clearly show that Covid-19 has an impact on the organisation's sustainability policy but not necessarily on the interpretations and understandings. That could limit the impact on discourse application on publications, nevertheless it is a limitation.

- The time frame of this research did not allow to test ROSETA in different environments and organisations.

- ROSETA is a roadmap of coordinates for strategic sustainability transitions and not a process to integrate those coordinates.

- ROSETA was developed for organisations management, although can be adapted for other fields of management e.g. territorial management.

7.5 Recommendations for future research

Application of the outcomes

A research process is always contextualised by many parameters, particularly time constrains. Making recommendations for future work is an opportunity to outline some of elements that these constrains inhibited to be followed, specifically related to the two models developed:

Wider application of SPRAY

SPRAY as a potential to structure a diversity of experiences and knowledge that are related to sustainability.

The three applications were restricted by the research interests. Collecting more data in the same settings can provide a validation of the data. For example, SPRAY can be used to identify findings in news or social media which have different filters and different speeds levels. Thus, this can be translated in less barriers to innovative approaches.

ROSETA application process

Develop an application process, from an exploratory perspective, creating different participatory stages involving participants/ organisations to develop and share ideas, experiences and thoughts. The collection of feedback from this process may encouraged to rethinking the choices that frame it allowing to development a learning flow.

Sustainability Transition Research

Sustainability transitions can be further explored by additional developments of ROSETA, beyond capabilities, incorporating values, culture, beliefs, processes, ... Moreover, transitions can be developed in other settings and/or other fields (beyond strategic management).

Sustainability continues and will be growing a research field

Finally, and as an ending note, although Sustainability became a buzzword, and such as could be out of fashion/trend. Humans still consume more than the planet is capable of regenerating, knowing that are living on a finite planet, not taking into account its limits. According to the data published by the research organization Global Footprint Network, in 2016 it was consumed the equivalent of 1.69 Earth planets (Global Footprint Network, 2019).

And although due the pandemic these numbers show a trend to decrease, global civilization has important challenges to face in order to secure the future of our planet, and the need to consider sustainability in our activities is still a critical and relevant theme.

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ANNEX 4.A

SUSTAINABILITY QUESTIONNAIRE (ENGLISH VERSION)

Sustainability questionnaire

*Obrigatório

1. Name of your organization *

2. Personal data *

Marcar apenas uma oval.

- ◯ Do you want to complete this questionnaire anonymously *Avançar para a pergunta 6*
- ◯ You agree to provide data to be contacted later, as part of this investigation *Avançar para a pergunta 3*

Personal data

The present investigation is confidential and the answers will be used exclusively for the purposes o this PhD research.

3. Name *

4. E-mail *

5. Mobile number (optional)

Identification

6. Select the main area of activity in your organization's *

Marcar apenas uma oval.

- ◯ Academy
- ◯ Consulting
- ◯ Public administration
- ◯ Company / Industry
- ◯ NGO
- ◯ Outra: _____

7. Select the position you hold in your organization *

Marcar apenas uma oval.

- ◯ Top management (Executive Management or Administration)
- ◯ Senior staff
- ◯ Technical staff
- ◯ Outra: _____

Sustainability in your organization

8. Do you consider that your organization actively contributes to sustainability? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No

9. In your organization, do you think that involvement to contribute to sustainability could be improved? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No
- ◯ Do not know

10. If you answered yes, do you know how to do it?

Marcar apenas uma oval.

- ◯ Yes
- ◯ No

11. If you know how to do it indicate how

_____

_____

_____

_____

_____

12. Are there contextual factors that promote or constrain the development of actions for sustainability? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No
- ◯ Maybe

13. If yes or maybe, indicate the factors that promote:

14. If yes or maybe, indicate the factors that constrain:

15. When developing activities and actions that contribute to sustainability, you consider that your organization's approach is more focused on *

Marcar tudo o que for aplicável.

- [ ] Future goals and objectives
- [ ] Action and operationalization
- [ ] Report and monitoring of initiatives carried out
- [ ] Products
- [ ] Factor relations (marketing, human resources, efficiency, technology, cost, ...)

Outra: [ ] _____

Sustainable Development Goals

2030 Agenda for Sustainable Developmer

16. Select the 2030 Agenda Sustainable Development Goals that are most relevant to your organization's activity *

Marcar tudo o que for aplicável.

- [ ] 01: End poverty in all its forms everywhere
- [ ] 02: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- [ ] 03: Ensure healthy lives and promote well-being for all at all ages
- [ ] 04: Ensure inclusive and equitable quality education and promote lifelong learning opportunities f all
- [ ] 05: Achieve gender equality and empower all women and girls
- [ ] 06: Ensure availability and sustainable management of water and sanitation for all
- [ ] 07: Ensure access to affordable, reliable, sustainable and modern energy for all
- [ ] 08: Promote sustained, inclusive and sustainable economic growth, full and productive employme and decent work for all
- [ ] 09: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- [ ] 10: Reduce inequality within and among countries
- [ ] 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- [ ] 12: Ensure sustainable consumption and production patterns
- [ ] 13: Take urgent action to combat climate change and its impacts
- [ ] 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- [ ] 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- [ ] 16: Promote peaceful and inclusive societies for sustainable development, provide access to just for all and build effective, accountable and inclusive institutions at all levels
- [ ] 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

17. In your organization, the Sustainable Development Goals contribute mainly to: *

Marcar apenas uma oval.

- ◯ Future goals and objectives
- ◯ Select operational and management areas
- ◯ Human resources training/capabilities
- ◯ Outra: _____

Conceptualization

18. How is sustainability seen in your organization? *

Marcar apenas uma oval.

- ◯ As an integrated system
- ◯ Structured according to the 3 pillars of sustainability (environment, social, economy)
- ◯ Centered on one of the 3 pillars of sustainability (environment, social, economy)
- ◯ Outra: _____

19. Sustainability characteristics in your organization - Select the 3 most relevant *

Marcar tudo o que for aplicável.

- [ ] Ambiguous
- [ ] Inclusive
- [ ] Systemic
- [ ] Complex
- [ ] Dynamic
- [ ] Integrative
- [ ] Interdisciplinary
- [ ] Interdependent
- [ ] Interactive
- [ ] Complicated
- [ ] Intangible

Outra: [ ] _____

20. As a concept, sustainability in your organization is: *

Marcar tudo o que for aplicável.

- [ ] A plural concept (multiple meanings)
- [ ] A concept developed by your organization, which guides your actions
- [ ] A unique concept, shared and built by everyone

Outra: [ ] _____

Leadership

21. Characterize the dominant leadership style in your organization: *

Marcar apenas uma oval.

- ◯ Authoritarian
- ◯ Liberal
- ◯ Visionary
- ◯ Democratic
- ◯ Motivating
- ◯ Leader Coach
- ◯ Leader by technical capacity
- ◯ Outra: _____

22. Do you consider that different leadership styles contribute or influence sustainability in organizations? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No

23. If yes, please indicate how:

_____

_____

_____

_____

_____

Capabilities

24. From the listed skills and capabilities, select the 5 most relevant for the development of activities in the scope of sustainability *

Marcar tudo o que for aplicável.

- [ ] Diagnosis
- [ ] Monitoring
- [ ] Anticipation
- [ ] Reflexive
- [ ] Prospective
- [ ] Proactive
- [ ] Strategic
- [ ] Management
- [ ] Flexibility
- [ ] Adaptability
- [ ] Observation
- [ ] Interdependence
- [ ] Systemic view
- [ ] Innovation
- [ ] Transparency
- [ ] Cooperation
- [ ] Collaboration
- [ ] Dynamic
- [ ] Transformation
- [ ] Leadership

Outra: ☐ _____

Action

25. In your organization you consider that sustainability is: *

Marcar apenas uma oval.

- ◯ part of the organization's DNA (considered since the definition of the organization's vision and strategy)
- ◯ incorporated into the organization's planning and management
- ◯ developed in parallel with the core actions of the organization
- ◯ Outra: _____

26. The actions for sustainability developed in the organization include mainly: *

Marcar tudo o que for aplicável.

- ☐ Top management (Executive Management or Administration)
- ☐ Department and project managers
- ☐ Employees
- ☐ Suppliers
- ☐ Other stakeholders
- Outra: ☐ _____

27. What instruments or tools do you use when working on sustainability? *

(examples: indexes, norms, prospective studies, involvement of agents ..)

Marcar tudo o que for aplicável.

- ☐ Institutional Shareholder Services group of companies (ISS)
- ☐ Corporate social responsibility
- ☐ Eco-efficiency / Eco-efficiency
- ☐ Industrial ecology
- ☐ Shared value
- ☐ Sustainability and corporate responsibility
- ☐ Conscious capitalism
- ☐ None
- Outra: ☐ _____

28. In sustainability performance assessment which aspects / indicators, your organization uses: *

Marcar tudo o que for aplicável.

- [ ] Global report initiative
- [ ] Sustainability Reports
- [ ] Sustainalytics' ESG Risk Ratings
- [ ] Bloomberg ESG Performance Scores
- [ ] Water & Forests Scores
- [ ] EcoVadis CSR Rating
- [ ] RobecoSAM
- [ ] CDP Climate
- [ ] Dow Jones Sustainability Index
- [ ] FTSE
- [ ] Life cycle assessment
- [ ] None

Outra: ☐ _____

29. What are the learning results that you get from the assessment process (eg. competencie growth, ...) *

_____

_____

_____

_____

_____

At last...

30. Do you consider that the emerging situation created by Covid-19 has an impact on the organization's sustainability policy? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No

31. If so, how? *

Marcar apenas uma oval.

- ◯ Sustainability is reinforced
- ◯ Sustainability is delayed
- ◯ Sustainability takes on a new meaning
- ◯ Outra: _____

32. Do you think sustainability has an added value for your organization? Rate from 0 (no add value) to 10 (maximum value added) *

Marcar apenas uma oval.

0	1	2	3	4	5	6	7	8	9	10
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

33. Use three keywords that best identify the added value *

_____

_____

_____

_____

_____

34. Was there any question in this questionnaire that contributed to thinking about sustainability differently? *

Marcar apenas uma oval.

- ◯ Yes
- ◯ No

35. If yes, indicate what

Thank you very much for your participation!

Do not forget to submit your answers (button at the bottom of this page).
These results are very important for the research.
I appreciate that you share with everyone you think that can contribute.

Please, share the link:
https://joanalima.wixsite.com/questionario/eng (eng)
https://joanalima.wixsite.com/questionario (pt)

Este conteúdo não foi criado nem aprovado pela Google.

Google Formulários

ANNEX 4.B

SUSTAINABILITY QUESTIONNAIRE (PORTUGUESE VERSION)

Questionário sobre sustentabilidade nas Organizações

*Obrigatório

1. Nome da sua organização *

2. Dados Pessoais *

Marcar apenas uma oval.

- ◯ Deseja preencher este questionário anonimamente *Avançar para a pergunta 6*
- ◯ Aceita fornecer dados para ser contactado(a) posteriormente, no âmbito desta investigação *Avançar para a pergunta 3*

Dados Pessoais

O presente inquérito é confidencial e as respostas serão utilizadas exclusivamente para os fins desta investigação de Doutoramento.

3. Nome *

4. E-mail *

5. Contacto telefónico (opcional)

Identificação

6. Selecione a principal área atividade da sua organização *

Marcar apenas uma oval.

- ◯ Academia
- ◯ Consultoria
- ◯ Administração Pública
- ◯ Empresa / Indústria
- ◯ ONG
- ◯ Outra: _____

7. Selecione o cargo que exerce na sua organização *

Marcar apenas uma oval.

- ◯ Gestão Executiva (Administração ou Gerência)
- ◯ Quadro Superior
- ◯ Quadro Técnico ou Operacional
- ◯ Outra: _____

A Sustentabilidade na sua organização

8. Considera que a sua organização contribui ativamente para a sustentabilidade? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

9. Acha que o envolvimento para a sustentabilidade na sua organização poderia ser melhorado? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não
- ◯ Não sabe

10. Se respondeu sim, sabe como fazê-lo?

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

11. Se sabe como fazê-lo indique como

_____

_____

_____

_____

_____

12. Considera que há fatores contextuais que promovem ou condicionam o desenvolvimento de ações para a sustentabilidade? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não
- ◯ Talvez

13. Se sim ou talvez, indique os factores que promovem:

14. Se sim ou talvez, indique os factores que condicionam:

15. No desenvolvimento de atividades e ações que contribuem para a sustentabilidade considera que a abordagem da sua organização se centra mais *

Marcar tudo o que for aplicável.

- [ ] Produtos
- [ ] Relações de fatores (marketing, recursos humanos, eficiência, tecnologia, custo,...)
- [ ] Metas e objetivos futuros
- [ ] Ação e operacionalização
- [ ] Report e monitorização de iniciativas realizadas

Outra: [ ] _____

Agenda 203

Objetivos de Desenvolvimento Sustentável

16. Selecione os Objetivos de Desenvolvimento Sustentável da Agenda 2030 mais relevantes para a atividade da sua organização *

Marcar tudo o que for aplicável.

- [ ] 01: Erradicar a pobreza em todas as suas formas
- [ ] 02: Erradicar a fome, atingir a segurança alimentar e a melhoria alimentar e promover a agricultu sustentável
- [ ] 03: Assegurar vidas saudáveis e promover o bem-estar para todos, em qualquer idade
- [ ] 04: Assegurar educação de qualidade, inclusiva e equitativa e promover oportunidades de aprendizagem ao longo da vida para todos
- [ ] 05: Atingir a igualdade de género e o empoderamento de todas as mulheres e raparigas
- [ ] 06: Assegurar a disponibilidade e a gestão sustentável de água e saneamento para todos
- [ ] 07: Assegurar o acesso à energia fiável, sustentável, moderna e a preço acessível a todos
- [ ] 08: Promover o crescimento económico sustentado, inclusivo e sustentável, o emprego pleno e produtivo e o trabalho digno para todos
- [ ] 09: Construir infraestruturas resilientes, promover a industrialização inclusiva e sustentável e fomentar a inovação
- [ ] 10: Reduzir as desigualdades dentro e entre os países
- [ ] 11: Tornar as cidades e os povoamentos humanos inclusivos, seguros, resilientes e sustentáveis
- [ ] 12: Assegurar padrões sustentáveis de consumo e produção
- [ ] 13: Tomar medidas urgentes no sentido de combater as alterações climáticas e seus impactos
- [ ] 14: Conservar de forma sustentável os oceanos, mares e recursos marinhos para o desenvolvimento sustentável
- [ ] 15: Proteger, restaurar e promover a utilização sustentável dos ecossistemas terrestres, gerir as florestas de forma sustentável, combater a desertificação, travar e reverter a degradação das terras e estancar a perca da biodiversidade
- [ ] 16: Promover sociedades pacíficas e inclusivas para o desenvolvimento sustentável, conceder o acesso à justiça para todos e criar instituições eficazes, responsáveis e inclusivas a todos os níveis
- [ ] 17: Reforçar os meios de implementação e revitalizar a parceria global para o desenvolvimento sustentável

17. Na sua organização os Objetivos de Desenvolvimento Sustentável contribuem sobretudo para: *

Marcar apenas uma oval.

- ◯ Metas e objetivos de futuro
- ◯ Selecionar áreas operacionais e de gestão
- ◯ Capacitação dos recursos humanos
- ◯ Outra: _____

Conceptualização

18. Como é vista a sustentabilidade na sua organização? *

Marcar apenas uma oval.

- ◯ Como um sistema integrado
- ◯ Estruturado segundo os 3 pilares da sustentabilidade (ambiental, social, económico)
- ◯ Centrado num dos 3 pilares da sustentabilidade (ambiental, social, económico)
- ◯ Outra: _____

19. Características da sustentabilidade na sua organização - Selecione as 3 mais relevantes *

Marcar tudo o que for aplicável.

- [ ] Ambígua
- [ ] Inclusiva
- [ ] Sistémica
- [ ] Complexa
- [ ] Dinâmica
- [ ] Integrativa
- [ ] Interdisciplinar
- [ ] Interdependente
- [ ] Interativa
- [ ] Complicada
- [ ] Intangível

Outra: [ ] _____

20. Como conceito, na sua organização a sustentabilidade é: *

Marcar apenas uma oval.

- ◯ Um conceito plural (múltiplos significados)
- ◯ Um conceito desenvolvido pela sua organização, que guia as suas ações
- ◯ Um conceito único, partilhado e construído por todos
- ◯ Outra: _____

Liderança

21. Caracterize o estilo de liderança dominante na sua organização: *

Marcar apenas uma oval.

- ◯ Autoritário
- ◯ Liberal
- ◯ Visionário
- ◯ Democrático
- ◯ Motivador
- ◯ Líder " Coach"
- ◯ Liderança por capacidade técnica
- ◯ Outra: _____

22. Considera que diferentes estilos de liderança contribuem ou influenciam a sustentabilidade nas organizações? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

23. Se respondeu sim, indique como:

_____

_____

_____

_____

_____

Capacidades e Competências

24. Das capacidades e competências listadas selecione as 5 que considera mais relevantes para o desenvolvimento de atividades no âmbito da sustentabilidade *

Marcar tudo o que for aplicável.

- [ ] Diagnóstico
- [ ] Monitorização
- [ ] Antecipação
- [ ] Atitude reflexiva
- [ ] Prospetivo
- [ ] Pró-activo
- [ ] Estratégico
- [ ] Gestão
- [ ] Flexibilidade
- [ ] Adaptabilidade
- [ ] Observação
- [ ] Interdependência
- [ ] Visão sistémica
- [ ] Inovação
- [ ] Transparência
- [ ] Cooperação
- [ ] Colaboração
- [ ] Dinâmica
- [ ] Transformação
- [ ] Liderança

Outra: ☐ _____

Ação

25. Considera que a sustentabilidade *

Marcar apenas uma oval.

- ◯ Faz parte do ADN da organização (é considerada desde a definição da visão e estratégia da organização)
- ◯ É incorporada no planeamento e gestão da organização
- ◯ É desenvolvida em paralelo com as ações core (centrais) da organização
- ◯ Outra: _____

26. As ações para a sustentabilidade desenvolvidas na organização envolvem sobretudo: *

Marcar tudo o que for aplicável.

- ☐ Gestão Executiva e Administração
- ☐ Dirigentes e gestores de departamentos ou projetos
- ☐ Colaboradores
- ☐ Fornecedores
- ☐ Outros stakeholders
- ☐ ONG
- Outra: ☐ _____

27. A que instrumentos ou ferramentas costuma recorrer quando trabalha em sustentabilida *

(exemplos: índices, normas, estudos prospetivos, envolvimento de agentes..)

Marcar tudo o que for aplicável.

- ☐ Institutional Shareholder Services group of companies (ISS)
- ☐ Responsabilidade social corporativa
- ☐ Ecoeficiência / Ecoeficácia
- ☐ Ecologia industrial
- ☐ Valor partilhado
- ☐ Sustentabilidade e responsabilidade corporativa
- ☐ Capitalismo consciente
- ☐ Nenhum
- Outra: ☐ _____

28. Na avaliação da performance dos aspetos/indicadores de sustentabilidade recorre a: *

Marcar tudo o que for aplicável.

- [ ] Global report initiative
- [ ] Relatórios de Sustentabilidade
- [ ] Sustainalytics' ESG Risk Ratings
- [ ] Bloomberg ESG Performance Scores
- [ ] Water & Forests Scores
- [ ] EcoVadis CSR Rating
- [ ] RobecoSAM
- [ ] CDP Climate
- [ ] Dow Jones Sustainability Index
- [ ] FTSE
- [ ] Avaliação do ciclo de vida
- [ ] Nenhum
- [ ] Outra: _____

29. O que resulta da aprendizagem deste processo de avaliação de performance (ex.: competências, crescimento, ...) *

_____

_____

_____

_____

_____

Por fim...

30. Considera que a situação emergente criada pelo Covid-19, tem impacto na política de sustentabilidade da organização? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

31. Se sim, como?

Marcar apenas uma oval.

- ◯ A sustentabilidade fica reforçada
- ◯ A sustentabilidade fica adiada
- ◯ A sustentabilidade ganha um novo significado
- ◯ Outra: _____

32. Acha que a sustentabilidade apresenta um valor acrescentado para a sua organização? Classifique de 0 (sem valor acrescentado) a 10 (máximo valor acrescentado) *

Marcar apenas uma oval.

0	1	2	3	4	5	6	7	8	9	10
◯	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

33. Use três palavras-chave que melhor identifiquem o valor acrescentado

_____

_____

_____

_____

_____

34. Neste questionário houve alguma questão que tenha contribuído para pensar sobre a sustentabilidade de forma diferente? *

Marcar apenas uma oval.

- ◯ Sim
- ◯ Não

35. Se sim, indique o qual?

Por favor não se esqueça de submeter as suas respostas (botão no fim desta página)

Muito obrigada pela sua participação!

Estes resultados serão muito importantes para a investigação.
Agradeço que divulgue com quem considere que possa dar um contributo.

Para o fazer divulgue o link:
https://joanalima.wixsite.com/questionario (pt)
https://joanalima.wixsite.com/questionario/en (eng)

Este conteúdo não foi criado nem aprovado pela Google.

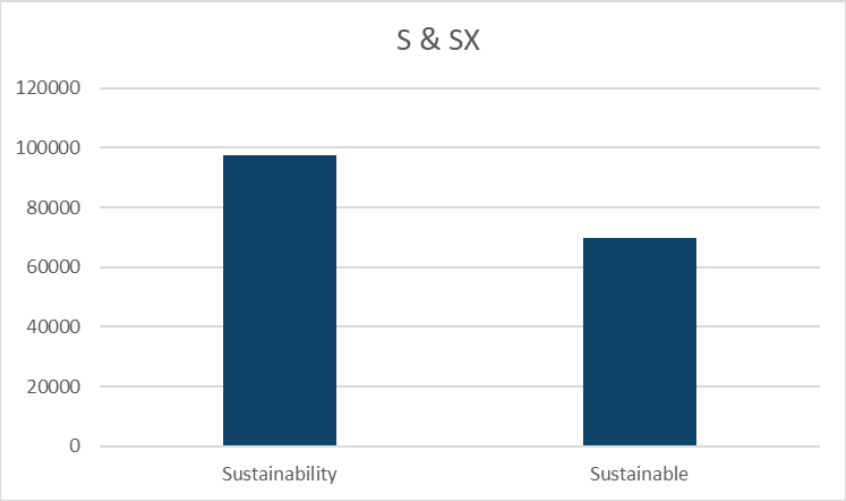
Google Formulários

ANNEX 5.A

SYSTEMATIC LITERATURE REVIEW – STATISTICAL DATA

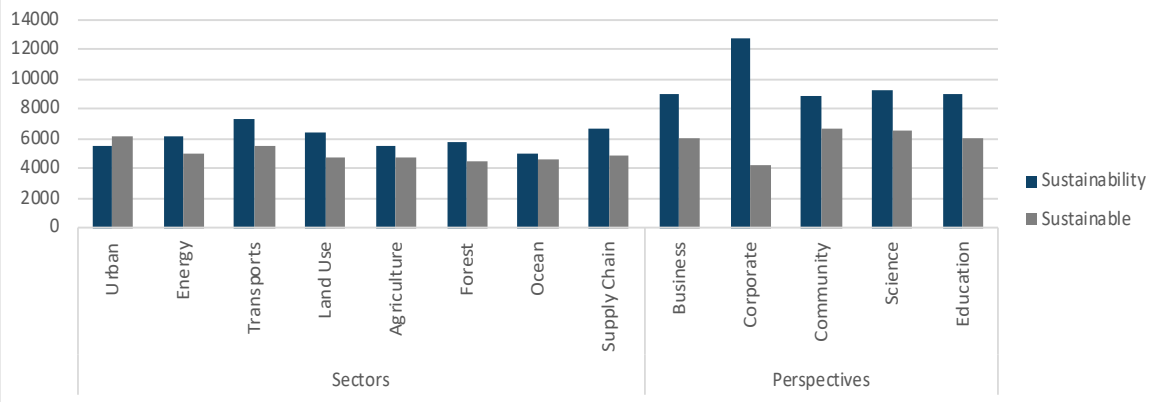
1 Sustainability and Sustainable-X

1.1 Global results: Sustainability and Sustainable-X



S & S	
Sustainability or Sustainable	168106
Sustainability	97606
Sustainable	69820

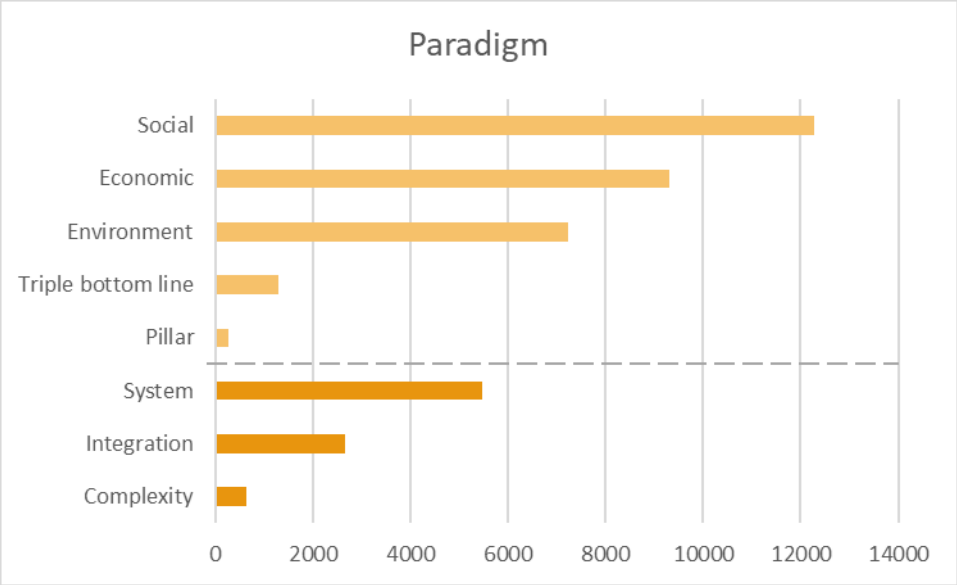
1.2 Results by topic: Sustainability and Sustainable-X



	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Sustainability	5587	6220	7375	6408	5503	5739	5037	6728	9013	12742	8903	9302	9049
Sustainable	6184	5044	5579	4686	4733	4514	4623	4883	6071	4202	6715	6516	6070

2 Paradigms

2.1 Frequency in the absolute use of keywords of Paradigm category

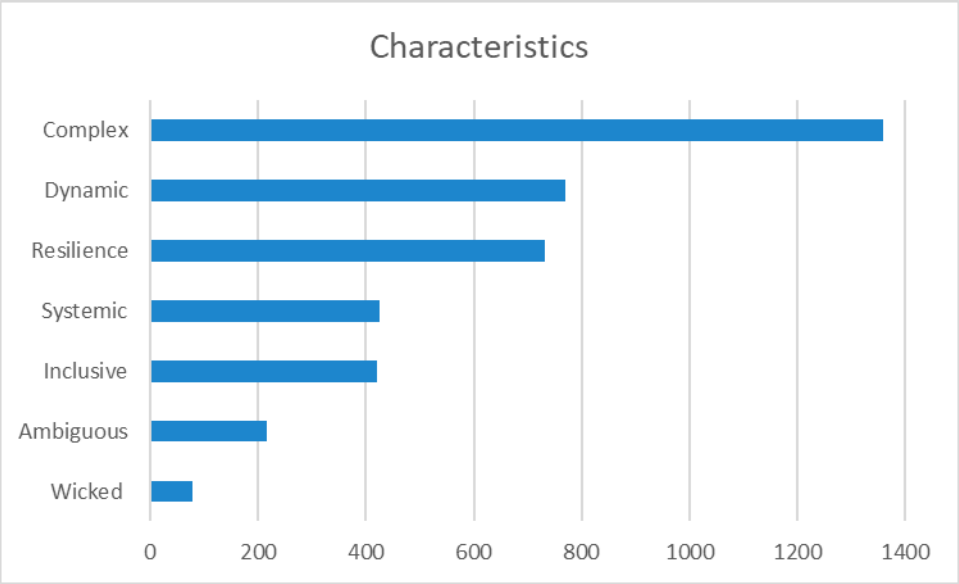


Paradigm	
Social	12268
Economic	9306
Environment	7221
Triple bottom line	1284
Pillar	249
System	5476
Integration	2639
Complexity	630

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Paradigm	32	13	37	22	35	20	85	15	41	35	34	27	81
Social	917	692	1107	807	820	853	661	1185	1140	1716	13	1253	1104
Economic	650	702	829	702	633	656	584	772	736	937	859	678	568
Environment	562	389	460	359	323	270	380	293	405	2408	451	389	532
Triple bottom line	22	54	70	63	56	56	64	195	180	241	135	90	58
Pillar	42	20	13	11	20	21	18	12	21	19	21	23	8
System	379	516	580	442	384	353	544	256	400	330	386	482	424
Integration	113	137	174	134	103	94	82	256	275	472	254	262	283
Complexity	64	21	23	40	29	27	38	91	46	62	38	92	59

3 Characteristics

3.1 Frequency in the absolute use of keywords of the Characteristics category

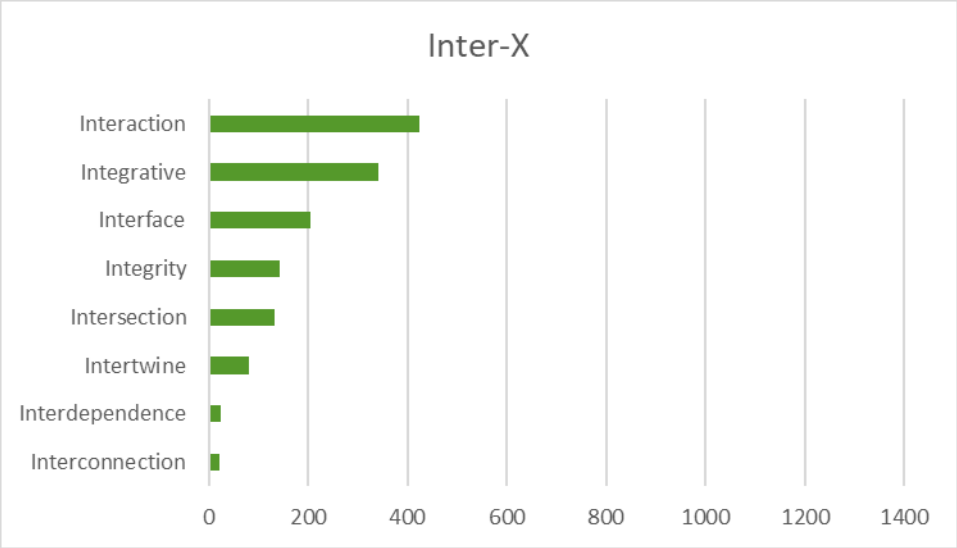


Characteristics	
Complex	1359
Dynamic	770
Resilience	733
Systemic	426
Inclusive	420
Ambiguous	215
Wicked	79

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Complex	118	87	85	62	88	95	110	98	91	105	115	159	146
Dynamic	38	47	0	48	32	53	35	125	49	120	48	114	61
Resilience	72	56	58	75	105	32	50	66	19	22	84	79	15
Systemic	26	10	37	28	23	22	21	16	45	32	44	61	61
Inclusive	45	23	35	36	23	35	49	9	34	40	38	26	27
Ambiguous	17	12	22	9	17	18	11	5	21	17	20	20	26
Wicked	6	3	4	14	3	8	10	0	2	4	4	16	5

4 Inter – X

4.1 Frequency in the absolute use of keywords of the eight Inter-X category

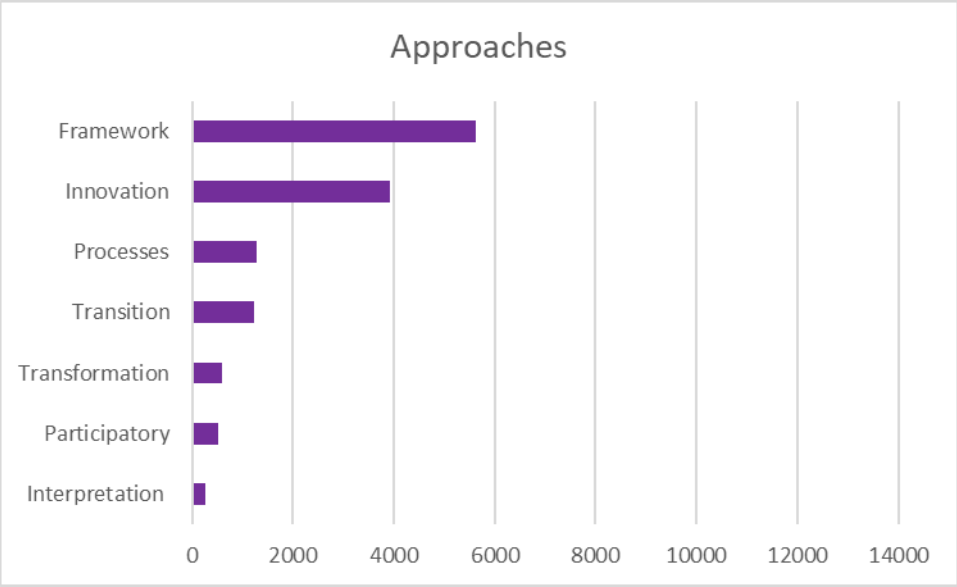


Inter-X	
Interaction	425
Integrative	342
Interface	204
Integrity	142
Intersection	132
Intertwine	82
Interdependence	24
Interconnection	22

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Interaction	30	28	28	19	22	16	30	42	41	53	43	35	38
Integrative	14	11	14	21	16	26	6	19	41	81	35	29	29
Interface	10	3	12	6	11	9	18	10	66	6	15	30	8
Integrity	12	3	5	21	9	17	9	2	14	15	16	14	5
Intersection	10	3	8	8	5	16	19	14	12	9	10	16	2
Intertwine	7	0	4	2	4	9	0	8	3	8	5	15	17
Interdependence	4	0	1	0	0	1	1	2	3	2	3	3	4
Interconnection	3	1	4	3	1	2	0	1	1	1	3	1	1

5 Approaches

5.1 Frequency in the absolute use of keywords of the eight Approaches category

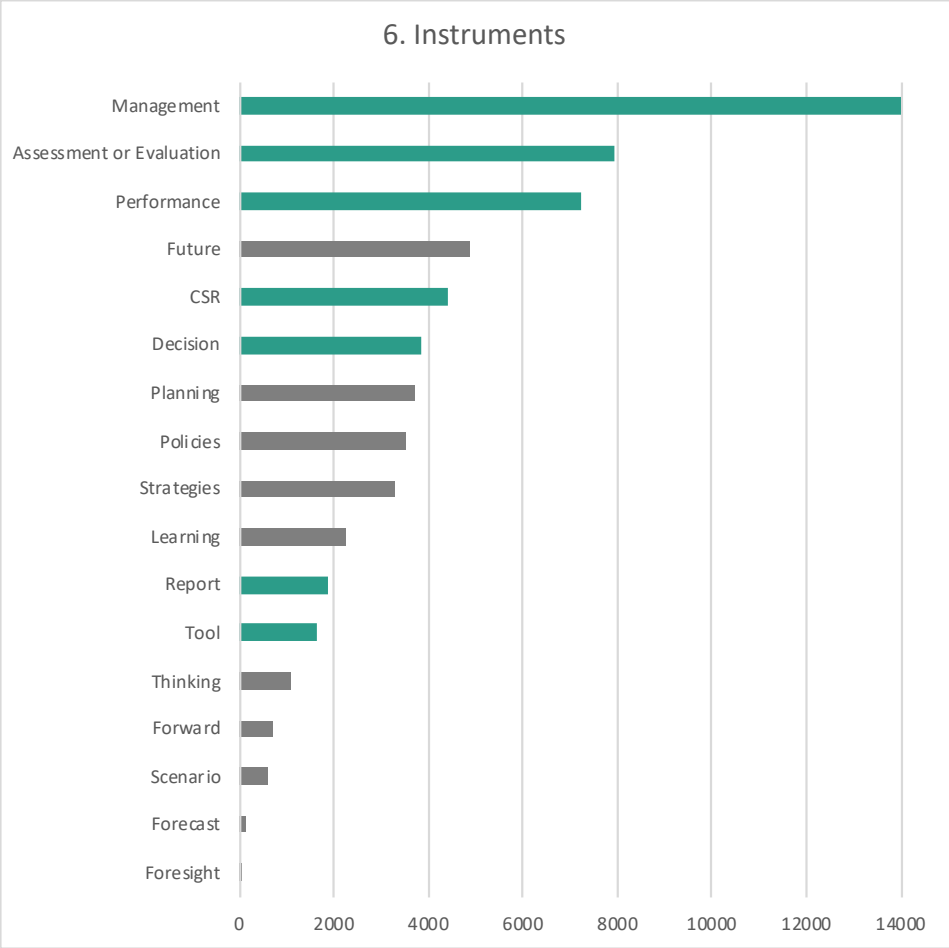


Approaches	
Framework	5615
Innovation	3916
Processes	1285
Transition	1238
Transformation	584
Participatory	517
Interpretation	271

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Framework	290	327	364	444	377	294	351	604	482	672	499	538	373
Innovation	241	191	249	120	240	192	157	227	675	436	393	403	392
Processes	84	91	95	70	74	76	92	91	144	107	117	147	97
Transition	116	155	77	69	87	99	82	59	102	83	9	172	128
Transformation	130	39	25	25	36	43	35	11	46	34	47	57	56
Participatory	31	22	19	30	47	33	22	0	119	15	45	43	91
Interpretation	18	16	20	13	0	20	46	9	28	35	23	37	6

6 Instruments

6.1 Frequency in the absolute use of keywords of the ten action-oriented instruments

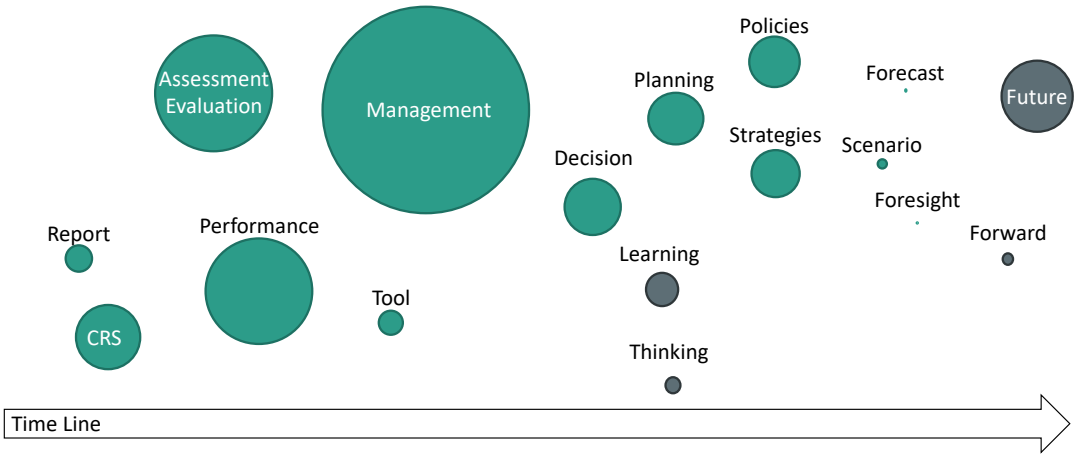


Instruments	
Management	14109
Assessment or Evaluation	7943
Performance	7224
CSR	4408
Decision	3837
Planning	3725
Policies	3523
Strategies	3286
Report	1880
Tool	1639

Future orientated	
Future	4875
Learning	2266
Thinking	1082
Forward	707
Scenario	614
Forecast	121
Foresight	32

	Sectors								Perspectives				
	Urban	Energy	Transports	Land Use	Agriculture	Forest	Ocean	Supply Chain	Business	Corporate	Community	Science	Education
Sustainability or Sustainable	11771	11944	12954	11094	10236	10253	9660	11611	15084	16944	15618	15818	15119
Management	479	771	810	873	635	793	672	2005	1496	2000	1347	1147	1081
Assessment or Evaluation	631	535	686	946	705	562	496	470	306	520	451	1005	630
Performance	242	411	448	369	219	320	183	1083	834	1645	536	542	392
CSR	4	200	87	142	161	182	72	404	567	1554	286	279	470
Decision	168	230	352	357	316	179	189	376	266	371	416	403	214
Planning	793	152	513	296	166	201	220	115	125	167	383	417	177
Policies	392	339	302	335	298	326	290	112	161	193	273	255	247
Strategies	233	257	222	195	183	133	125	298	298	466	297	316	263
Report	128	110	125	124	108	142	118	68	145	315	157	153	187
Tool	108	101	153	125	109	113	103	69	125	120	185	167	161
Future	376	396	386	299	292	294	458	289	41	476	474	534	560
Learning	122	123	78	63	142	75	68	98	212	122	204	223	736
Thinking	65	41	77	50	64	39	92	28	168	77	101	116	164
Forward	39	29	34	27	26	36	30	27	46	43	156	165	49
Scenario	25	92	65	84	51	68	42	34	19	24	27	28	55
Forecast	12	10	6	5	7	8	7	8	6	9	8	11	24
Foresight	2	3	1	0	2	3	5	2	4	1	2	3	4

6.2 Results by timeline focus (past and future horizon line)

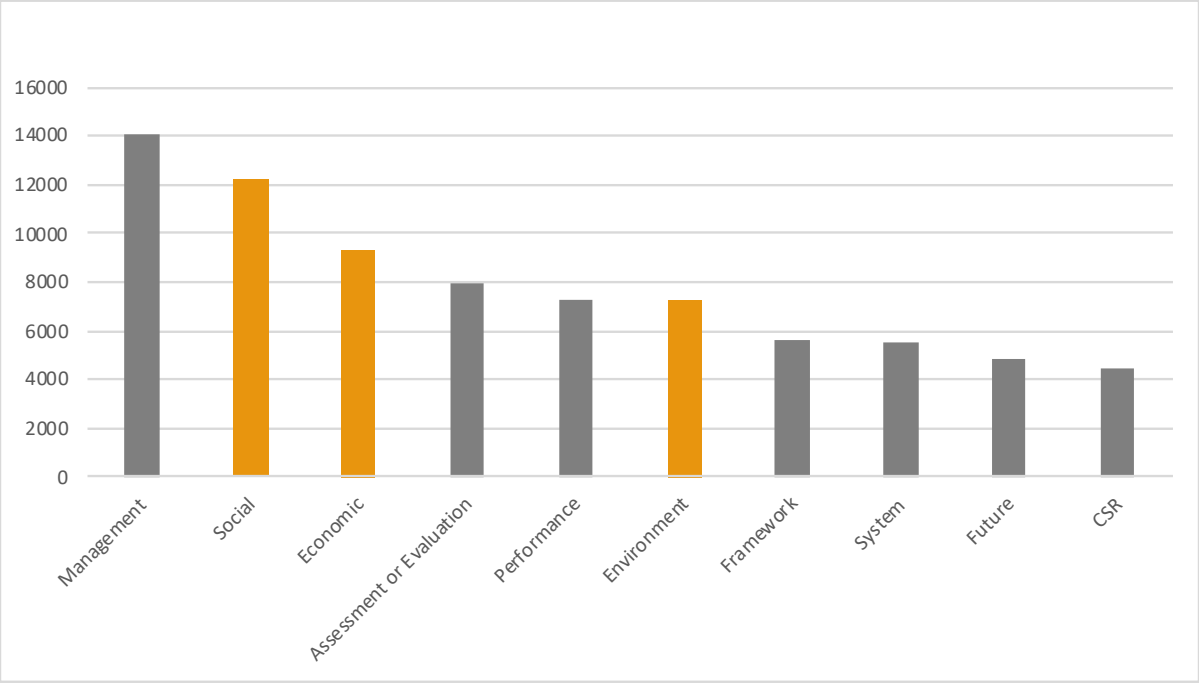


7 Overall keywords

7.1 Top ten most, and less, keywords frequently used

TOP TEN MOST	
FREQUENCY	KEYWORD
14.109	Management
12.268	Social
9.306	Economic
7.943	Assessment or Evaluation
7.224	Performance
7.221	Environment
5.615	Framework
5.476	System
4.875	Future
4.408	CSR

TOP TEN LESS	
FREQUENCY	KEYWORD
215	Ambiguous
204	Interface
142	Integrity
132	Intersection
121	Forecast
82	Intertwine
79	Wicked
32	Foresight
24	Interdependence
22	Interconnection

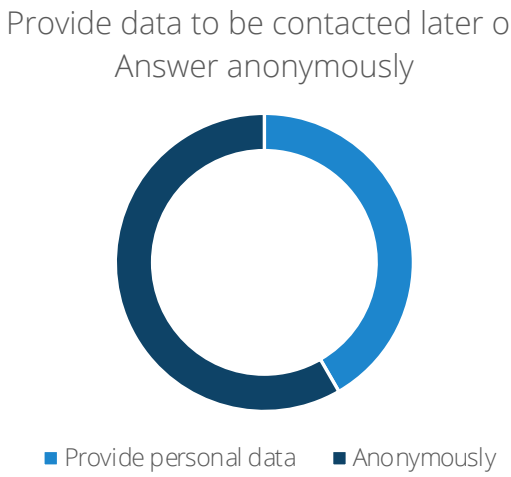


Annex 5.B

Questionnaire results

Personal Data

Provide data to be contacted later or Answer anonymously

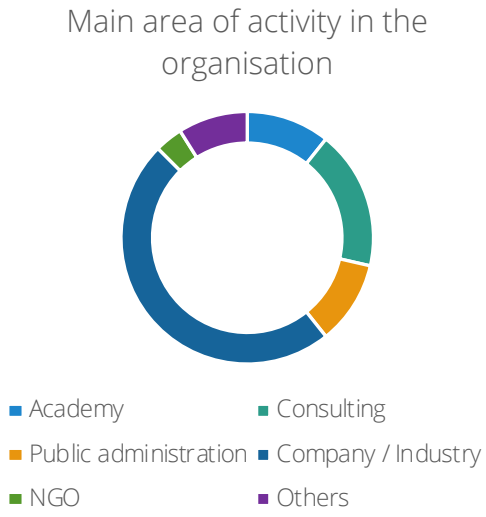


	Frequency	Percentage
Anonymously	36	60%
Provide personal data	24	40%

nº answers	60

1 Identification

1.1 Main area of activity in the organisation



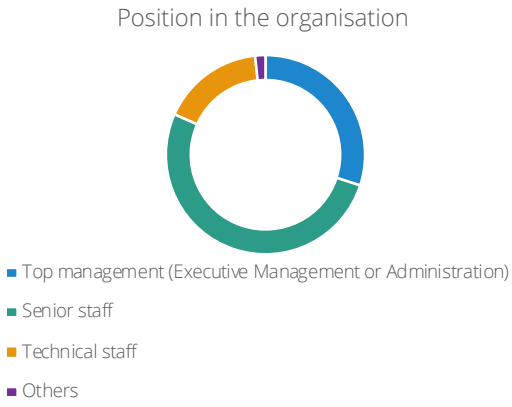
	Frequency	Percentage
Company / Industry	27	48%
Consulting	10	18%
Academy	6	11%
Public administration	6	11%
Others	5	9%
NGO	2	4%

Nº answers	56

Answers in the category "others" includes:

- Wholesaler
- Public business entities
- Agriculture
- Agriculture and wine growing
- Grocery
- Bank
- Design and communication

1.2 Position you hold in the organisation



	Frequency	Percentage
Top management	18	15%
Senior staff	31	26%
Technical staff	10	8%
Others	1	1%

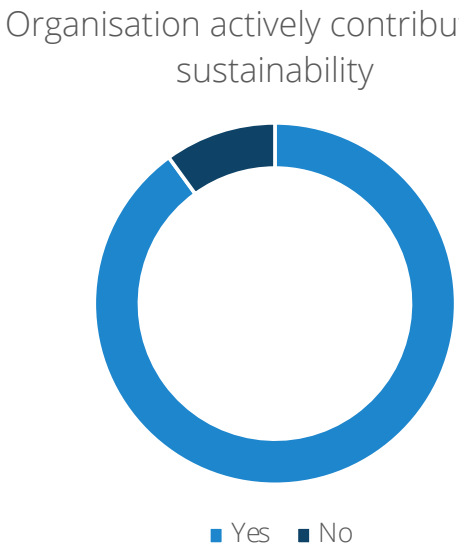
Nº answers	60

Answers in the category "others" includes:

- Team coordinator

2 Sustainability in the organisation

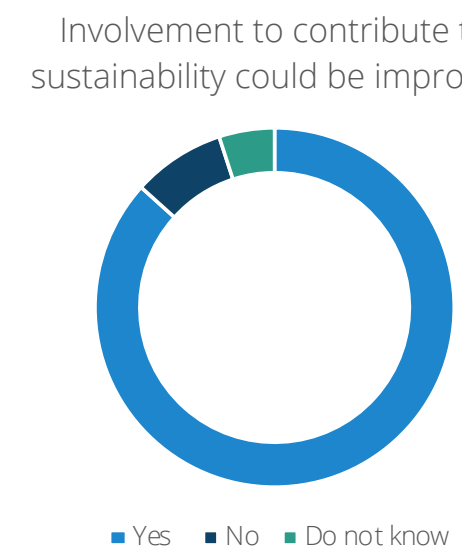
2.1 Organisation actively contributes to sustainability



	Frequency	Percentage
Yes	54	90%
No	6	10%

Nº answers	60

2.2 Involvement to contribute to sustainability could be improved

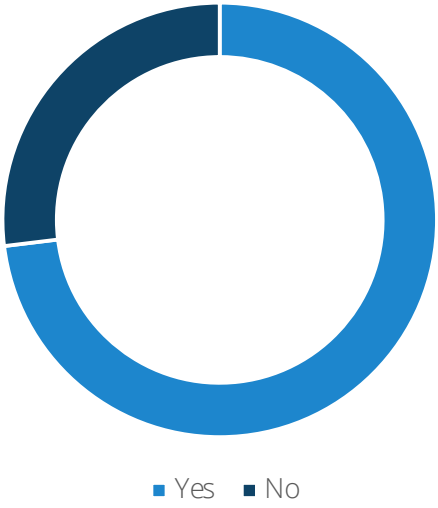


	Frequency	Percentage
Yes	52	87%
No	5	8%
Do not Know	3	5%

Nº answers	60

2.3 Knowledge to improve on contribution to sustainability

Know how to do it



	Frequency	Percentage
Yes	38	73%
No	14	27%

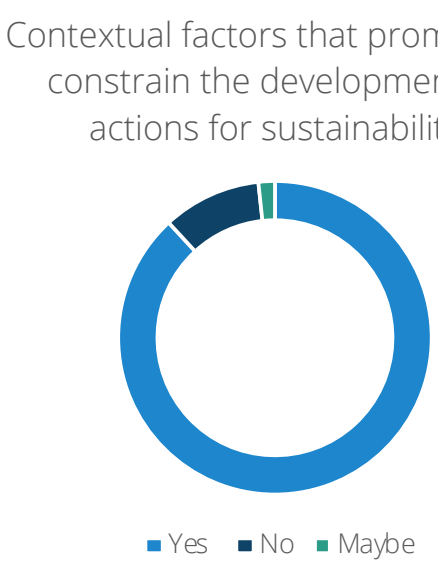
Nº answers	52

Indicate how

Clusters of open answers	Frequency	Percentage
Materiality	8	21%
Management	12	32%
Clean Production	11	29%
Work in Progress	7	18%

Nº answers	33
Nº of selections	38
Average options selected	1,65

2.4 Contextual factors promote or constrain the development of actions for sustainability

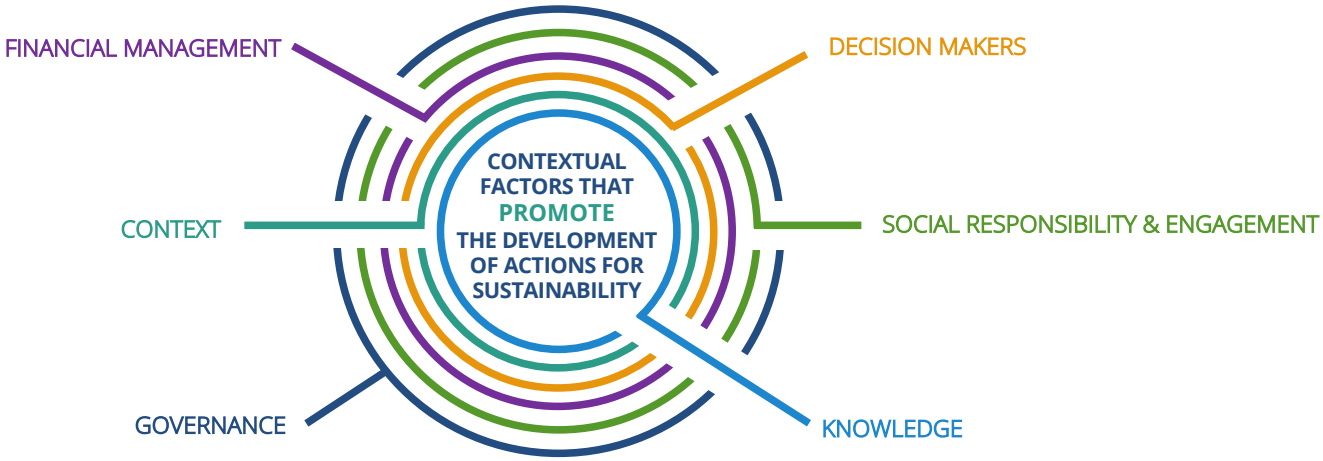


	Frequency	Percentage
Yes	52	88%
No	6	10%
Maybe	1	2%

Nº answers	59

Clusters of open answers	Frequency	Percentage
Decision makers	16	30%
Governance	13	25%
Social responsibility & engagement	8	15%
Context	7	13%
Financial management	6	11%
Knowledge	3	6%

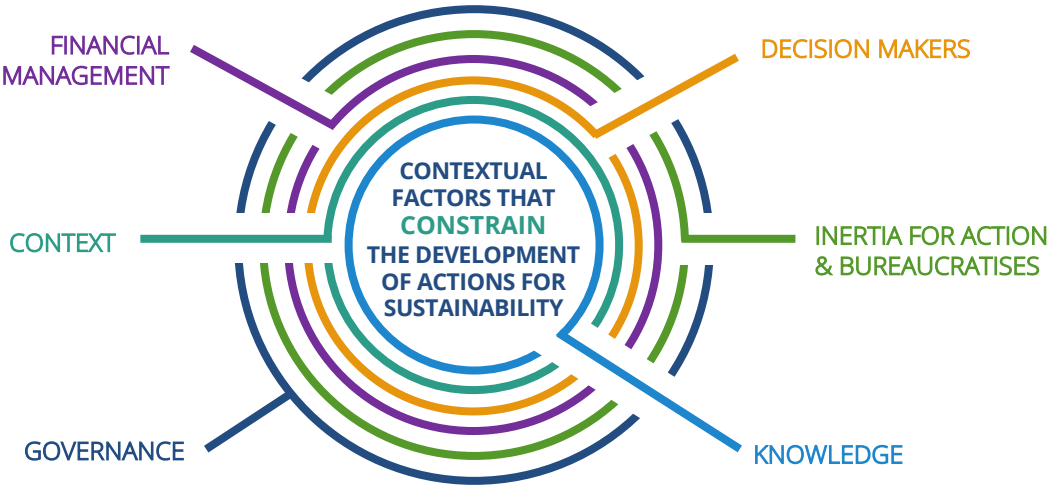
Nº answers	47
Nº of selections	53
Average options selected	1,27



Factors that constrain

Clusters of open answers	Frequency	Percentage
Decision makers	7	14%
Governance	10	20%
Social responsibility & engagement	10	20%
Context	3	6%
Financial management	13	27%
Knowledge	6	12%

Nº answers	44
Nº of selections	49
Average options selected	1,11



2.5 Organisation's approach is more focused on what activities and actions that contribute to sustainability (unlimited selection)

	Frequency	Percentage
Future goals and objectives	27	20%
Action and operationalization	32	24%
Report and monitoring of initiatives carried out	20	15%
Products	24	18%
Factor relations	31	23%
Other	1	1%

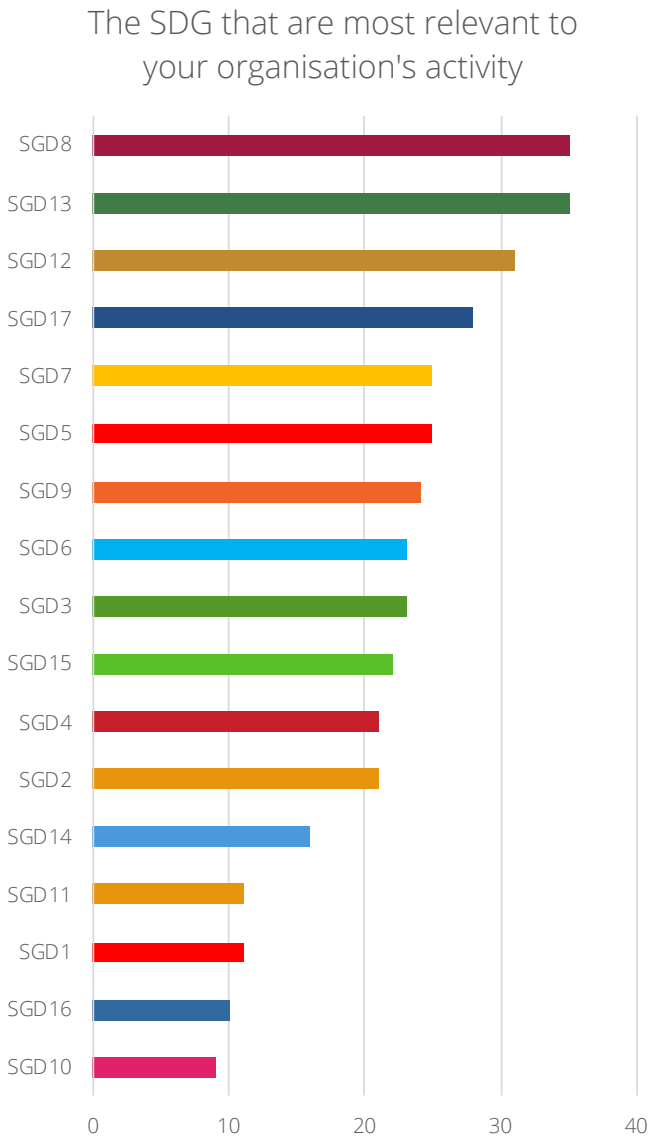
Nº answers	60
Nº of selections	135
Average options selected	2,12

Answers in the category "other" includes:

- research

3 Sustainable Development Goals

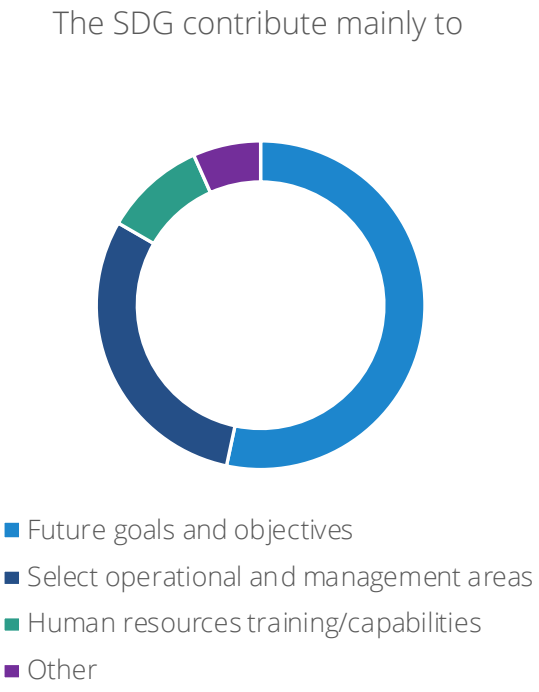
3.1 2030 Agenda Sustainable Development Goals that are most relevant to the organisation's activity (unlimited selections)



	Frequency	Percentage
SGD1	11	3%
SGD2	21	6%
SGD3	23	6%
SGD4	21	6%
SGD5	25	7%
SGD6	23	6%
SGD7	25	7%
SGD8	35	9%
SGD9	24	6%
SGD10	9	2%
SGD11	11	3%
SGD12	31	8%
SGD13	35	9%
SGD14	16	4%
SGD15	22	6%
SGD16	10	3%
SGD17	28	8%

Nº answers	60
Nº of selections	370
Average options selected	5

3.2 In the organisation what Sustainable Development Goals contribute mainly to…



	Frequency	Percentage
Future goals and objectives	32	53%
Select operational and management areas	18	30%
Human resources training/capabilities	6	10%
Other	4	7%

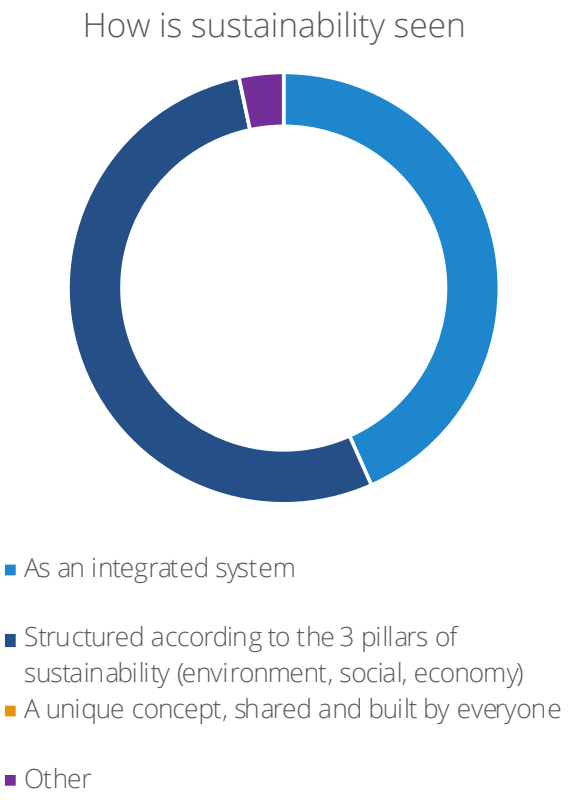
Nº answers	60

Answers in the category "other" includes:

- Research
- It is transversal to all areas
- Contribute to the three options, depending on the service in question, Planning, environment or Operational Program that provides greater operationalization through project financing
- Everything that may be related to consumption and education

4 Conceptualization

4.1 How is sustainability seen



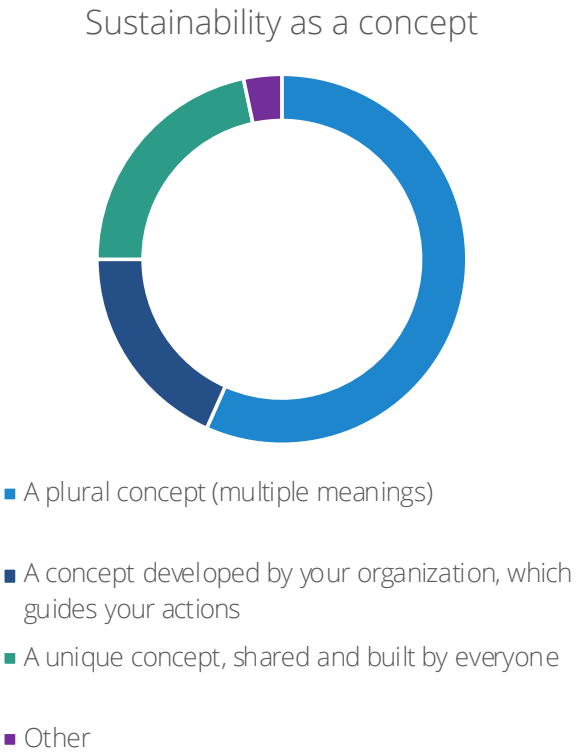
	Frequency	Percentage
Structured according to the 3 pillars of sustainability (environment, social, economy)	32	53%
As an integrated system	26	43%
A unique concept, shared and built by everyone	0	0%
Other	2	3%

Nº answers	60

Answers in the category "other" includes:

- It is not strategic. It happens due to the will of the business or the collaborators
- I don't think there is a defined vision

4.2 Sustainability as a concept



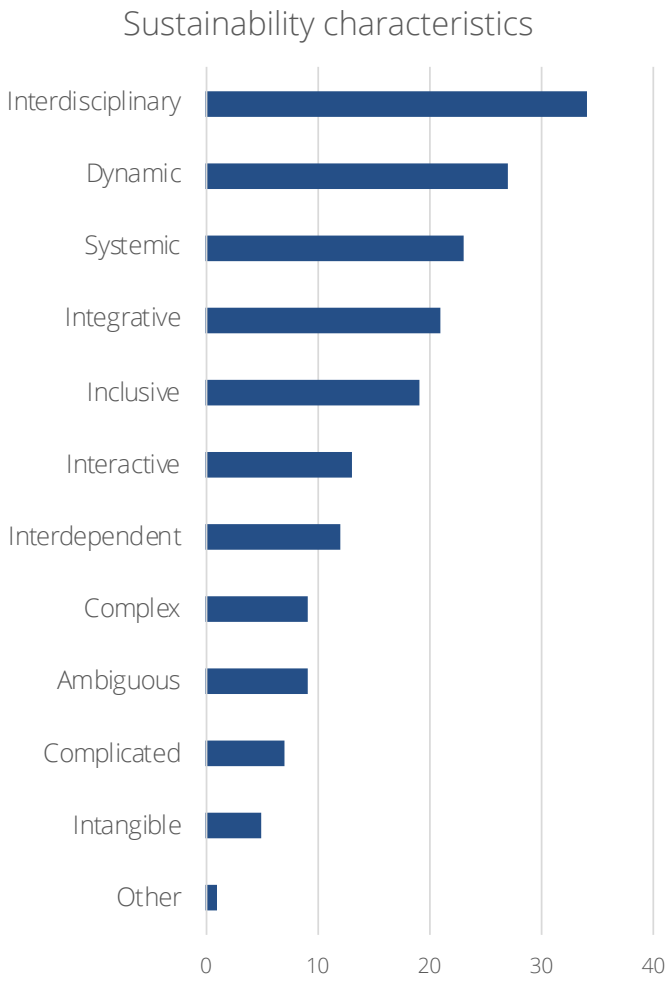
	Frequency	Percentage
A plural concept (multiple meanings)	34	57%
A unique concept, shared and built by everyone	13	22%
A concept developed by your organisation, which guides your actions	11	18%
Other	2	3%

Nº answers	60

Answers in the category "other" includes:

- Not conceptualized
- It does not exist specifically. It's random

4.3 Sustainability most relevant characteristics (3 selections)



	Frequency	Percentage
Interdisciplinary	34	19%
Dynamic	27	15%
Systemic	23	13%
Integrative	21	12%
Inclusive	19	11%
Interactive	13	7%
Interdependent	12	7%
Ambiguous	9	5%
Complex	9	5%
Complicated	7	4%
Intangible	5	3%
Other	1	1%

Nº answers	60
Nº of selections	180
Options selected	3

Answers in the category "other" includes:

- Developed to fulfil objectives but made by people without deep knowledge in the subject

5 Leadership

5.1 Dominant leadership style

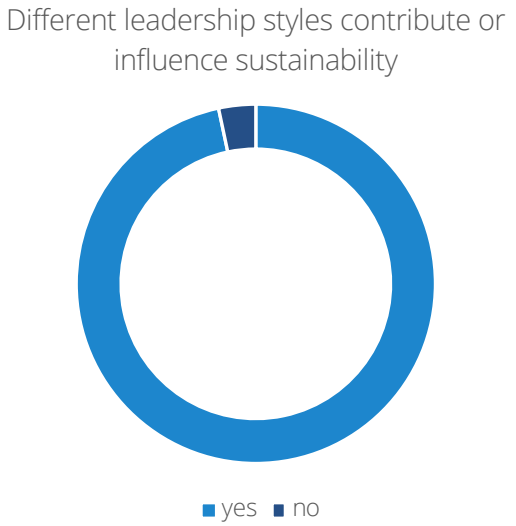
	Frequency	Percentage
Democratic	13	22%
Leader by technical capacity	12	20%
Motivating	11	18%
Authoritarian	8	13%
Leader Coach	6	10%
Visionary	4	7%
Liberal	3	5%
other	3	5%

Nº answers	60

Answers in the category “other” includes:

- Authoritarian / low qualified
- Combination between Visionary, Motivator, Leader "Coach" and Leadership by technical capacity.
- Vision / motivation team (s) / demonstrated ability

5.2 Different leadership styles contribute or influence sustainability



	Frequency	Percentage
Yes	58	97%
No	2	3%

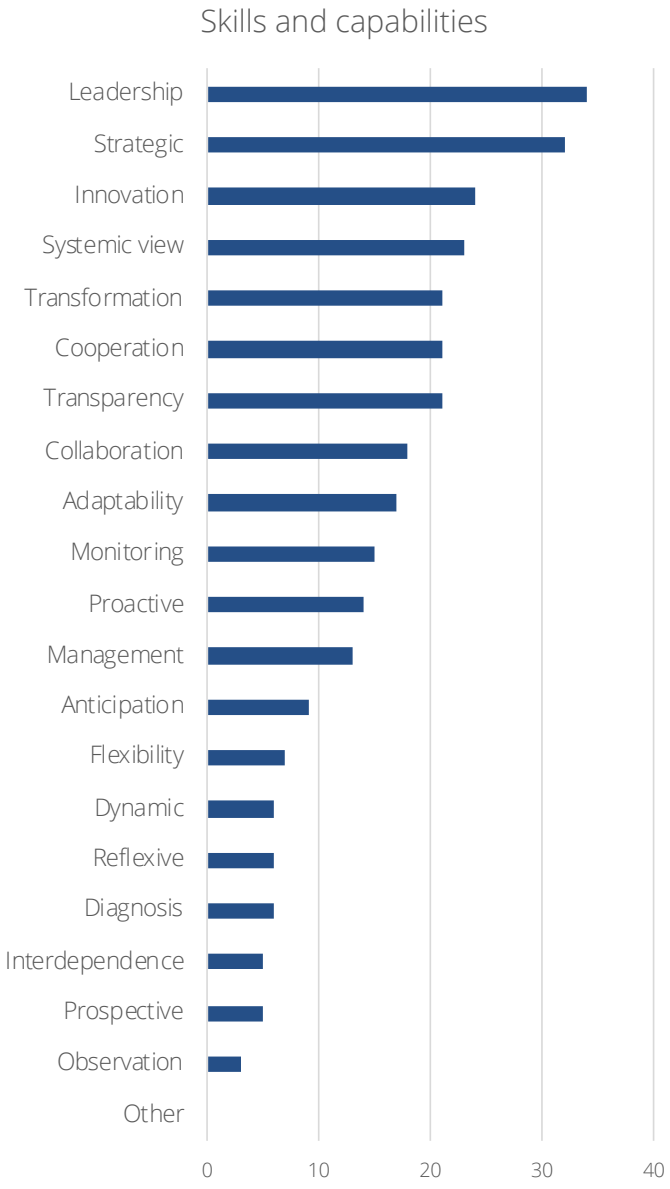
Nº answers	60

how:

Clusters of open answers	Frequency	Percentage
Vison / strategy	10	21%
Driver to Action	10	21%
Collective participation	10	21%
Team management	9	19%
Knowledge and capacity	6	13%
Values	3	6%
Nº answers		48
Nº of selections		48
Average options selected		1

6 Capabilities

6.1 Skills and capabilities most relevant for the development of activities in the scope of sustainability (5 selections)



	Frequency	Percentage
Leadership	34	11%
Strategic	32	11%
Innovation	24	8%
Systemic view	23	8%
Transparency	21	7%
Cooperation	21	7%
Transformation	21	7%
Collaboration	18	6%
Adaptability	17	6%
Monitoring	15	5%
Proactive	14	5%
Management	13	4%
Anticipation	9	3%
Flexibility	7	2%
Diagnosis	6	2%
Reflexive	6	2%
Dynamic	6	2%
Prospective	5	2%
Interdependence	5	2%
Observation	3	1%
Other	0	0%

Nº answers	60
Nº of selections	300
Options selected	5

7 Action

7.1 Sustainability integration in the organisation

	Frequency	Percentage
Part of the organisation's DNA *(considered since the definition of the organisation's vision and strategy)*	25	42%
Developed in parallel with the core actions of the organisation	15	25%
Incorporated into the organisation's planning and management	14	23%
Other	6	10%

Nº answers	60

7.2 Engagement in developing actions for sustainability (unlimited selection)

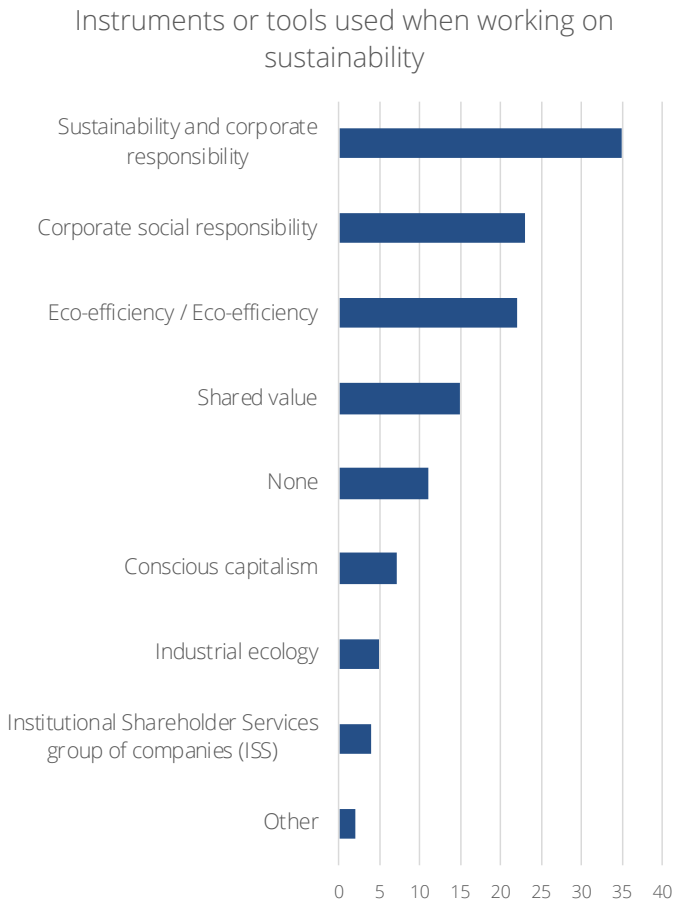
	Frequency	Percentage
Top management *(Executive Management or Administration)*	33	24%
Employees	33	24%
Department and project managers	31	23%
Suppliers	14	10%
Other stakeholders	14	10%
NGO	5	4%
other	7	5%

Nº answers	60
Nº of selections	137
Options selected	2,17

Answers in the category "other" includes:

- Do not know
- The entire organisation (managers and employees in daily activities with those who interact with the organisation)
- There is a team that reports directly to the steering committee
- all relevant stakeholders
- The size of the organisation leads everyone to be involved

7.3 Instruments or tools used when working on sustainability (unlimited selection)



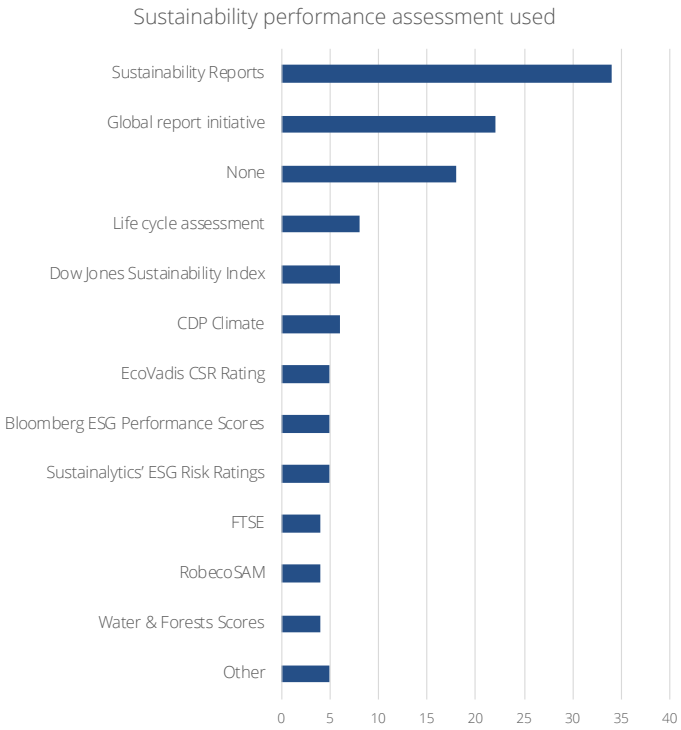
	Frequency	Percentage
Sustainability and corporate responsibility	35	28%
Corporate social responsibility	23	19%
Eco-efficiency / Eco-efficiency	21	17%
Shared value	16	13%
None	11	9%
Conscious capitalism	7	6%
Industrial ecology	5	4%
Institutional Shareholder Services group of companies (ISS)	4	3%
Other	2	2%

Nº answers	60
Nº of selections	124
Options selected	1,97

Answers in the category "other" includes:

- suitable for the challenge in question
- regional, national and European / international policy guidelines

7.4 Sustainability performance assessment used (unlimited selection)



	Frequency	Percentage
Sustainability Reports	34	27%
Global report initiative	22	17%
Life cycle assessment	8	6%
CDP Climate	6	5%
Dow Jones Sustainability Index	6	5%
Sustainalytics' ESG Risk Ratings	5	4%
Bloomberg ESG Performance Scores	5	4%
EcoVadis CSR Rating	5	4%
Water & Forests Scores	4	3%
RobecoSAM	4	3%
FTSE	4	3%
None	18	14%
Other	5	4%

Nº answers	60
Nº of selections	124
Options selected	1,95

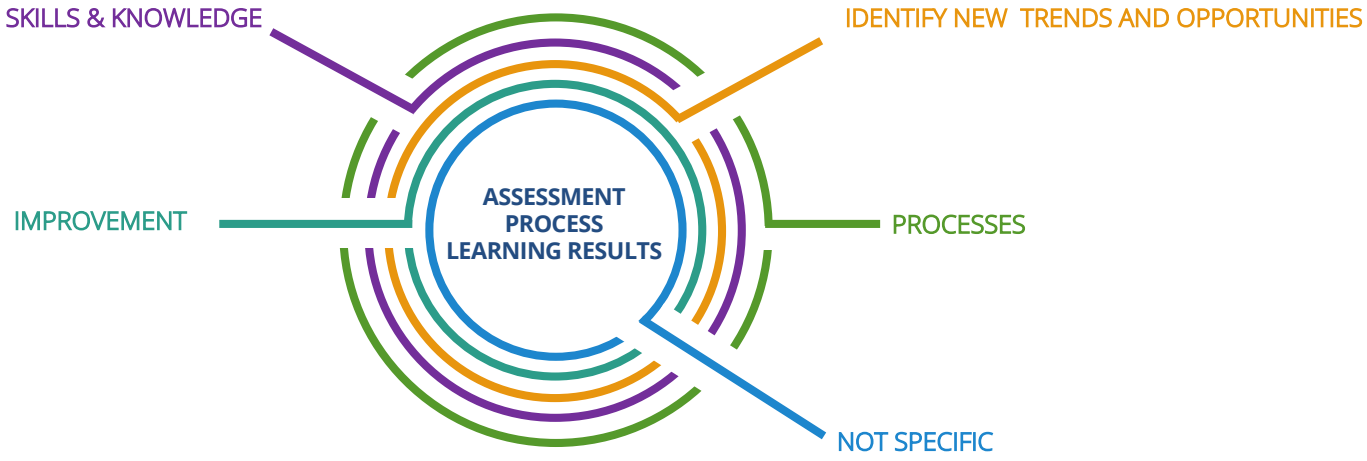
Answers in the category "other" includes:

- Not applicable
- I'm not informed enough to answer
- Impact assessment of actions
- Ecosystem-based Approaches to Climate Change Adaptation
- Ecosystem-based Adaptation (EbA)

7.5 Learning results that you get from the assessment process

Clusters of open answers	Frequency	Percentage
Identify new trends and opportunities	13	22%
Improvment	12	20%
Skills & Knowledge	11	18%
Process	5	8%
Not specific	7	12%
* not know	12	20%

Nº answers	60
Nº of selections	60
Average options selected	1

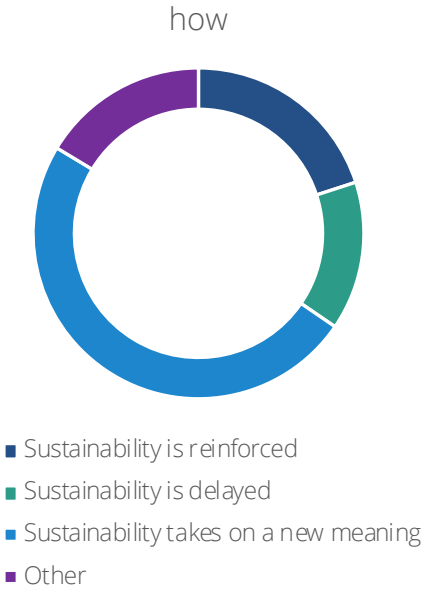


8 Closing section

8.1 Covid-19 has an impact on the organisation's sustainability policy

	Frequency	Percentage
Yes	50	83%
No	10	17%

Nº answers	60



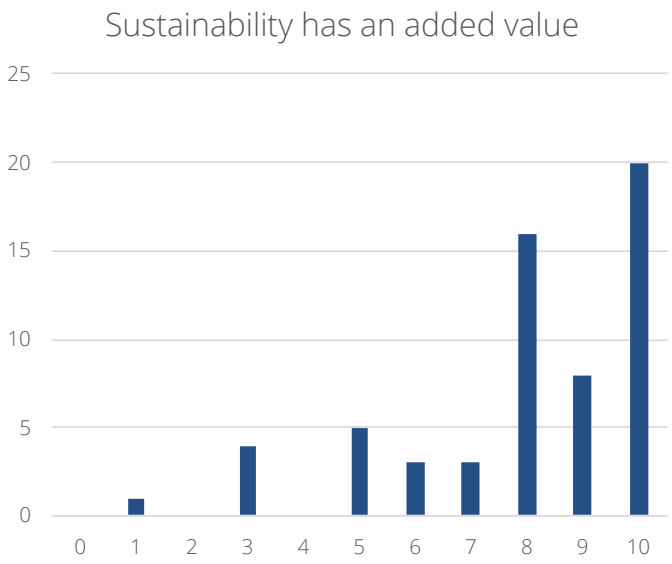
	Frequency	Percentage
Sustainability is reinforced	11	20%
Sustainability is delayed	8	15%
Sustainability takes on a new meaning	27	49%
Other	9	16%

Nº answers	55

Answers in the category "other" includes:

- The Covid is the only thing important
- All employees started teleworking
- I am not aware of the evolution of the strategy
- Both sides of the coin became more evident. On the one hand, sustainability is more present on the other hand, COVID measures require a greater expenditure of resources
- Investments in energy transformation postponed

8.2 Sustainability has an added value



	Frequency	Percentage
0 (no added value)	0	0%
1	1	2%
2	0	0%
3	4	7%
4	0	0%
5	5	8%
6	3	5%
7	3	5%
8	16	27%
9	8	13%
10 (maximum value added)	20	33%

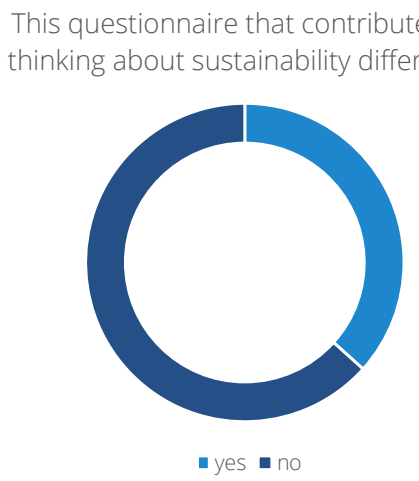
Nº answers	60

Three keywords that best identify the added value

Clusters of open answers	Frequency	Percentage
Future	21	18%
Approach	25	22%
Values	22	19%
Image	15	13%
Action	17	15%
World Pillars	14	12%

Nº answers	43
Nº of selections	114
Average options selected	2,65

8.3 The questionnaire contributed to thinking about sustainability differently



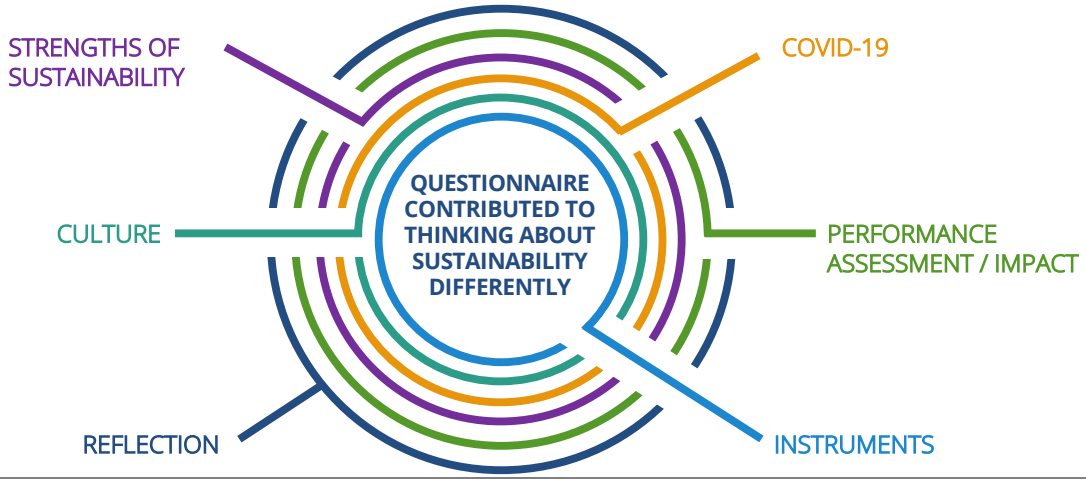
	Frequency	Percentage
Yes	22	37%
No	38	63%

Nº answers	60

what

Clusters of open answers	Frequency	Percentage
Reflection	6	27%
Performance Assessment / Impact	5	23%
Intruments	4	18%
Culture	3	14%
Strengths of Sustainability	2	9%
Covid	2	9%

Nº answers	22
Nº of selections	2211
Average options selected	



ANNEX 5.C

QUESTIONNAIRE RESULTS – CASE STUDY ORGANISATIONS

Annex 5.C
Questionnaire results – case study organisations

	Name	IMVF	Esporão	NBI
SUSTAINABILITY IN THE ORGANISATION	ORGANISATION ACTIVELY CONTRIBUTES TO SUSTAINABILITY	Yes	Yes	Yes
	INVOLVEMENT TO CONTRIBUTE TO SUSTAINABILITY COULD BE IMPROVED	Yes	Yes	Yes
	NOW HOW TO DO IT	Yes	Yes	Yes
	ORGANISATION'S APPROACH IS MORE FOCUSED ON	Future goals and objectives	Action and operationalisation	Develop innovation projects in the fields of bioeconomic
		Action and operationalisation	Factor relations	
		Report and monitoring of initiatives carried out		

ID	Name	IMVF	Esporão	NBI
CONCEPTUALISATION	HOW IS SUSTAINABILITY SEEN	As an integrated system	As an integrated system	As an integrated system
	SUSTAINABILITY CHARACTERISTICS IN THE ORGANISATION	Interdisciplinary	Systemic	Systemic
		Dynamic	Dynamic	Dynamic
		Interdependent	Interactive	Interdisciplinary
	AS A CONCEPT, SUSTAINABILITY IN THE ORGANISATION IS	A plural concept (multiple meanings)	A unique concept, shared and built by everyone	A plural concept (multiple meanings)

ID	Name	IMVF	Esporão	NBI
CAPABILITIES	THE MOST RELEVANT SKILLS AND CAPABILITIES FOR THE DEVELOPMENT OF ACTIVITIES IN THE SCOPE OF SUSTAINABILITY	Proactive	Systemic view	Systemic view
		Management	Cooperation	Cooperation
		Collaboration	Transformation	Transformation
		Leadership	Leadership	Strategic
		Adaptability	Diagnosis	Adaptability

ID	Name	IMVF	Esporão	NBI
LEADERSHIP	DOMINANT LEADERSHIP STYLE	Leader by technical capacity	Democratic	Visionary
	DIFFERENT LEADERSHIP STYLES CONTRIBUTE OR INFLUENCE SUSTAINABILITY	yes	yes	yes

ID	Name	IMVF	Esporão	NBI
SUSTAINABLE DEVELOPMENT GOALS	SELECT THE 2030 AGENDA SUSTAINABLE DEVELOPMENT GOALS THAT ARE MOST RELEVANT	SGD1 SGD2 SGD4 SGD5 SGD6 SGD10 SGD12 SGD13 SGD16 SGD17	SGD2 SGD3 SGD6 SGD7 SGD8 SGD9 SGD12 SGD13 SGD15	SGD2 SGD13 SGD14 SGD15
	IN YOUR ORGANISATION, THE SDG CONTRIBUTES MAINLY TO	Select operational and management areas	Select operational and management areas	Select operational and management areas

ID	Name	IMVF	Esporão	NBI
ACTION	THE ORGANISATION CONSIDER THAT SUSTAINABILITY IS:	Part of the organisation's DNA (considered since the definition of the organisation's vision and strategy)	Part of the organisation's DNA (considered since the definition of the organisation's vision and strategy)	Part of the organisation's DNA (considered since the definition of the organisation's vision and strategy)
	THE ACTIONS FOR SUSTAINABILITY DEVELOPED IN THE ORGANISATION INCLUDE MAINLY:	• Top management (Executive Management or Administration) • Department and project managers • Employees •	• Top management (Executive Management or Administration) • Department and project managers	• Top management (Executive Management or Administration) • Department and project managers
	INSTRUMENTS OR TOOLS USED WHEN WORKING ON SUSTAINABILITY	• Corporate social responsibility • Shared value • Sustainability and corporate responsibility	• None	• Shared value • Nature-Based Solutions, Biomimica, Sciemce-Based Targets
	IN SUSTAINABILITY PERFORMANCE ASSESSMENT WHICH ASPECTS / INDICATORS, YOUR ORGANISATION USES:	Global report initiative	Global report initiative	Global report initiative
		Sustainability Reports	Sustainability Reports	Sustainability Reports
		Life cycle assessment		Ecosystem-based Approaches to Climate Change Adaptation, or Ecosystem-based Adaptation (EbA)

ID	Name	IMVF	Esporão	NBI
ADDED VALUE	USE THREE KEYWORDS THAT BEST IDENTIFY THE ADDED VALUE OF SUSTAINABILITY	Productivity Surplus Costs vs Results	Brand Equity Balance between Stakeholders Long term	Naturally Based Economy

Annex 5.D

Sense Making Background

Dervin's SMM

Sense-Making is a methodology, as Dervin has indicated with her framing, and is chosen as it attempts to build bridges between the two dominant approaches to theories and begins "*to be theory of the third kind*" (Dervin, 2005: 26) – the theory for methodology (Agarwal, 2012:2).

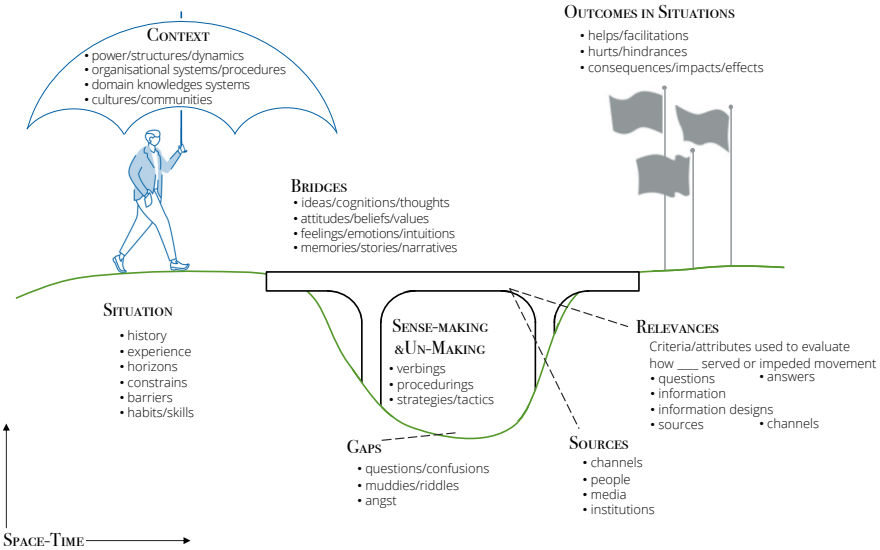
"*Sense-Making is accurately understood to be both a body of theoretical assumptions that support a particular understanding of human communication and also a specific set of methods that guide the design and implementation of communication research and practice*." (Foreman-Wernet, 2003:14) . While "*its methods for data collection are qualitative in nature, the results can be analyzed in quantitative as well as qualitative ways*." (ibid).

Sense-Making is concentrated on information seeking, focusing on the "hows" of communication occurs, and that helps us not only to comprehend how we communicate but to intervene, transform and improve these practices. "*Sense-Making is proposed as a generalizable approach to thinking about and studying human sense making and sense unmaking in its variant forms*." (Dervin, 2005: 26).

Dervin's Sense-Making Methodology (SMM) is used to understand the relationship between communication, information, and meaning. And it was not developed as a substantive theory but rather as a philosophically informed methodological approach for attending to (and researching) human "*communicating*". (Dervin & Foreman-Wernet, 2003).

Thus, in a way Dervin has a clear individual and hermeneutic approach, that has valuable insight to guide the construction of knowledge from the data.
The sensemaking metaphor is summarised by Naumer, Fisher and Dervin (2008) as follows (Erro! A origem da referência não foi encontrada.):

Figure 5.D.1 -Dervin's sensemaking metaphor (Dervin, 2008:17)



A person is seen as embedded in a context laden situation, bounded in time space. The person pictured as crossing a bridge is used to metaphorically describe the way that humans are mandated by the human condition to bridge gaps in an always evolving and ever-gappy reality.
The person is seen facing a gap (i.e., a sensemaking need) that arises out of a situation. Through the process of gap bridging, people seek inputs (sometimes the stuff systems call information) and engage in other activities through the time space continuum that lead to outcomes. (ibid:2)

Weick's sensemaking

On the other hand, Weick's approach has been focus on organizational activity (collective), and the location of sensemaking is internalized as a representation of collective meaning.

Weick's sensemaking involves and requires an articulation of the unknown (Ancona, 2012:4). It is the process of "structuring the unknown" (Waterman, 1990: 41) by "placing stimuli into some kind of framework" that enables us "to comprehend, understand, explain, attribute, extrapolate, and predict" (Starbuck & Milliken, 1988:51).
Sensemaking is the act that enables to turn the enduring complexity of something into a "*situation that is comprehended explicitly in words and that serves as a springboard into action*" (Weick, Sutcliffe, & Obstfeld, 2005: 409).

In the realm of an organization, sensemaking can mean learning about something new, a previously successful model that is no longer working, about something that has always existed or about a problem that you haven't seen before.

Weick's sensemaking navigates mainly into two perspectives:

(i)Action-interpretation perspective

"*Sensemaking is about the interplay of action and interpretation rather than the influence of evaluation on choice. When action is the central focus, interpretation, not choice, is the core phenomenon*" (Weick et al. 2005:409).

(ii)Meta-theoretical perspective:

Sensemaking "*is best described as a developing set of ideas with explanatory possibilities, rather than as a body of knowledge*" (Weick 1995: xi) and "*sensemaking perspective is a frame of mind about frames of mind that is best treated as a set of heuristics rather than as an algorithm*" (Weick 1995: xii)

These two perspectives allow relating sensemaking with decision-making supported by "action-driven processes of sense-making" (Weick 1995: 155) and complemented by "belief-driven processes of sense-making" (ibid:133).

This relation that determinates triggers to transition and Weick (1995) seven properties that suggest "*what sensemaking is, how it works and where it can* fail" (ibid:18), constitute ontological, epistemological, and methodological claims that are pillars to shape a model for strategic contributions for sustainability.