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The state of the art and practice in improvement planning for ethics, social and environmental topics

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Quote

“To become real, to be able to steer action, something has to be developed which might be called a plan” (Adams & McNicholas, 2007)

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Abstract

It is common for organisations to engage in a lifelong continuous improvement cycle centred around reducing negative externalities and increasing positive ones. As a result, organisations have a central role when it comes to our concerns about how the concept of sustainability is both threatened and communicated. Additionally, the biggest challenge for most organisations remain in how unsustainable behaviour can be alleviated and how associated improvement areas and actions can be determined.

In this research, we refer to this as Improvement Planning for Ethics, Social and Environmental (IP4ESET); a set of activities, as part of a strategic management process, leading to the determination of actions that are needed to improve social and environmental impact and business ethics. The input for these actions can vary due to different social and environmental accounting methods that exist assessing the social and environmental effects of an organisational action. This can be regarded as a complication for defining a standard method for IP4ESET. For this reason, the purpose of this research is to provide an overview of the state-of-research and state-of-practice in IP4ESET by conducting a literature study and a case study. To discover which activities are performed, a semi-structured interview is conducted with six responsible enterprises. By using a formal method comparison approach, in which improvement planning methods for ethics, social and environmental topics are compared with each other. As a result, a super method is constructed, which serves as a generic method for IP4ESET. This is complemented by a systematic literature study of both scientific and grey literature.

In practice, we discovered several issues. For instance, closing the gap between translating high level goals into concrete actions. Some organisations have very mature processes and completed an improvement plan many times, while others start their first improvement planning phase. However, there is no step-by-step guide indicating how and where to start, which activities are relevant and to evolve over the years. A variability model could provide such a guide and framework. This model is created by applying process variants in the activities of the generic method for IP4ESET. By including variants to a generic process, a variable business process emerged. Here, possibilities are offered for tailoring the process to the desires and standards of different organisations.

Accordingly, this research intends to investigate the possibilities of developing a versatile and model-driven tool that supports the IP4ESET phase. We found that several tools have been introduced. Despite, no versatile tool can be found in both literature and practice solely focusing on IP4ESET. It becomes clear that such a tool is highly desirable in practice in order to manage data and to create a social, environmental and business ethics improvement plan. Therefore, we have created a concept version of a versatile and model-driven tool visualising the results of the activities as part of the variability model.

This concept version is validated by means of a Technical Action Research, which revealed both weaknesses and strengths, while suggesting potential improvements. As a result, this research lays the groundwork for a mature ICT-support tool for IP4ESET in the future.

Keywords: continuous improvement, improvement planning methods for ethics social and environmental topics, method engineering, model-driven engineering, variable business process, ICT-support tool

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List of Abbreviations

AHRQ	Agency for Healthcare Research and Quality
APG	Action Planning Guide
ASSIST	Adaptive System of School Improvement Support Tools
CI	Continuous Improvement
CEIM	Continuous Ethical Improvement Model
CEAP	Community Environmental Action Plan
CSR	Corporate Social Responsibility
DMAIC	Define, Measure, Analyse, Improve, Control
ECG	Economy for the Common Good
ESEIP	Ethics, Social and Environmental Improvement Planning
IP	Improvement Planning
IP4ESET	Improvement Planning for Ethics, Social and Environmental Topics
MA	Materiality Assessment
MLR	Multivocal Literature Research
MEL	Monitoring, Evaluation and Learning
PSAT	Program Sustainability Assessment Tool
PDCA	Plan, Do, Check, Act
PDD	Process Deliverable Diagram
QSIR	Quality, Service Improvement and Redesign tools
SEA	Social and Environmental Accounting
SEBEIC	Social, Environmental and Business Ethics Improvement Cycles
SAP	Sustainability Action Plan
SBT	Sustainability Business Transformation
SLR	Systematic Literature Review
SMC	Sustainability Management Cycle
SPM	Sustainability Planning Model
TAR	Technical Action Research
TEC	The Ethical Cycle
VBP	Variable Business Process
VP	Variable Partition

1 | Introduction

“To meet the needs of the present without compromising the ability of future generations to meet their needs” can be seen as the basic foundation for sustainable development [57]. According to Gray [20], this “sustainable” development can be regarded as a ‘good thing’, seeing that it takes care of the environment and promotes social justice between and within generations. In addition, the concept of Corporate Social Responsibility (CSR) has become almost a universal standard promoted by governments and corporations to non-governmental organisations and even individual consumers [37]. Also, the increasing pressure to meet inter-generational equity, regardless of whether they are in government, private or public sector, forces organisations to rethink their operations. As well, the need for it to become sustainability-driven through initiatives such as sustainability modelling and reporting [48][2]. The recognition of the growing importance of these organisations has led to an emphasise on their current standing with regard to their social and environmental performances and business ethics.

Accordingly, anecdotal evidence tells us that organisations that wish to become more responsible and engage in a transition to becoming responsible organisations, can take an iterative approach by addressing the phases of a sustainability and business ethics improvement cycle. This cycle is depicted in Figure 2 on page 15, consisting of the following four phases:

- *Materiality assessment* (MA): determine which sustainability and business ethic topics are relevant and important for the organisation)
- *For ethical, social and environmental accounting* (ESEA): (the assessment of social and environmental effects and business ethics of an organisation’s actions is reported)
- *Sustainability improvement planning* (SIP): the strategic management process that leads to the determination of short and long term actions that are needed to improve the social and environmental performance of an organisation
- *organisational re-engineering*: executing the prescribed and improvement actions in the previous phase

Organisations can engage in a network of responsible enterprises. Examples of these networks are the Economy for the Common Good (ECG)¹, REAS² and B Corp³. These enterprises play an essential role in reaching a sustainable economy. However, one of the challenges they face, are for instance how to define a sustainability baseline and how to manage responsible actions. As indicated in [16] a responsible enterprise conforms to ethical values, taking care of the impact of their activities on society and the environment. As a result, these enterprises contribute by behaving responsible throughout the whole value chain and recompense to society and nature.

¹<https://www.ecogood.org/nl/>

²<https://www.reasred.org/>

³<https://bcorporation.net/>

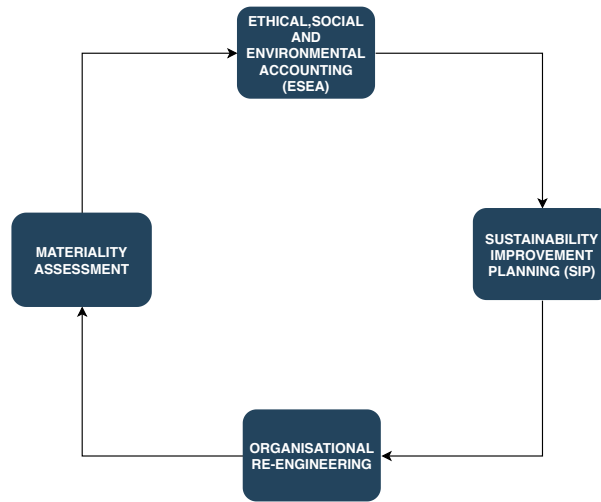


Figure 2. Sustainability and business ethics continuous improvement cycle

1.1 Problem Statement

This research focuses on Improvement Planning for Ethics, Social and Environmental Topics (IP4ESET), which coincides with the third step in the cycle as depicted in Figure 2. According to Gray [20], we cannot speak about sustainability at a corporate or organisational level. The main reason for this, is that the concept of sustainability is to be placed at an ecological, planetary and societal system level, which will only rarely coincide with corporate or organisational boundaries and therefore cannot be mapped to organisations [41][20]; narratives related an organisational level should be based on the state of organisational activity with regard to humanity and other species on the planet. So, in this research, we adopt the terms social, environmental and business ethics in relation to improving organisational impact.

The phase prior to IP4ESET, known as the ESEA phase, can be seen as a key practice used for both measuring and identifying improvement areas and actions [16]. Consequently, this phase is essential for providing input for IP4ESET. It is discovered in [49] that 29 ESEA methods exist and organisations of all sizes apply more than one of these methods in one period of time. This indicates that the ESEA practices can be very diverse, which has led to the creation of a versatile and model-driven tool called openESEA; a tool able to support virtually any ESEA method and which provides features to extend methods or even merge overlapping methods [15].

In the current situation, we assume that the practices for IP4ESET can also vary due to the different results and output of the ESEA methods, which can be regarded as a complication for performing IP4ESET or defining a standard IP4ESET method. In addition, as a result of the work as presented in [49], there are some additional features that could be implemented to the ESEA tool. For instance, how an improvement plan is created. Accordingly, the state-of-research and state-of-practice of IP4ESET requires further investigation. In this way, the activities enclosed in the IP4ESET phase can be modelled, compared and analysed using different modelling techniques. Additionally, we aim to construct a scientifically valid continuous improvement (CI) cycle in which the IP4ESET phase can be placed. Based on the findings in both literature and practice, generic activities, common and best practices can be identified. In this research, common and best practices are defined as procedures, methods or techniques that have become a standard in the execution of tasks related to IP4ESET, due to desirable results they produce. We are dedicated to gain an in-depth understanding of the field of CI and IP4ESET particularly, in order to investigate how this process is performed and how it can be supported with an ICT-support tool.

1.2 Research Objective

The scope in terms of covered dimensions of this research are visualised in Figure 3 using an OLAP cube visualisation technique [19]. Here, we illustrate a three-dimensional view using three axes. These axes can be described in terms of groups; a) *focus*, b) *activities* and c) *context*. The focus is either on performance in general (quality, process and/or product improvement etc.) or on social and environmental performance and business ethics. The activities are related to CI cycles at a more high-level or the improvement planning (IP) phase specifically. Finally, the context of the focus area and activities are investigated either in literature (through a literature study) and in practice (by means of a case study).

We intend to investigate the process of IP4ESET using different modelling techniques in order to lay the groundwork for a future mature ICT-support tool for IP4ESET. For instance, this tool could interact with results of the OpenESEA that can be adopted by various responsible enterprises of networks. Thus, this tool should be versatile in order to be able to connect with other existing or future tools. The expected benefit for using an ICT-support tool is that it offers a straightforward practice through a step-by-step guide able to simplify the execution of IP4ESET and to increase productivity.

To explore whether an ICT-support tool would be beneficial for responsible enterprises, we need to have a clear understanding of the current state-of-research and practice in IP4ESET. In this way, common and best practices and possible limitations of these practices can be discovered. Furthermore, this research might highlight other activities and practices that could be included in the development of a mature software tool or other future supporting opportunities. As a result, the artefact that will be created in this research will be based on the main findings uncovered during the case study and the literature study.

A future goal is to develop a repository in which common and best practices that can interact with the envisioned versatile and model-driven tool. We define a repository as “*a shared database of information on engineered artefacts which are produced or used by an enterprise*”[11]. So, in this case the artefact can be described as common and best practices on social, environmental and business ethics issues, which are a form of business process data that describe what other organisations have done in their (attempted) transition to become a responsible enterprise. Ideally, this repository can then be consulted by organisations during the IP4ESET phase to support the identification of improvement actions, by capturing and sharing appropriate action steps to take. Therefore, this research lays the groundwork for the development of an ICT-support software tool for IP4ESET.

The remainder of this thesis is structured as follows: In Chapter 2, the research approach, the research questions and research method are described. In addition, an outline of the literature study, case study approach and method comparison approach, including its protocols can be found here. Subsequently, Chapter 3 contains the results of the Literature Review and the Multivocal Literature Review (MLR), which support the domain and main concepts included in this research followed by a method comparison of CI cycles and IP methods. Then, in Chapter 4, the results of the case study are reported. The findings per case are presented, as well as the results of the case study as a whole through a method comparison. Chapter 5 provides the framework for a future mature ICT-support tool for IP4ESET. First of all, a super method for a CI cycle and IP4ESET is presented followed by an extension of this model through the use of business process variants. This results in a variability model for IP4ESET.

In addition, Chapter 6 elaborates on the current ICT-support tools as founded in both literature and practice. Subsequently, a proof of concept version of a versatile and model-driven tool is introduced for IP4ESET called openESEIP (Ethics, Social and Environmental Improvement Planning). Followed by Chapter 7, in which we validate the concept version of openESEIP by means of a Technical Action Research (TAR). Finally, Chapter 8 addresses the strengths and limitations of the research are discussed, as well as future research directions and the overall conclusion can be found in Chapter 9.

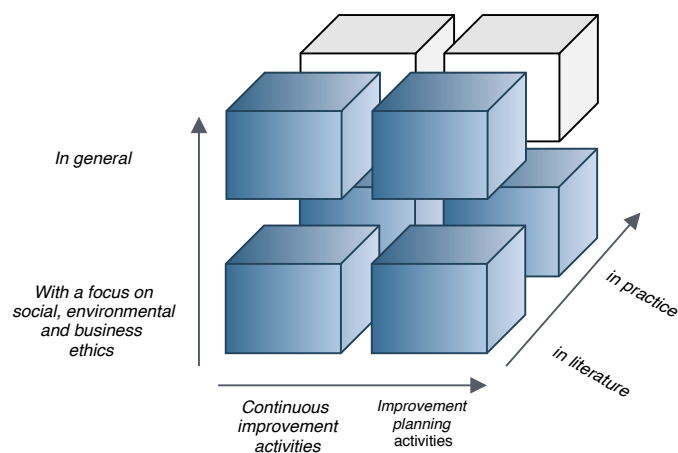


Figure 3. Visualisation of the covered areas of this research

2 | Research Approach

The main goal of this thesis as mentioned in section 1.2 is to provide an overview of the process of IP4ESEIP by means of a literature study (see section 3) and a case study (see section 4). The research approach consists of three parts. First of all, the research questions are set-up, followed by a detailed description of the research method to get an overview of the different phases that are followed in this research. Secondly, the literature study approach and case-study approach are described in detail in section 2.3 and 2.4. Finally, the method comparison approach is described in section 2.5.

2.1 Research Questions

The following research questions and sub-questions are set up based upon the aforementioned goal and problem statement of this research:

RQ1 What is the state of the art of improvement planning in the field of continuous improvement approaches?

1. What is continuous improvement?
2. What generic improvement planning methods and tools can be found in literature?
3. What improvement planning method and tools can be found with a focus on social and environmental performance and business ethics in literature?
4. What is understood as an improvement plan in literature?

RQ2 What is the state-of-practice in improvement planning, in the context of responsible enterprises aiming at improving their social and environmental performance and business ethics?

1. What is understood as an improvement plan in practice?
2. Do organisations apply any method(s)?
3. Do organisations use tools?
4. What are limitations of the current practices?

RQ3 How can common and best practices in improvement planning for ethics, social and environmental topics be supported with advanced ICT-support software tools?

1. What features should be included for an ICT-support tool?

2.2 Research Method

In order to provide a clear understanding of the research method, a Process Deliverable Diagram (PDD) is created to illustrate the phases, activities and deliverables in accordance with this research in Figure 4 on page 19. This research consists of five phases. First of all, in the research set-up the scope and subject of this research are decided in section 1.1 and 1.2. Subsequently, the research questions and sub-research questions of this research are set-up and discussed in section 2.1. Then the research method is described. These concepts combined determine the research approach consisting of a literature study approach (see section 2.3) and a case study approach (see section 2.4).

The literature study identifies the relevant aspects that describe the state-of-research of improvement cycles and improvement planning (IP) activities both in *general* and with a focus on *social, environmental performance and business ethics*. Hence, this literature study consists of three sections; CI and its approaches, *generic and social, environmental and business ethics* improvement cycles (SEBEIC) and a Multivocal Literature Research (MLR) that investigates the state-of-research and the state-of-practice in IP and IP4ESEIP activities in particular. A method comparison analysis is conducted, which compares all activities and deliverables that are represented in the described cycles, which are treated as methods. This results in the creation of a super method and a cycle that depicts this super method. For the identifying *generic* tools and methods for IP and with a focus on *social and environmental performance and business ethics*, a Multivocal Literature Research (MLR) is conducted. The protocol for the MLR is described in section 2.3.1. For each identified tool or method, the name, domain and validation are described. In

addition, PDDs are created based on the available data found in the results of the MLR. A super method based on the results of the MLR is created as well. This super method can be seen as an extension of the super method of CI cycles. Hence, the literature study marks the second phase of this research, answers the first RQ1 and its sub-questions.

The third phase is concerned with the preparation and execution of the case study; executed with responsible enterprises as part of a network of responsible enterprises. First of all, a study protocol is defined followed by an interview. This interview is concentrated on obtaining information about the overall followed CI cycle and the IP4ESET process in particular as carried out by a responsible enterprise. The data that results from the semi-structured interviews are coded in Nvivo¹. For each case, based on this data, two PDDs are created; the first model follows the CI improvement cycle and the second one zooms in on the IP4ESET process. Therefore, the results of the case study provides an answer to RQ2 and its sub-questions. In the fourth phase, a method comparison is conducted in which a super method is created that consists of the generic activities and deliverables that result from both literature and practice.

The final phase focuses on setting up a framework for an ICT-support tool. First of all, a variability model is created using a BPMN that is derived from the super method of both literature and practice. Here, the super method is extended with process variants. Secondly, the identification of features for an ICT-support tool are derived from this model, leading to the creation of a proof of concept version of the openESEIP tool using Google Sheets. Finally, a Technical Action Research (TAR) is conducted that is used to validate the tool. As can be observed in the PDD, the TAR concept is modelled as an open concept, meaning that its sub concepts are expanded in text in Chapter 7. Subsequently, the research outcome is reported. The final phase poses an answer to RQ3 and its sub-question.

¹<https://www.qsrinternational.com/nvivo/nvivo-products>

2.3 Literature Study Approach

In order to get a better understanding of the research topic and domain, we conduct a literature study to investigate the existing body of knowledge in the field of CI and IP methods, and their existence in the domain of social, environmental and business ethics. Hence, to clarify our research objective, we start with formulating a definition for continuous improvement (CI) and an overview of CI approaches. Followed by a description of generic improvement cycles (process, performance, quality improvement, etc.) and social, environmental and business ethics improvement cycles in the field of CI. Sources are gathered by searching on Google Scholar and by using the snowballing technique (forward and backward searching) the results. This is done by using various search terms related to the topics.

Subsequently, a MLR is conducted to report on the state-of-research *and* the state-of-practice in IP and IP4ESET activities. A MLR is a form of a Systematic Literature Review (SLR), which includes both academic (formal) and so called “grey” literature (articles not formally published by commercial academic publishers) [23]. According to Garousi, Felderer and Mantyla [18], SLRs may not provide insight into the state-of-the-practice. Hence, crucial and valuable knowledge and information from practices in the field of IP and IP4ESET may stay hidden. In addition, it has been reported by other researchers that MLRs can be used for bridging the gap between academic research and professional practice [45].

We intend to acquire insights and knowledge about theories, tools and methods for generic IP and IP4ESET in the field of CI. The detailed protocol is described in section 2.3.1. The MLR follows the guidelines as proposed by Kitchenham [34] in “*Procedures for performing systematic reviews*”. This review will be an important source of knowledge for researchers and practitioners who want to stay up to date with the state-of-research of IP and IP4ESET resulting from both academic and grey literature. The results of both parts of the literature study can be found in Chapter 3.

2.3.1 Systematic Literature Review Protocol

According to Kitchenham [34], a SLR is a means of identifying, evaluating and interpreting all available research relevant to a particular research question, topic area or phenomenon of interest. The SLR procedures consist of three phases [36]:

1. Review planning phase
2. Review execution phase
3. Reporting phase

In the first phase the need and scope of the review is defined. Furthermore, the review questions are specified and the review protocol is set-up. In this research, we decide to focus the scope of our MLR on generic IP and IP4ESET. We aim to extract theory, tools, and methods from the results of this review for modelling the IP4ESET phase. The review execution includes the collection, organisation and classification of data. Data collection is carried out with a predefined selection algorithm using predefined search strings (see section 2.3.4). Subsequently, the data is analysed according to selection process criteria (see section 2.3.5), followed by an extraction analysis (see section 2.3.6). In the reporting stage the results of the MLR are presented (see section 3.5).

2.3.2 Method

In literature, there is a lack of knowledge regarding an overview of the state-of-research *and* the state-of-practice in generic IP and IP4ESET. Therefore, the goal of the SLR is to acquire a body of knowledge for theories, tools, and methods for IP and IP4ESET. Moreover, we expect to define activities and deliverables that provide a super method of the state-of-research *and* the state-of-practice in IP4ESET based on literature. There are various reasons for accumulating a body of knowledge as stated by Penzenstadler et al. [46]; justifying a foundation for future research, learning as much as possible from other domains related to the topic, and providing a basis for other researchers as well as students who want to learn about and contributing to this area. Furthermore, research questions should be defined in order to establish a sound review process and SLR [35]. Hence, we have defined the following research questions regarding this MLR:

- RQ1. What has been reported about improvement planning in general in existing literature?
- RQ2. What has been reported about improvement planning for ethics, social and environmental topics in existing literature?
- RQ3. Which methods and tools are used?

2.3.3 Search Process

The search process for this study will be based on an automated search in the following digital libraries using two search strings as described in section 2.3.4:

- Google
- Google Scholar

2.3.4 Search String

The search string used in this MLR follows a similar approach as the literature review. Hence, this MLR is divided into two search strings. For both search strings, we will only consider the first two pages of search results, due to the specificity of the search string. The aim of the first search string (**S1**) is to capture results that relate to methods and tools for generic IP. A combination of the following search terms are searched in Google and Google Scholar:

(improvement planning)

AND

(method OR tool)

Subsequently, the aim of the second search string (**S2**) is to capture results that relate ethics, social and/or environmental issues with IP. The following combination of search terms are searched in Google and Google Scholar:

(sustainability) OR (social) OR (environmental) OR (ethics) OR (fair) OR (Corporate Social Responsibility)

AND

(improvement planning)

AND

(method OR tool)

2.3.5 Selection process

In consensus with the protocol, the studies retrieved from the database are included when focused on generic IP tools or methods. In addition, ethics, social and/or environmental aspects in IP. The following inclusion criteria were chosen in order to select relevant papers and publications to answer the research questions:

- Written in English
- Grey Literature
- Academic (formal) literature
- Electronically available
- Sources directly describing one or methods or tools for IP
- Reviews or aggregated reports that compare a number of methods or tools
- Field studies
- Case studies

In this MLR sources are excluded that describe theories, tools or methods that we are unable to access. In order to properly analyse the described methods and tools of the retrieved sources, as part of RQ3, access is required. Subsequent, we exclude sources that describe improvement cycles, methods, tool, methodologies and/or approaches. However, if these sources contain a description of IP activities in particular, they are not excluded.

2.3.6 Data Analysis

We examine the sources that meet the criteria (see section 2.3.5) in order to describe the state-of-research and practice with regard to generic IP (RQ1, RQ2). We assess the remaining sources on the following subjects:

- The degree to which the sources describe IP activities
- The degree to which the sources describe generic IP activities

With the latter, we refer to activities that are not specific for a certain context, domain or case study. By means of the findings of this analysis, we are able to present an overview of methods and tools for generic IP and in specific IP4ESET.

2.4 Case study Approach

In this research, multiple case studies are conducted in order to provide additional insights in the state-of-practice in IP4ESET based on semi-structured interviews, documentation and organisational data. A case study is method that “explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in- depth data collection involving multiple sources of information and reports a case description and case themes” [22]. According to Baxter and Jack [7], an overall accepted fact is that the evidence that arises from a multiple case study is measured strong and reliable. Accordingly, multiple cases allow a wider exploring of research questions and theory development [14]. The case studies have an exploratory-explanatory character and are done by means of observations. An observational case study is a study of a real-world case without performing an intervention and are done in the field, or at least based on information produced in the field [64]. In this case, the observations are done based upon information produced in the field. Through performing an observational case study, implementation, evaluations and problem investigations can be done. The goal of this case study research is to acquire knowledge about individual cases of IP4ESET in responsible enterprises aiming at improving their social and environmental performance and business ethics. Moreover, this case study intends to provide a foundation for the development of an ICT-support tool for IP4ESET. We intend to obtain an overview of the IP4ESET processes in practice by answering the following knowledge questions:

- RQ1. What activities are performed in the improvement planning process for ethics, social and environmental topics in your organisation?
- RQ2. What are the dependencies between these activities?
- RQ3. What deliverables are created and/or used in your organisation?
- RQ4. Who is responsible for the ethics, social and environmental improvement planning process and its activities in your organisation?
- RQ5. Which methods and/or (software) tools are used during the improvement planning process for ethics, social and environmental topics in your organisation?

A Case Study Protocol is a set of guidelines that can be used to structure and govern a case research project [39]. Moreover, to be able to provide an answer to the determined knowledge questions above. Resulting from the case study, we attempt to define activities and deliverables, which are used to compare with the results from literature. Thus, the procedure in the case study is as follows:

1. Analyse improvement planning documentation related to ethics, social and environmental topics
2. Perform exploratory (semi-structured) interviews
3. Create two meta-models (PDDs) of the followed improvement cycle and the improvement planning process for ethics, social and environmental topics in particular
4. Perform feedback interviews to verify results

The steps performed in this case study are repeated for each case (see Chapter 4). The selected cases are based upon several selection criteria, which are described in section 4.1.1. The results of the case study are presented in Chapter 4.

2.5 Method Comparison Approach

In this section, we present a formal method comparison approach in order to compare various CI cycles and IP methods and tools. We apply a main method comparison approach proposed by Hong, van den Goor and Brinkkemper [27]. This comparison approach is based upon conceptual differentiation of meta-models

(PDDs). In addition, we also include elements of an approach as described in [59] [52]. This approach aims to derive reference process models that represent best practices from a set of individual process models. By using a merged model containing all elements of different source models, a reference model is created by identifying commonalities, grouping elements and evaluating these groups [52]. Hence, in this research, we use elements of two formal approaches, in the field of reference modelling of Meta-Models (PDDs) and reference modelling of process models, to develop a super method for CI cycles and IP4ESET methods. This super method can be used for the following; a) give an overview of the activities and deliverables of a CI method and b) develop a uniform terminology field within the CI domain, and c) give recommendation to responsible enterprises in the case study (see Chapter 4). This formal approach consists of the following four steps:

1. **Method selection**

In this research, we compare several CI cycles and tools and methods for IP in both literature (see section 3.4 and 3.6) and practice (see section 4.9.1 and 4.9.3).

2. **Method modelling**

For the analysis of the methods, we use PDDs, a meta-modelling technique that is based on UML activity diagrams and UML class diagrams [62]. This meta-modelling technique is clear, compact and consistent with UML standards. The resulting PDDs models depict the processes (UML activity) on the left-hand side and deliverables (UML class) on the right-hand side.

3. **Development of super method**

For the development of a super model, a similar approach is used as described in [63]. A meta-model is created of all the compared methods, decomposed in activities and concepts. From both activities and concepts a comparison table is created that lists all activities and concepts of all the methods. However, for the development of a super model, we also include elements of an approach as described in [59], which are applied in section 3.4.2 and 4.9.2.

4. **Comparison of the tools and method**

A comparison of the different methods is performed by filling in the fields in the comparison tables with the following comparison symbols:

- '=' : indicates that the concepts or activities are equal
- '<' : indicates whether an activity in the super method comprises less than the activity in the concerning method
- '>' : indicates whether an activity in the super method comprises more than the activity in the concerning method.
- '><' : indicates that the activity in the super method partly overlaps the activity of the process model
- No symbol: indicates that the activity or concept is not present in the concerning method

3 | Literature Study

The literature study presented in this chapter focuses on the main subjects related to this research; CI, CI cycles and IP activities. These elements are discussed both in *general* and with a focus on *social and environmental performance and business ethics*. In order to enhance the readability and understanding of the literature study, an overview of the followed structure of this literature study is illustrated in Figure 5. First of all, in section 3.1 an introduction to CI, CI definitions and CI approaches are presented. Subsequently, in section 3.2 an overview of a selection of generic performance improvement cycles are given, followed by a section on improvement cycles with a focus on social and environmental performance and business ethic in section 3.3. In section 3.4, a method comparison of these improvement cycles is conducted. The results of the MLR are discussed in section 3.5, which consists of both the results of **S1** on generic IP activities and of **S2** on IP4ESET activities. Finally, a method comparison is performed with the results of the MLR in section 3.6.

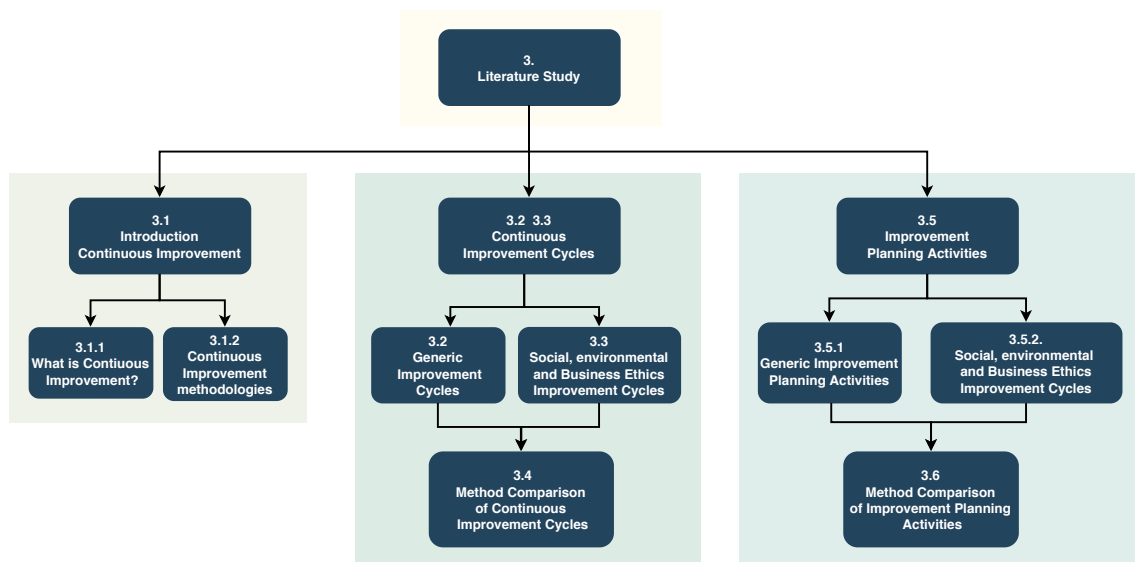


Figure 5. Structure of the literature study

3.1 Introduction Continuous Improvement

3.1.1 What is Continuous Improvement?

CI is an important concept that has been considered an essential element in achieving business excellence and enhancing performance motivated by three major phenomena: changes in the business environment, the emergence of new management systems and the importance of quality management itself [51]. The literature shows that CI has taken on a variation of meanings and definitions. Juergensen [31] defines CI as “*Improvement initiatives that increase successes and reduce failures*”. The drawback of this definition is that it is very high-level and abstract.

The ongoing nature of CI is emphasised by Boer and Gertsen [10], who describe CI as “*the planned, organised and systematic process of ongoing, incremental and company-wide change of existing practices aimed at improving company performance*”. This definition suggests that CI is not a top-down process, however improvement can be suggested and implemented by any employee at any layer in the organisation.

Another similar definition of CI is “*a company-wide process of focused and continuous incremental innovation*” [8]. This definition includes a focus on all employees and layers of the organisation to contribute to improving performance by continuously implementing small changes to their work processes.

Research indicates that CI can occur at three different levels within an organisation: at the management, group, and individual levels [9]. According to Bhuiyan and Baghel [9], CI is more generally considered as: “*a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organisation*”. This definition introduces “sustained” improvement and the elimination of waste.

From the above definitions, it becomes clear that CI should be seen as an ongoing activity instead of a single one, in which all layers from an organisation are involved. According to the Japanese term Kaizen, mentioned by Sanchez and Blanco [51], there are two elements related to the foundation of CI; change and improvement. Taking this into account and the scope of this research, we define CI as “*a continuous process cycle focused on improving social and environmental performance and business ethics in responsible enterprises*”.

3.1.2 Continuous Improvement Approaches

CI initiatives have evolved from traditional manufacturing focused systems that concentrate on the production line to reduce waste and improve the product quality, into comprehensive, systematic approaches that focus on the entire organisation from top management to the workers on the floor [9]. Improvement practices have been positively correlated with competitive advantage and have generated significant interest as a result of different research projects and case studies during the 1990s. According to Jaca et al. [28], these studies served to identify and further promote the importance of continuous, sustainable and systematic management. As mentioned before, it is common for companies to engage in a lifelong CI process. Over the decades, the need to continuously improve on a larger scale within the organisation has become even more crucial. Hence, a number of CI approaches have been developed based upon a basic concept of either quality or process improvement, or both, in order to reduce waste, simplifying the production line and improving quality. Organisations use Quality Management Systems (QMS) worldwide for enhancing performance, ensuring customer satisfaction, and improving supplier-customer relationships [58]. These systems promote CI of processes and procedures and may lead to excellence, sustainable, and competitive achievements [58]. According to Bhuiyan and Baghel [9], the most well known approaches for CI are:

- **Lean Manufacturing;** “*an integrated multidimensional approach encompassing wide variety of management practices based on philosophy of eliminating waste through continuous improvement*” [67]
- **Balanced Scorecard;** “*an approach for strategy development and deployment*” [33]
- **Six Sigma;** “*an organised and systematic method for strategic process improvement and new product and service development that relies on statistical methods and the scientific method to make dramatic reductions in the customer defined defect rates*” [38]
- **Lean Six Sigma;** “*a combination of the strengths of both concepts, which are the elimination of all kinds of unnecessary waste from development (lean) and a focus on reducing variation (six sigma)*”

In Appendix A, a detailed description of these CI approaches can be found. CI aims at improving, which is the overall purpose of the definitions given to the term as described in section 3.1.1 [29]. So, the improvement focus or area may differ (performance, products, process, quality etc.), however in the end CI tries to accomplish both change and improvement [51].

3.2 Generic Performance Improvement Cycles

In order to engage in a process of CI, a number of generic CI cycles have been proposed by practitioners, academics and researchers. In this section, two improvement cycles are discussed that are related to improvement of process management (products and/or services). Accordingly, these cycles are related to well known CI approaches as described above. It must be noted that these generic improvement cycles are analysed in order to gather insight information about CI in general and what elements are sufficient to be part of a CI cycle that can be adopted for domain of CI of social and environmental performance and business ethics as well. Therefore, two well-known cycle for CI approaches in literature are used to provide insights in generic CI cycles.

3.2.1 PDCA Cycle

The well-known PDCA-cycle is an integral part of process management and is designed as a dynamic model, in which one cycle serves as one complete improvement initiative [56]; using this cycle means to evolve in a continuous process seeking for better methods and coordinate CI efforts. By the 1960's the PDCA cycle had evolved into an improvement cycle and a management tool for the *control of CI of processes and/or products* [42]. “It teaches organisations to plan an action, do it, check to see how it conforms to the plan and act what has been learned” [30]. The model is both widely applicable and supports improvement efforts in a full range from the very informal to the most complex (e.g. introduction of a new product line or service for a major organisation) [42]. This cycle includes four activities as depicted in Figure 6. The PDCA cycle is also referred to the Deming circle, named after W. E. Deming and PDSA (Plan, Do, Study, Act) [55].

In the first activity **PDCA.1.Plan**, an analysis of what needs to be improved is performed by recognising opportunities and improvement areas. This means *identifying a problem* and *analyse the problem*; discover its history, root causes where and why it started. As part of identifying a problem, a number of questions should be answered; a) is this the right problem, b) is this an important problem and c) what is the impact of this problem and how does it affect the organisation? For analysing the problem, data is required to fully understand the problem and determine how to solve it. It must be noted that the identified problem is related to the domain, context and/or scope in which the PDCA is adopted. Subsequently, the improvement actions are planned, meaning that decisions on what should be changed are made. This includes identifying expected results, who is responsible and how can performance be measured; leading to the *creation of an action plan*.

The second activity is known as the **PDCA.2.Do** activity, in which the *implementation* and *realisation* of the changes take place that are decided on in the first activity. Subsequently, in the third activity **PDCA.3.Check** it is essential that an organisation *monitors, controls* and *measures* the changes and decisions that are made in the previous activities in accordance with policy, goals, expected results and requirements of processes and/or products [56]. During the final activity **PDCA.4.Act**, a *decision* is made based on the outcome of the previous activity. Either, *adoption* (i.e. standardise) of the changes, *reflection* on what can be changed or running the PDCA-cycle through again. This ensures the on-going process of improvement initiatives. The importance of learning and innovation and the development of institutional knowledge innovation, required for CI in the final activity, is emphasised by Asif et al. [6]. This means that insights gathered by running through the PDCA cycle once, can be used to identify other areas of improvement and hence engage in a CI process.

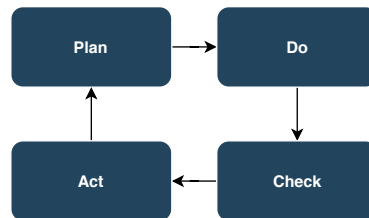


Figure 6. The PDCA cycle

3.2.2 DMAIC Cycle

The DMAIC cycle represents a main data-driven life-cycle approach that is used as an approach of Six Sigma projects (see Appendix A) that focuses on *process improvement* [55]. The cycle consists of the following five activities [55]; define, measure, analyse, improve and control. Within this cycle, each activity has a set of criteria, indicating that, only if these criteria are met, the next activity can be started. Figure 7 represents these activities. The set of criteria will be discussed per activity. The first activity **DMAIC.1.Define** is concerned with *identifying the business problem*, which outlines the focus of the project including its scope. Three elements are defined in this activity: a problem, the customer(s) and the critical outputs of the process. This identified problem and focus of the project is related to the context in which the DMAIC cycle is adopted.

In the second activity **DMAIC.2.Measure**, *the problem is quantified*, which means *establishing a fundamental baseline* for improvement and current process performance. In addition, determining the key metrics for the project and how these metrics can be measured. During the **DMAIC.3.Analyse** activity, the key *root causes* and *process determinants* for the identified gaps in the current process are determined.

Hence, for completion of this activity it is important to have an in-depth understanding of the current process. This means that one has to know the resources that are used as well as the obstacles that need to be tackled. Subsequently, the **DMAIC.4.Improvement** activity is carried out by *identifying* and *implementing solutions* for eliminating the root causes of the problem. The goal of this activity is to *test* and *implement these solutions* in order to optimise and improve process performance.

Finally, **DMAIC.5.Control** is carried out in order to sustain improvement and to maintain the desired results of the solution(s). Hence, the process and measurements needs to be monitored. Therefore, a *monitoring plan* is created to continue measuring the process. It must be noted that for the application of this DMAIC cycle and the proposed technique, a process including its relevant data need to be defined in order to measure it: “*If you cannot define your process you cannot measure it*” [55]. This is needed in order to improve and sustain the quality of the implemented project. The approach may appear to be linear and explicitly defined, however it should be noted that the best results from DMAIC are achieved when the process is flexible by eliminating unproductive steps [55]. Thus, an iterative approach may be necessary when employees are not familiar with the tools and techniques.

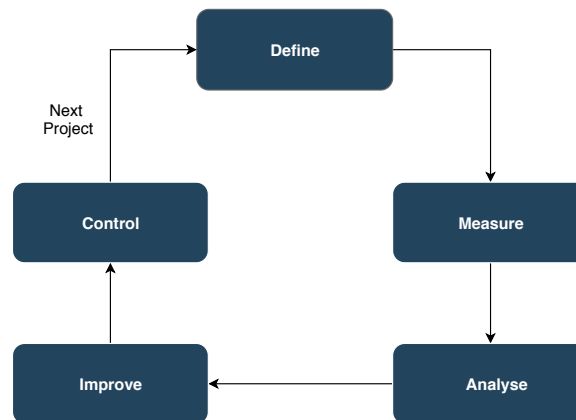


Figure 7. The DMAIC cycle

3.3 Social, Environmental and Business Ethics Improvement Cycles

In this section, we move away from generic CI cycles and provide an overview of a more goal-oriented aspect of this research. Hence, this section describes a selection of sustainability challenging cycles related to sustainability management and planning, ethics and sustainable business transformation. We believe that this selection is sufficient to gather useful information, since it provides insights and guidelines from different scopes regarding the concept of *sustainability* related to improvement cycles.

3.3.1 Monitoring Evaluation and Learning cycle

MEL¹ is a guide that supports organisations in international development in increasing knowledge and success in the following three practices; *monitoring*, *evaluation* and *learning* (MEL). Monitoring is the process of routine monitoring of processes, resources, results and activities related to a project. Evaluation is a routine assessment and analysis of a project. Subsequently, learning refers to the process of reflecting on the information generated by the monitoring and evaluation practices, which is used to ensure the CI of results related to a project. MEL is a service guidelinw that is offered by Scotland’s International Development Alliance². This service aims to help organisations with strengthening their organisational effectiveness by enhancing the capacity in order to become more efficient, maximise organisational impact and promoting a learning and reviewing process with stakeholders, communities and organisations. Thus, it helps organisations in implementing MEL systems that use the above described practices into their projects. It should be noted, as stated in the MEL guide, that the ongoing cycle to implement a MEL system, can be depicted in different ways, since there is no uniform generic project cycle with associated MEL activities. Figure 8 is an example of illustrating this cycle. In this example, the MEL cycle can be

¹<https://www.intdevalliance.scot/application/MEL.pdf>

²<https://www.intdevalliance.scot/>

roughly divided in the following three phases: *the preparation phase, the project implementation phase and the learning phase*. Each phase consists of a number of activities, characterised by the ongoing activities monitoring, evaluation and learning throughout the cycle. So, MEL is a fundamental part of project design, implementation, completion and evaluation. It is used in the context of an organisation, their partners and the communities they work with. However, MEL can also be used at the organisational level, which is known as organisational MEL. The MEL guide has its main focus on Project MEL, which cycle is used in this research. In order to integrate MEL into the life cycle of a project, the MEL cycle can be adopted.

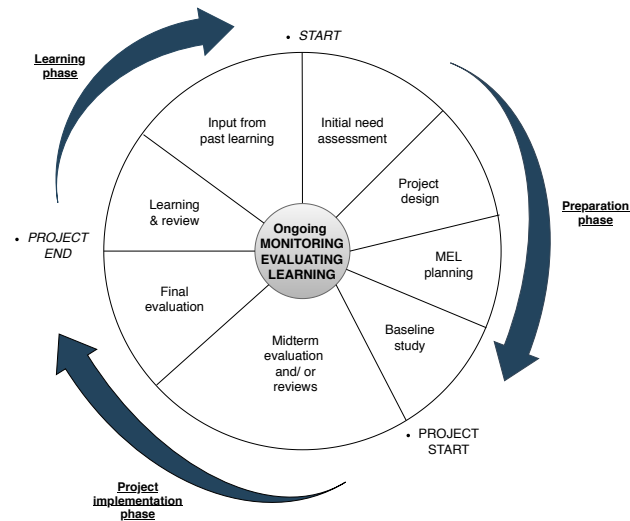


Figure 8. The MEL cycle

The preparation phase consists of the following activities: initial need assessment, project design, MEL planning and a baseline study. During the **MEL.1.Initial need assessment**, a *specific problem or need is identified* in a context, which can be targeted by an organisation that is active within this context. The purpose of this activity is to gain an *in-depth understanding of the identified problem by performing an analysis*. In addition, the generation of possible solutions is also part of this activity. After identifying a problem, a *suitable project* for addressing this problem needs to be defined. This activity is known as the **MEL.2.Project design**. Subsequently, during the **MEL.3.MEL planning**, it is decided what the main MEL activities are for the project. This is done in collaboration with partners.

Furthermore, it is the process for *determining which methods and tools can be adopted for integrating monitoring, evaluation and learning on activities, outputs of the activities and outcomes of the project life cycle*. This activity results in a realistic *action plan*. The MEL planning is a critical activity in the cycle, in which the follow-up MEL activities in the cycle require planning: conducting a baseline study, integrate routine monitoring, and mid-term and final evaluations during the implementation phase. In addition, deciding on how to conduct the reflecting on information and learning from project implementations to improve project performance. This means that the MEL planning activity is about planning how to conduct all the follow-up activities in the cycle. According to the MEL guide, a **MEL.4.Baseline study** can be described as *an establishment of how the target area looks like prior to the start and implementation of the project*. This will set a baseline from which project results can be compared to.

The second phase is characterised by the *project implementation*, managing two main activities: **MEL.5.Midterm evaluation and/or reviews** and **MEL.6.Final evaluation**. During this phase, it is recommended to conduct a midterm evaluation to keep track on the project, ensuring that it is achieving desired results regarding the identified need or problem. *Monitoring* is an ongoing process during the project implementation activity that should be integrated in the work processes to ensure that this is taking place. At the completion phase of your project, a final *evaluation* should be conducted, in which it is evaluated if the project achieved desired results and realised real changes.

Subsequently, after completion of the project implementation phase the following activities need to be executed as part of the learning phase: **MEL.7.Learning and reviewing** and **MEL.8.Input from past learning**. After completing the final evaluation, identification of any *possible future learning aspects* and *knowledge* that can be used as input for future project ideas takes place. With regard to the responsibility of the MEL cycle, the project manager and the assigned MEL Officer, who is part of a

dedicated MEL staff, should both be responsible for managing the process. For small organisations and projects, a MEL staff does not necessarily need to be assigned. In this case, the project manager should have the knowledge required for MEL. In order to ensure consistency and efficiently, it is recommended to organise MEL into all projects and associated roles.

3.3.2 Sustainability Management Cycle

The Wageningen University & Research institute (WUR)³ have proposed a Sustainability Management Cycle (SMC) that can be used for *reaching sustainability goals*. By adopting this cycle, rigour and multidisciplinary thinking is required to measure and improve on sustainability goals following five activities. These activities are depicted in Figure 9. For each activity, a wide range of models and tools are offered. The cycle is also known as the Societal Impact Management Cycle.

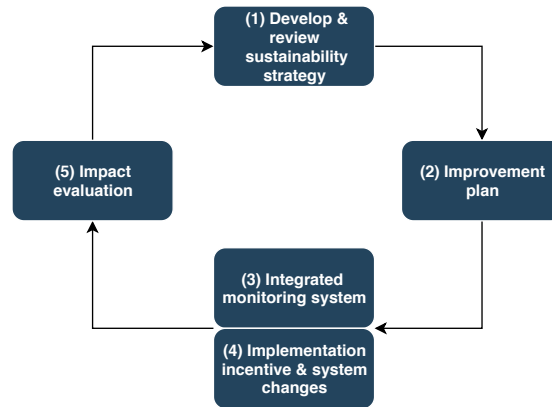


Figure 9. The sustainability management cycle

The first activity **SMC.1. Develop and review sustainability strategy** is concerned with *defining the goal, objectives, KPIs, metrics and method* that define the *sustainability strategy*. This activity is also concerned with *reviewing the current sustainability strategy* if applicable. Sonneman et al. [57] made it clear that sustainability needs to be embedded in a company's strategy and have a clear link to business value creation in order to be integrated within a company. These elements define the input for the **SMC.2. Improvement plan**, in which *costs, efforts and impact* are determined that are related to the sustainability strategy. The **SMC.4. Implementation incentive and system changes** of the *improvement plan* and **SMC.3. Integrated monitoring system** of the implemented improvement plan including its changes are executed simultaneously.

The WUR offers tools that provide direct insights into the current gaps between market-based outcomes and more sustainable and inclusive target results include regular monitoring and inclusive procedures. In the **SMC.5. Impact evaluation** activity, the *economic, societal and environmental impacts* of a range of development policies, strategies, projects, products and services are *analysed*. The purpose of this evaluation is to *gain insights into the efficiency and effectiveness of implemented monitoring measures*. There are three types of evaluations: ex-ante evaluation, mid-term and ex-post evaluation. An ex-ante evaluation is performed in order to analyse whether the goals that are set in the first activity of the cycle can be achieved or whether they can be measured by means of the proposed actions and indicators. The goal of the midterm and ex-post evaluations is to measure and assess intermediate and final results of the effects and the impact of the actions and indicators.

3.3.3 Sustainability Planning Model

The Wallace Foundation⁴ have proposed a toolkit for sustainability planning in the *field of education*, which should be regarded as a multifaceted process. The Sustainability Planning Toolkit, as part of the Summer Learning Toolkit⁵ designed for starting or enhancing summer learning programs consists of three tools:

- 1) Sustainability Planning: Self-Assessment
- 2) Sustainability Planning: Strategy Development

³<https://www.wur.nl/en.htm>

⁴<https://www.wallacefoundation.org/>

⁵<https://www.wallacefoundation.org/knowledge-center/pages/summer-learning-toolkit.aspx>

3) Sustainability Planning: Action Plan

These tools are designed to be completed as a cycle as depicted in Figure 10. This cycle is referred to as the Sustainability Planning Model (SPM). The elements that are illustrated in the middle represents the focus areas for each tool individually. The process within each tool adopts the following guidelines: First of all, an analysis should be performed in order to identify strategies for the program(s) you want to start or enhance. Subsequently, a focus on the broader view of your organisation and community context should be adopted. Lastly, investigate the policy and funding context that have an impact on the sustainability of summer programs. The cycle consists of three corresponding activities according to the tools described above. The first activity **SPM.1. Self-Assessment** is concerned with *rating the strength of the current program, the organisation and community, and the policy and funding context* on 32 sustainability elements, consisting of indicators, on the readiness of your program to identify strengths and weaknesses. These indicators are integrated and described in the Sustainability Planning: Self-Assessment Tool. Moreover, this tool is presented as a worksheet that needs to be filled out. Instructions and guidelines on how to fill out these worksheets can be found in the Sustainability Planning Toolkit. By means of this Self-Assessment, early priority areas can be identified.

During the second activity **SPM.2. Strategy development** *information is collected and organised that are related to the program, the organisation and community, and policy and funding* in the strategy development worksheet. This means that the shared mission and vision statement, the core program elements, the strategic goals and priority alignment, and potential strategies for the *action plan* are determined for the program. In addition, for the organisation and community, stakeholder engagement and potential strategies for the *action plan* are considered. Subsequently, the challenges and opportunities in the policy context are identified, followed by an analysis of the funding sources. Potential strategies for the *action plan* are also identified for both policy and funding. In the final activity **SPM.3. Action plan**, an *action plan is established for each focus area* by using the action plan worksheet. Furthermore, for each identified strategy, action steps are determined that include a description of the expected results, the related time frame, roles and responsibilities per action.

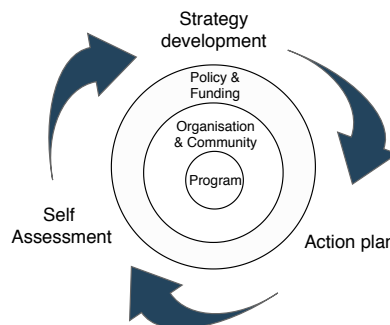


Figure 10. The sustainability planning model

3.3.4 Continuous Ethical Improvement Model

For many organisations it is not easy to commit to incorporating continuous ethical improvement processes in their daily operations. According to Arnold, Lampe and Sutton [5], there are three reasons that contribute to this; the lack of knowledge and awareness of promoting ethical decision making, poor desire or ability to invest in the required processes and resources that facilitate continuous ethical improvement, and the resistance of management to change their way of decision making. Continuously integrating ethically behaviour into their decision making takes away part of their desired flexibility. In order to understand the current ethical position of an organisation, a four stage model is introduced. The purpose of this model is to provide a framework, which companies can use for determining their current position. The stages are depicted in a bell curve in Figure 11 and are known as follows [5]:

- **Stage 1: Absence of attention**
This stage represents organisations that have no intention or desire to take incorporate ethical decision making
- **Stage 2: Passive support**
This stage represents organisations that desires that their employees consider ethics in their decision

making. However, there are no procedures in place to encourage and assist employees in how to make ethically correct decisions

- **Stage 3: Active Pursuit**

This stage represents organisations who motivate ethical decision making and who are actively pursuing procedures to encourage this

- **Stage 4: Total integration**

This stage represents organisations who integrate ethical decision making throughout the entire organisation

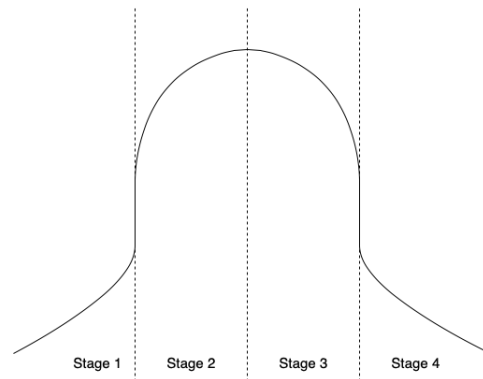


Figure 11. Four stage model of ethical culture in organisations

Figure 11 does not represent a perfect distribution of the categorisation of the organisations belonging to the different stages. Arnold et al. [5] state that most organisations will fall into the second and third stage, being either passive support of active pursuit. By adopting this framework, organisations can develop ways for implementing continuous ethical improvement. This introduces the Continuous Ethical Improvement Model (CEIM), which is illustrated in Figure 12. The cycle starts with performing a **CEIM.1.Self-assessment**. An organisation must *assess its current standing and level of existing process* including its *weaknesses* and *strengths* in order to engage in CI [5]. As mentioned before, organisations can use the four-stage model as a framework for determining their current position. After completing a self-assessment, organisations then need to solve the challenge of *how to implement procedures and structures* that will encourage ethical improvement and decision making in their organisation. The outcome of this will be the **CEIM.2.Development of an improvement plan** and subsequently the **CEIM.3.Implementation** of the *improvement plan*. Eventually, the CEIM becomes a repetitive cycle of these three activities for enhancing continuous ethical improvement.

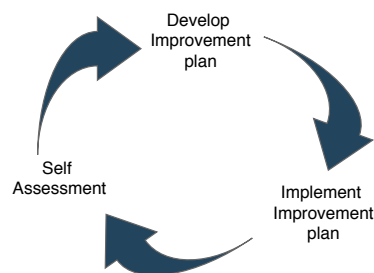


Figure 12. Continuous ethical improvement model

3.3.5 The Ethical Cycle

The ethical cycle (TEC) is a model for moral problem solving. This model can be used as a helpful tool in structuring and improving moral decisions and is illustrated in Figure 13 on page 32. The cycle consists of several activities. There are two feedback loops, which indicate that the activities are part of an iterative process. In the first activities the moral problem statement is defined. There are 3 conditions for formulating a moral problem (question) [60]:

1. Clearly state what the problem is
2. Clearly state for whom it is a problem
3. Clearly state the moral nature of the problem

In the paper by Morris [44], a definition of a moral problem is defined: “a choice from among alternative courses of action, made unilaterally by an individual or group of individuals, where at least one of the proposed actions resulting from the decision involves modifying the life plan of another individual or group of individuals”. At the start of the cycle, it might not be possible to define a precise and clear **TEC.1.Moral problem statement**. Therefore, *defining a precise and clear moral problem statement* is an iterative process that arises throughout the completion of other activities. Subsequently, during the **TEC.2.Problem analysis** three key elements can be distinguished [60]: *the stakeholders and their interests, the moral values that are relevant in the situation and the relevant facts*. The establishment of these elements are crucial for fulfilling the follow-up activities.

In the third activity, suitable **TEC.3.Options for actions** in accordance with the formulated problem analysis are created. These options for actions require **TEC.4.Ethical judgement**, meaning that the *moral acceptability of the options are judged*. This can be done by means of moral frameworks. Two frameworks are distinguished: intuitions and the dominant-value method [60]. The first framework indicates, based on your viewpoint, which action is intuitively most acceptable. In most actual cases there is one predominant value. However, the dominant-value method establishes either an individually or collectively favoured value. Due to the use of different frameworks, the conclusions that arise from them, regarding options for actions in a given situation, may be different. Therefore, a **TEC.5.Reflection** takes place in the final activity. The main goal of this activity is to *reach a well-argued decision about what actions to follow taking into account all outcomes of the previous activities*. Argumentation is fundamental for reflection, which means that the decision made must be argued in line with the different ethical frameworks.

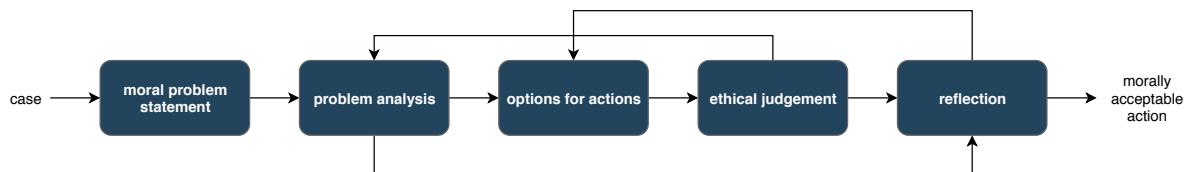


Figure 13. The ethical cycle

3.3.6 Sustainable Business Transformation Road-map Cycle

This section describes a generic sustainability business transformation road-map (SBT Road-map): “A road-map follows a common format, ensures the setting of clear objectives, defines action plans for achieving these objectives, and helps users to analyse critical decision points.” [2]. An organisation is composed of several systems for business structures, people and technologies. However, a sustainable business system has the possibilities to integrate them and to achieve sustainable results. The decision making process for such a system involves; 1) development of a sustainability vision and strategies for designing organisational infrastructure, 2) design and establishment of information systems infrastructure that is aligned with business strategies, and 3) alignment of the organisational infrastructure with that of the information systems [2]. The proposed road-map is primarily a procedural guideline in order to help decision makers in the adoption of the sustainability concept into a traditional business and developing a new sustainable business model. This road-map is supported by a framework and architecture for integrated sustainability modelling and reporting [2]. The road-map is visualised in a cycle (see Figure 14) evolving from discovery and learning, determining a strategy, to designing, to transforming, to monitoring and controlling. This cycle should be looked upon as a continuous process and hence the activities within the cycle are repeated. Moreover, it is to be used by decision makers within an organisation.

The first activity **SBTRC.1.Discover and learn** is about *gaining insights in the current performance and the business context*. Once the decision maker understands and learns from this, they can then envision how sustainability can be achieved in the organisation. Additionally, this vision needs to be realised by means of one or more strategies, by exploring various sustainability scenarios and *deciding on the strategy* that fits best within the organisation. This activity is called **SBTRC.2.Strategise**. Subsequently, the next activity is **SBTRC.3.Design** of process, the organisational and technological elements that would enable the business to execute the strategy. This design would then be implemented by the fourth step in

the cycle called **SBTRC.4.Transform**, which refers to the *transformation of the organisation in terms of processes, organisational structures and information systems*. This transformation is not a one-off activity, but is envisioned as a continuous process of improvement that allows the organisation to become more and more sustainable. For this to be possible, top management needs to be able to **SBTRC.5.Monitor and Control** the organisation as a whole. This monitoring and controlling ensures the continuous discovery and learning about the organisation and surroundings, which enables decision makers to reformulate sustainability strategies, redesign, and continue to transform the organisation into a more sustainable one.

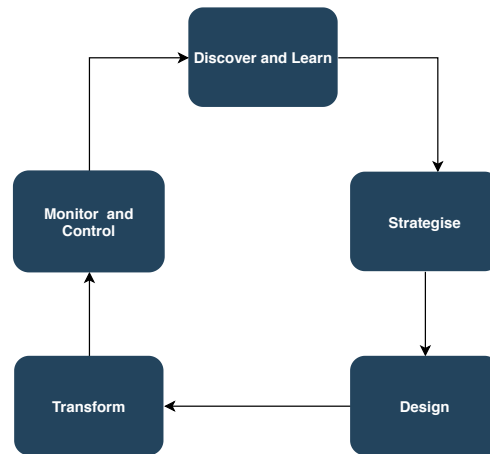


Figure 14. The sustainable business transformation road-map cycle

3.4 Method Comparison of Improvement Cycles

So far, we have created an overview of various definitions of CI, CI approaches, generic performance CI cycles and social, environmental performance and business ethics CI cycles. In this section, we compare eight CI cycles, which we treat as methods. This provides us with an insightful comparison in which multiple perspective are analysed and used for the creation of a super method. We apply the method comparison approach as described in section 2.5.

We specify the CI methods by interpreting the information as it is found in literature and subsequently translating these to PDDs. We use the activities that are part of the CI cycles in order to construct the process part of the PDD. It can be observed that the deliverables (concepts) of a method are often less visible and hence explained in less detail. Therefore, we use the description and outcomes of each activity in a CI cycle combined with common sense, in order to construct this part of the PDD. By using this information, we are able to investigate the relations between the concepts. For instance, the activity **DMAIC.1.Define explains** (see Figure 15) tells us that this activity is concerned with identifying a business problem, which outlines the focus of the project including its scope. By analysing this information, we can derive concepts such as **PROBLEM** and **PROJECT**. The process part and the deliverables (concepts= are explained through the use of activity and concept tables, in which all activities and deliverables are described (see Appendix B).

3.4.1 Meta-models of Described Continuous Improvement Methods

In this section, an overview is given of the CI methods derived from section 3.2 and 3.3. In Figure 15, the PDD of the DMAIC cycle is depicted to give an example of one of the created PDDs. In Appendix B, an overview of all the created PDDs can be found. In Table 1, an excerpt of the description of the activity table (see Table 27) of the generic improvement methods is shown. In Table 2, an excerpt of the description of the concept table (see Table 29) of the deliverables of the activities of the generic improvement methods is depicted. In Table 3, we provide an overview of the amount of activities, sub-activities and concepts per method. The same abbreviations are used as in section 3.2 and 3.3 to refer to the methods.

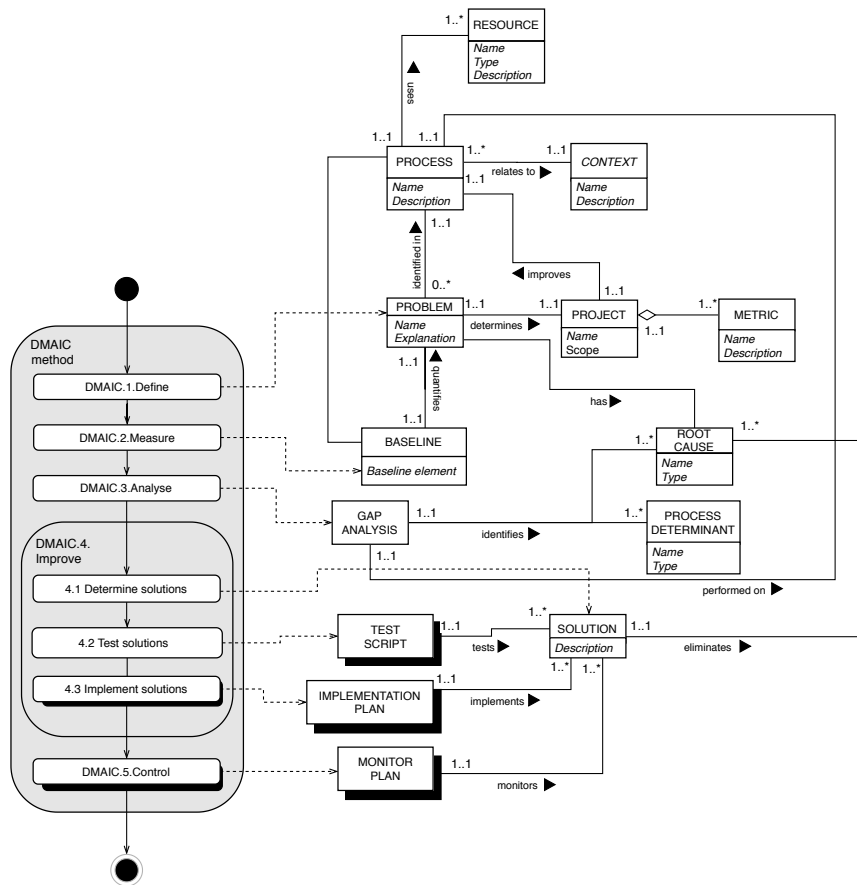


Figure 15. PDD of DMAIC cycle

Method	Indicator activity	Description
DMAIC	DMAIC.1. Define	Identifying the business problem, which outlines the focus of the project (including its scope and objectives)
	DMAIC.2. Measure	Quantifying the problem; establishing a baseline for improvement and current process performance
	DMAIC.3. Analyse	Determining key root causes and process determinants for gaps in the current process
	DMAIC.4. Improve	Determining key tasks to implement solutions (4.1) for the determined root causes of the problem; test (4.2) and implement (4.3) these solutions
	DMAIC.5. Control	Sustaining improvement and maintaining the desired results by creating a monitoring plan to continue measuring the process

Table 1: Overview of descriptions of the activities of the generic improvement methods (excerpt)

Method	Concept	Definition
DMAIC	PROCESS	A PROCESS uses one or more RESOURCES and is related to a CONTEXT. Name and description are modelled as properties
	CONTEXT	A CONTEXT has name and description modelled as properties and marks the scope of a PROCESS
	RESOURCE	A RESOURCES is used by a PROCESS and name, type and description are modelled as properties
	PROJECT	A PROJECT is set up to improve a PROCESS and consists of one or more METRICS to measure performance of that PROJECT. Name and scope are modelled as properties
	PROBLEM	A PROBLEM describes the business problem, its scope and objectives. It is identified in a PROCESS and has one or more ROOT CAUSES. A PROBLEM determines a PROJECT and its scope
	METRIC	A METRIC is determines the performance of a PROJECT and has name and description modelled as properties
	BASELINE	A BASELINE quantifies the problem; establishing a baseline for improvement and current process performance. Baseline element is modelled as a property
	GAP ANALYSIS	A GAP ANALYSIS holds the identification of the key ROOT CAUSES and PROCESS DETERMINANTS of the current process. It is performed on a PROCESS
	ROOT CAUSE	A ROOT CAUSE provides a description of the cause of a PROBLEM that occurs in a current process
	PROCESS DETERMINANT	A PROCESS DETERMINANT provides a description of process factors as part of a current process
	TEST SCRIPT	A TEST SCRIPT tests one or more SOLUTIONS
	IMPROVEMENT PLAN	An IMPROVEMENT PLAN contains the key tasks to implement solutions for the determined ROOT CAUSES of the PROBLEM
	SOLUTION	A SOLUTION eliminates the ROOT CAUSES of a PROBLEM. Description is modelled as a property
MONITOR PLAN	A MONITOR PLAN is a document that describes how to sustain and measure improvement and maintaining the desired results. It measures one or more SOLUTIONS	

Table 2: Overview of definitions of the concepts of the improvement methods (excerpt)

	PDCA	DMAIC	MEL	SMC	SPM	CEIM	TEC	SBTR
Activities	4	5	8	5	3	3	5	5
Sub-activities	3	3	3	0	0	0	0	0
Concepts	16	14	13	12	16	5	13	11

Table 3: Statistics of the generic improvement methods

3.4.2 Creation of Super Method: tabulation and comparison

In order to create the super method of the analysed CI methods, we construct a tabulation of the analysed methods. We create two tables; an activity comparison table (see Table 4) and a concept comparison table (see Table 5). Both tables use the comparison symbols as described in section 2.5. First of all, we apply two steps of the reference modelling approach as described in [59][52]:

- **Identify common elements** *and*;
- **Group elements**

We identify six generic sub-activities. These generic activities, we consider as a “*super method*”. Therefore, the activities and concepts of the analysed methods are compared with these generic activities. An activity is considered as generic if it occurs, in accordance with the comparison symbols, at least in six out of the eight methods. As a result, we define a frequency threshold as described in [59] of 75%. It should be noted that an activity can be referred to with different names regarding the different methods, while having the same meaning and description. Accordingly, the names of the generic activity arise from the descriptions and main purpose of these activities (see section B.2 in Appendix B).

Subsequently, we apply a grouping of elements, in which we group sub-activities that are enclosed in a main activity. As a result, we identify three generic grouped elements that we treat as main activities; **G1.Self-Assessment**, **G2.Improvement planning** and **G3.Organisational re-engineering**. We decide to adopt the name of the fourth activity (organisational re-engineering) of the SBEIC (see Figure 2) to refer to *implementation*. Based upon an in-depth analysis of these cycles including their activities and deliverables, this generic name is suitable, since it encompasses the following activities that were present within the analysed methods; a) a continuous change and improvement of projects, processes and/or products, b) implementation of an action plan including the defined improvement actions and c) organisational transformation. Therefore, we believe that organisational re-engineering is a suitable overarching term to describe these activities.

In the activity table (see Table 4), the procedure is as follows; each activity of the analysed methods is mapped to a generic activity. As can be seen in Table 4, the TEC method has two blank fields, since this method does not include an implementation and monitoring of activities; it is a method for structuring and improving moral decisions, in which no implementation, followed by a monitoring activity, actually occurs. It is a guide for all the activities prior to the implementation of the proposed actions. In addition, the DMAIC has a blank field as well, since this method does not include an evaluation activity. Also, SPM does not include an activity that refers to the implementation of an improvement plan. It can be

observed from the activity comparison table that the order of the SMC method, referring to the activities SMC.3 and SMC.4, is not in line with the chronological order of numbering. However, as can be found in the descriptions of these activities, they occur simultaneously. This allows us to map these activities to the corresponding generic activity.

For the approach of the concept table (see Table 5), a similar approach is used; a super set of concepts is derived from the deliverable part of the meta-models, and forms the basis for the comparison of concepts. The concepts are depicted in capital letters. A concept is added to the table if it occurs at least in four out of the eight methods, meaning that we define a frequency threshold of 50%. As with the activities, it should be noted that the same concept can have different names, while having the same definition. This is indicated in the table. For instance, other names are used to refer to the concept PROBLEM INVESTIGATION, namely GAP ANALYSIS and ANALYSIS. However, we decide to adopt the name PROBLEM INVESTIGATION, since we aim to highlight that these concepts aim to investigate an identified PROBLEM. So, we believe that PROBLEM INVESTIGATION covers the definition of the mapped concepts to this generic concept as presented in Table 5. A blank field means that a concept from the super method is not available in the concerning method. Other notations used in the concept comparison table are the ‘=’ symbol, which is still used to indicate that a concept in the super method is also included in the concerning method having the same name.

One important observation from the comparison of these activities of the different methods, is that the majority of methods start with either a problem definition, identification of a project or defining a strategy. Prior to the identification of a project or the development of a strategy, we presume that there is a preceding activity called *assessment*. The underlying thought behind this reasoning, is that without assessing and/or observing a current situation, context, level or standing, a problem cannot be identified. With this in mind and in contrast with some of the analysed methods, the first activity should be **G1.Self-Assessment**, prior to the identification of a problem or development of a strategy. Hence, we refer to the second generic activity as **G2.1.Identify Problem**.

Mapping of activities of cycles to identified generic activities									
Generic activities		PDCA	DMAIC	MEL	SMC	SPM	CEIM	TEC	SBTR
G1.Self-assessment	G1.1.Monitoring	PDCA.3 ><	DMAIC.5 =	MEL.5 >< MEL.6 ><	SMC.3 =	SPM.1 =	CEIM.1 =		SBTR.5 >< SBTR.1 ><
	G1.Evaluation	PDCA.4 =		MEL.5 >< MEL.6 >< MEL.7 >< MEL.8 ><	SMC.5 =			TEC.4 >< TEC.5 ><	SBTR.1 ><
G2.Improvement planning	G2.1.Problem investigation	PDCA.1 =	DMAIC.1 >< DMAIC.2 >< DMAIC.3 =	MEL.1 =	SMC.1 ><	SPM.2 ><	CEIM.2 ><	TEC.1 >< TEC.2 ><	SBTR.3 ><
	G2.2.Create improvement plan	PDCA.2 ><	DMAIC.4 ><	MEL.2 >< MEL.3 >< MEL.4 ><	SMC.2 ><	SPM.3 =	CEIM.2 ><	TEC.3 ><	SBTR.3 ><
G3.Organisational re-engineering	G3.1.Implement improvement plan	PDCA.2 =	DMAIC.4 ><	MEL.5 >< MEL.6 ><	SMC.4 =		CEIM.3 =		SBTR.4 =

Table 4: Activity comparison table

An assessment is done by monitoring and evaluating a current situation, level or standing of either a process or strategy depending on the use, scope and domain of the method. However, there are several names used in the analysed methods that refer to these activities being: check, control, reflection, review or self-assessment. *Monitoring* for instance, is an activity that happens simultaneously during the implementation activities in the SMC and the MEL cycle. In the other methods, monitoring follows after implementation. The CEIM and SPM do not include an activity called *monitoring* or *evaluation*, since this is covered in the activity *Self-Assessment*. Therefore, this activity is mapped to **G1.Self-Assessment**. Evaluation should again be seen as the starting activity of a method and not the final one, since this determines both the start of a new cycle and the end. Therefore, **G1.2.Evaluation** is a sub-activity of

Mapping of concepts of cycles to identified generic concepts								
Generic concepts	PDCA	DMAIC	MEL	SMC	SPM	CEIM	TEC	SBTR
MONITOR PLAN	MONITOR REPORT	=	=	MONITORING SYSTEM				=
DIRECT INDICATOR	MEASURABLE OBJECTIVE	METRIC	INDICATOR	KPI, METRIC	INDICATOR			
CONTEXT	MANAGEMENT CONTEXT	=	=	SUSTAINABILITY GOAL	=	=	=	=
ASSESSMENT REPORT	DECISION REPORT		EVALUATION PLAN	IMPACT EVALUATION	ASSESSMENT WORKSHEET	ASSESSMENT REPORT	REFLECTION	PERFORMANCE REPORT
PROBLEM	=	=	=				MORAL PROBLEM	
PROBLEM INVESTIGATION	ANALYSIS	GAP ANALYSIS	ANALYSIS				=	
IMPROVEMENT PLAN	ACTION PLAN		PROJECT	=	ACTION PLAN WORKSHEET	=		
IMPROVEMENT ACTION	ACTION	SOLUTION	SOLUTION		ACTION	=	ACTION	ELEMENT
IMPLEMENTATION PLAN	=	=		SYSTEM CHANGE		=		TRANSFORMATION PLAN

Table 5: Concept comparison table

the first activity **G1.Self-Assessment** as well. After performing an assessment and the identification of problem, however before a solution to the problem can be implemented, an analysis of the problem should be executed. In every described method, an investigation takes place in order to understand the problem and its causes. This leads to the generation of improvement actions targeting the problem, that are part of an improvement plan. Hence, the generic activity **G2.1.Investigate problem** and **G2.2.Create Improvement plan** are chosen. Subsequently, **G3.1.Organisational re-engineering** of the improvement actions as documented in an improvement plan takes place as well.

For instance, the MEL method is focused on improving monitoring, evaluation and learning. In addition, this method designs a PROJECT that is guided by an ACTION PLAN. Therefore this method differs, since the other methods refer to ACTION PLAN. Subsequently, there are two methods that start with strategy development instead of identification of a problem. However, both are considered as input for an improvement plan. Due to the frequency threshold and occurring of the concept PROBLEM, we use identification of a problem instead of strategy.

To conclude, the key elements of each method are performing an assessment, identifying a problem, investigate the problem in order to come up with suitable improvement action(s). Subsequently, implement these improvement actions, monitor them and finally evaluate these proposed solutions with regard to desired outcomes and expected results. Furthermore, the activity monitoring and evaluation are in fact both the ending and beginning activity of a CI method.

Figure 16 on page 38 illustrates the PDD of the created super method of the CI methods, based upon the descriptions of the analysed CI methods, the comparison analysis and gathered knowledge of the generic CI methods and the social, environmental and business ethics CI methods. In Appendix B, the corresponding activity and concept tables can be found in section B.4. The activity *G2.1.Investigate problem* *G2.2.Create improvement plan* are modelled as open activities, meaning that the sub-activities are depicted elsewhere. A super method (PDD) is created in section 3.4.2 that depicts the sub-activities of both activities. Moreover, *G3.1.Implement improvement plan*, is modelled as a closed activity, since their sub-activities are unknown and not relevant for the context and scope of this research.

As can be observed from this super method, there are both OPEN CONCEPTs and CLOSED CONCEPTs used as well. We use a CLOSED CONCEPT (visualised with a black border) if we are not interested in the sub concepts of a particular concept since it is not relevant for the scope, context and understanding of the method. For instance, IMPLEMENTATION PLAN and MONITOR PLAN are modelled as CLOSED CONCEPTs, since their sub concepts are unknown and not relevant for the scope of this research. Moreover, we use an OPEN CONCEPT (visualised with a white border) if the sub concepts are expanded in a separate PDD. For the activities, the same rules apply; an activity is closed when containing a black border indicated that sub-activities are unknown and not relevant in the defined scope.

There is one concept within the concept table and the super method that needs clarification, which is the concept DIRECT INDICATOR. We encounter different terms within the analysed methods that refer to the measurement of actions or current performances. By examining the conceptual model of openESEA in [15], we decide to denote three concepts in *Italic* that clarify and enhance the understanding of this concept. Additionally, to be consisted and in line with this model. These concepts are the following: INDICATOR, METRIC and DATA. It should be noted that INDICATOR and METRIC are explicitly mentioned in some of the methods and are presented in the concept comparison table (see Table 5). However, we model them as separate concepts, since indicators calculate the values of performance of a set of metrics. Also, DATA is not explicitly seen as a separate concept in the analysed methods. Nonetheless, it holds the value of a metric and is therefore modelled as a separate concept.

We choose the general concept **DIRECT INDICATOR** to refer to values that can be used to measure an **IMPROVEMENT ACTION** and are monitored by a **MONITOR PLAN**; *direct* means that these are values that can be used without any additional calculations. For instance, **Total female employees** in an organisation. Consequently, a **DIRECT INDICATOR** can be seen as an overall concept of the other concepts in the concept comparison table. Also, we added the concept **CONTEXT** to indicate that a **DIRECT INDICATOR** belongs to a certain **CONTEXT**, which is being assessed and reported on. This concept is modelled in *Italic*, since the existence of this concept is not explicitly mentioned in the analysed methods. However, in order to enhance the understanding of the scope of the CI method, we decide to add this concept. In Appendix B, a more detailed description of the existence of this concept can be found using an example of this concept in the PDCA method.

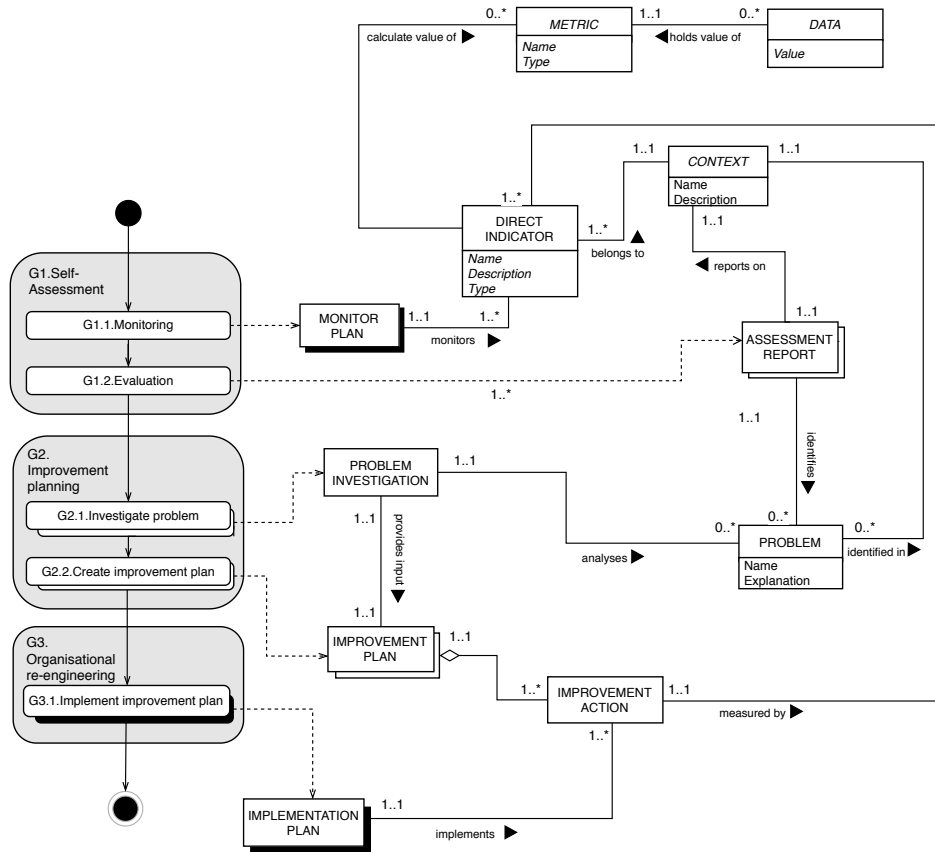


Figure 16. PDD of continuous improvement cycle super method: literature

3.5 Multivocal Literature Research Results

In this section, we present the results of the MLR, which zooms in on the generic activity **G2.Improvement planning** as part of the super method illustrated in Figure 16. Therefore, the MLR focuses on IP activities and consists of two search strings (see section 2.3.4). First of all, we start with an overview of the results of generic IP activities (**S1**), followed by a section on the results of IP4ESET activities (**S2**). The selection criteria and data analysis approach are performed in the same way for both search strings.

3.5.1 Results Generic Improvement Planning Activities (S1)

Table 6 presents the number of search results, from applying the first search string as described in section 2.3.4 to both search engines. In addition, the final set of relevant sources selection for each of the search engine are illustrated as well. S1 resulted in 82 sources from both Google and Google Scholar. First of all, from these initial 82 sources, all duplicate sources were discarded, which resulting in 69 remaining sources. According to the exclusion criteria as stated in section 2.3.5, we discard all sources of which the URL could not be accessed. This filtering results in 59 remaining sources. In a third round of filtering, we discard an additional 32 sources based, since they do not describe an IP method or tool. The majority of these discarded sources refer to overall improvement cycles, tools, methodologies or approaches, which are

not in scope of this MLR. Subsequently, the remaining 27 sources were assessed on the degree to which they provide an overview or guideline for creating an improvement- or action plan. This resulted in 16 sources of which two additional sources were discarded of which the presented tool could not be accessed. From the 14 remaining sources, we discard an additional 10 sources, since they fail to meet the criteria of describing ‘generic IP activities’. Meaning that the IP activities that are described in these sources are specific for a certain domain, case, community or organisation. This results in a final selection of four sources, having discarded 78 sources in total (see Figure 17).

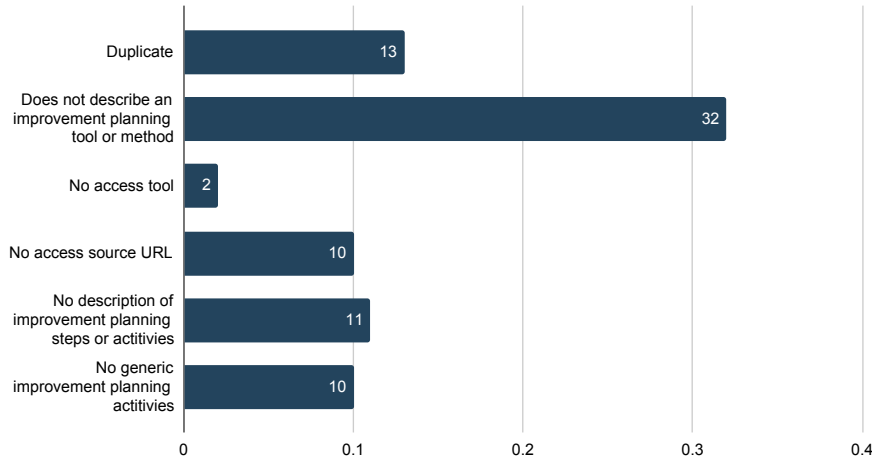


Figure 17. Reasons for discarding sources search string 1

	Google	Google Scholar	Total
Source	43	39	82
Finally selected	4	0	4

Table 6: Number of the search results for search string 1

3.5.2 Results Social, Environmental and Business Ethics Improvement Planning Activities (S2)

Table 7 presents the number of searching results that resulted from the second search string as described in section 2.3.4 and the final set of relevant sources selected for each of the search engine. First of all, from the initial 477 search results of both search engines, we immediately discard all duplicate sources, resulting in 402 sources. From these remaining sources, we discard all sources of which the URL could not be accessed. This filtering results in 379 remaining sources. An additional 314 sources are discarded, since these sources do not contain a description of an IP method or tool, resulting in 65 sources. Again, the majority of these discarded sources refer to overall improvement cycles, tools, methodologies or approaches. 10 Additional duplicate sources are discovered whose URLs are different, however refer to the same resources, result in 55 sources. From these remaining sources, 42 sources were discarded, since they do not describe IP activities as part of a method or tool. The remaining 13 sources are assessed on the degree of which they contain an description of generic IP activities, which led to eight additional discarded sources. This final selection of relevant sources results in five (see Figure 18 on page 40).

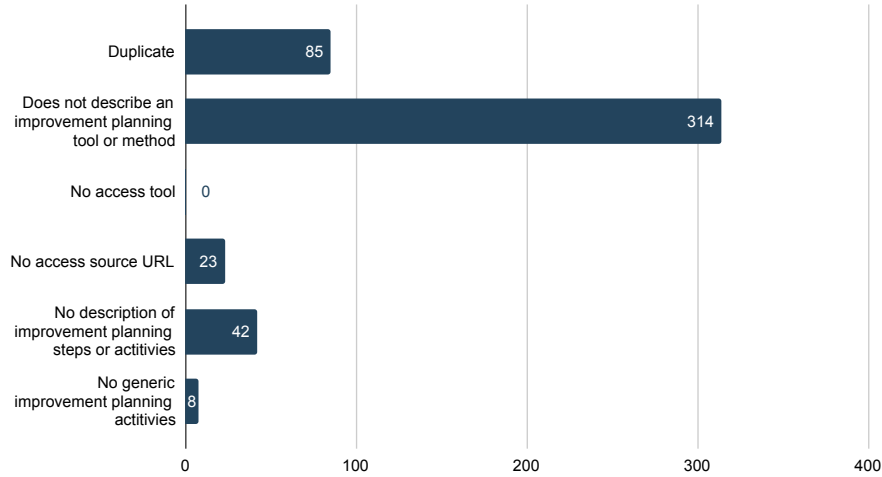


Figure 18. Reasons for discarding sources search string 2

	Google	Google Scholar	Total
Source	244	233	477
Finally selected	5	0	5

Table 7: Number of the search results for search string 2

3.6 Method Comparison of Improvement Planning Activities

In Table 8 on page 40, an overview of the results of both searches (**S1**, **S2**) of the MLR are presented. The sources are depicted per abbreviation, domain of improvement and the URL of the origin/creators of the tool or method. It should be noted that all these sources result from the search engine Google, meaning that none of these are validated by researchers, practitioners and/or scholars in literature. However, as discussed in section 2.3, these sources are related to practice. Hence, they offer crucial and valuable knowledge and information from the field of IP and IP4ESET in practice. In this section the same formal comparison approach for method comparison is followed as for the method comparison of the CI methods. Hence, the results of the MLR are treated as methods.

Name	Domain	URL
SAP	Sustainability Educational Program	https://www.wallacefoundation.org
PSAT	Sustainability Programs	https://www.sustaintool.org
CEAP	Environmental Programs	https://postconflict.unep.ch
APG	Survey Programs	https://www.colorado.edu
QSIR	Quality, Service Improvement and Redesign (QSIR)	https://improvement.nhs.uk
ASSIST	Continuous Educational Improvement	https://www.advanc-ed.org
AHRQ	Healthcare Delivery Systems	https://www.ahrq.gov

Table 8: All tools and methods resulting from the MLR

We specify the IP methods by interpreting the information, as it is found in literature, and subsequently translating these to PDDs. We use the steps that are described in the method documentation in order to construct the process part of the PDD. This documentation explains the process of how the method is applied. It must be noted that the deliverables (concepts) of a method are often unclear and explained in less detail. So, we use the description and outcomes of each activity of the method combined with common sense in order to be able to model this part of the PDD. By using this information, we are able to investigate the relations between the concepts. For instance, the activity **APG.1.Define opportunity for improvement** (see Figure 19) explains us that this activity is concerned with identifying an improvement area. By analysing this information we can derive concepts such as IMPROVEMENT AREA. The process and deliverable side are explained in more detail in the activity and concept tables, in which all activities and deliverables are described of each method (see Appendix C).

3.6.1 Meta-models of Described Improvement Planning Methods

In this section, an overview is given of the IP activity methods derived from the MLR, which resulted in seven PDDs. In Figure 19, an example of one of the created PDDs is given. In Appendix C, an overview of all the created PDDs of the methods can be found. In Table 9, an excerpt of the description of the activity table (see Table 35) of the generic IP methods is shown. Subsequently, in Table 10, an excerpt of the description of the concept table (see Table 37) of the generic IP methods can be found. In Table 11, we give an overview of the amount of activities, sub-activities and concepts per method. The same abbreviations for the methods are used as in Table 8.

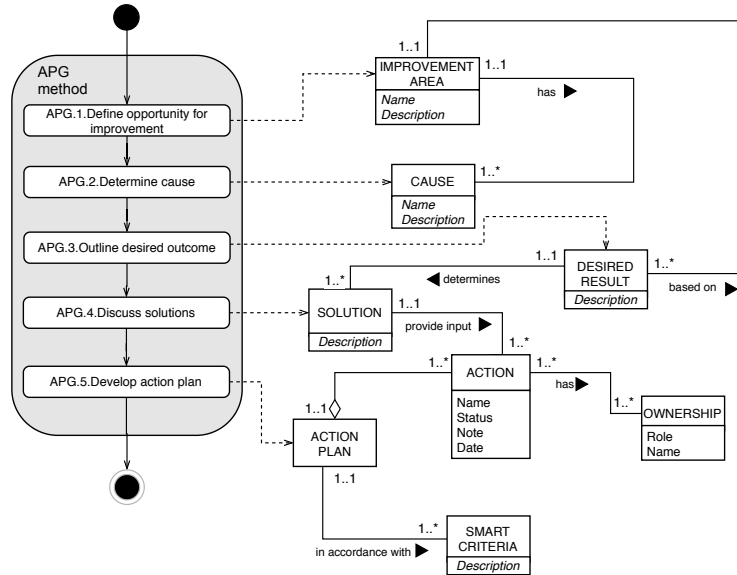


Figure 19. PDD of APG method

Method	Indicator activity	Description
APG	APG.1. Define opportunity for improvement	A clear determinations of an opportunity for improvement
	APG.2. Determine cause	Determine any potential causes for the opportunities for improvement and focus on the most probable cause
	APG.3. Outline desired outcome	Outline a desired outcome
	APG.4. Discuss solutions	Discussion of possible solution for the opportunities for improvement
	APG.5. Develop action plan	Develop an SMART (Specific, Measurable, Achievable, Relevant, Time-Based) action plan with action steps, ownership, and timelines

Table 9: Overview of descriptions of the activities of the generic improvement planning methods (excerpt)

Method	Concept	Definition
APG	IMPROVEMENT AREA	An IMPROVEMENT AREA has one or more CAUSEs and is the target the creation of an IMPROVEMENT PLAN
	CAUSE	A CAUSE describes the determinant of an IMPROVEMENT AREA
	DESIRED RESULT	A DESIRED RESULT is based on an IMPROVEMENT AREA and determines one or more SOLUTIONS
	SOLUTION	A SOLUTION provides input for one or more ACTIONs
	ACTION	An ACTION has one or more OWNERSHIPs and SMART CRITERIAs. Name is modelled as property
	OWNERSHIP	OWNERSHIP of an ACTION has a role and name modelled as property
	ACTION PLAN	An ACTION PLAN consists of one or more ACTIONs
SMART CRITERIA	SMART CRITERIAs are given to each ACTION	

Table 10: Overview of definitions of the concepts of the generic improvement planning methods (excerpt)

	ASSIST	APG	QRIS	SAP	PSAT	CEAP	AHRQ
Activities	6	5	7	5	5	9	9
Sub-activities	0	0	0	0	0	0	0
Concepts	7	8	7	6	7	10	10

Table 11: Statistics of the improvement planning methods

3.6.2 Creation of Super Method: tabulation and comparison

A super method is created by following the same approach as described in section 2.5. Accordingly, we start with constructing two tables of the analysed methods; an activity comparison Table (see Table 12) and a concept comparison Table (see Table 13). Here, we only apply the following step from the approach as described in [59]:

- **Identification of common elements**

In this section, we elaborate on the sub-activities and deliverables (concepts) of **G2.1.Investigate problem** and **G2.2.Create improvement plan** as part of the super method presented in Figure 16. We consider these two activities as two individual groups and therefore, we do not apply the step *grouping elements* as part of the approach described in [59]. The sub-activities as part of this group are considered as the generic activities and therefore are considered as the super method of IP. Accordingly, the activities and concepts of the analysed methods are compared with these activities.

The first group **G2.1.Investigate problem** consists of the following sub-activities: **G2.1.1.Identify target area of improvement**, **G2.1.2.Identify goals** and **G2.1.1.Identify objectives**. Subsequently, the next group **G2.2.Create improvement plan** consists of: **G2.2.1.Identify action steps**, **G2.2.2.Identify staff responsibilities**, **G2.2.3.Identify resources** and **G2.2.4.Document improvement plan**. In the activity table (see Table 12), an activity is considered as generic if it occurs at least in three out of the seven methods. Hence, we define a frequency threshold of $\approx 40\%$. It should be noted that an activity can be referred to with different names regarding the different methods, while having the same description. The generic activity names arise from the description of the activities (see section B.2 in Appendix C). As can be seen in Table 12, not all the activities of the analysed methods can be mapped to the generic activities. Due to the defined threshold, we discard these from this table.

The generic activity **G2.2.4.Document improvement plan** is chosen since, *Share improvement plan* occurs twice as an activity and the activity *Develop improvement plan*. In this research, we use the generic activity **G2.2.4.Document improvement plan** as an overarching activity that includes both elements. Finally, **G2.2.2.Identify staff responsibilities** is concerned with the name of the staff and the role that is connected to the concept STAFF RESPONSIBILITY. As can be seen in Table 13, in the case of the SAP and CEAP method, there are two activities mapped to the generic activity **G2.2.2.Identify staff responsibilities**, since they are concerned with identifying both roles and responsibilities. However, in this research, we decide to model name and role as a property as covered by the generic activity **G2.2.2.Identify staff responsibilities**. Due to the fact that an ACTION STEP can have one or more STAFF RESPONSIBILITIES covering one or more names and roles in the same way.

For the approach of the concept table (see Table 13), we apply the same approach as described in section 3.4.2. A concept is added to the table if it occurs at least in three out of the seven methods, meaning that we define a frequency threshold of $\approx 40\%$. As with the activities, it should be noted that the same concept can have different names, while having the same definition. This is indicated in the concept table. For instance, in the APG method another name is used to refer to the concept STAFF RESPONSIBILITY, namely OWNERSHIP. However, in this research we use the concept name STAFF RESPONSIBILITIES, since this covers the name of a staff member and its role.

Figure 20 on page 44 illustrates the PDD of the created super method of the IP methods, based on the descriptions of the analysed IP and methods for IP4ESET as a result of the MLR. In Appendix C in section C.5, the corresponding activity and concept table can be found. Additionally, time frame is a separate concept in the CEAP and the SAP method and a property of the concept ACTION STEP in AHRQ. However, we modelled time frame as a property of the concept IMPROVEMENT ACTION in figure 20, since it has a one-to-one relationship with IMPROVEMENT ACTION.

Finally, as can be noticed in the super method, a link is established between an IMPROVEMENT ACTION and a DIRECT INDICATOR. In the super method as presented in Figure 16, a similar link can be found between these concepts. Therefore, a DIRECT INDICATOR can be seen both as; the bad performance according to one or more indicators provides rationale for the existence of an improvement area and the achievement of the objective can be assessed by calculating these indicators again next year.

It can also be noted that two concepts (PROBLEM INVESTIGATION and PROBLEM) of Figure 16 are also included in this super method, since, as mentioned before we elaborate on the sub-activities

G2.1. Investigate problem and **G2.2. Create improvement plan** and deliverables (concepts). However, these concepts were not found in the comparison of concepts of the IP methods.

Mapping of concepts of improvement planning methods to identified generic activities								
<i>Generic activities</i>		<i>ASSIST</i>	<i>APG</i>	<i>QSIR</i>	<i>SAP</i>	<i>PSAT</i>	<i>CEAP</i>	<i>AHQR</i>
G2.1. Investigate problem	G2.1.1. Select improvement area	ASSIST.1 =	APG.1 =	QSIR.1 ><		PSAT.1 ><		AHQR.1 =
	G2.1.2. Identify goals	ASSIST.2 =				PSAT.1 ><		AHQR.2 ><
	G2.1.3. Identify objectives	ASSIST.3 =		QSIR.2 =			CEAP.3 =	
G2.2. Create improvement plan	G2.2. Identify action steps	ASSIST.6 =		QSIR.3 =	SAP.1 =	PSAT.2 =	CEAP.4 =	AHQR.3 ><
	G2.2.2. Identify staff responsibilities	ASSIST.6 ><		QSIR.4 =	SAP.2 >< SAP.3 ><	PSAT.3 =	CEAP.5 >< CEAP.6 ><	AHQR.5 =
	G2.2.3. Identify resources					PSAT.4 =	CEAP.7 =	AHQR.6 =
	G2.2.4. Document improvement plan	ASSIST.7 ><	APG.5 ><					AHQR.9 =

Table 12: Activity comparison table

Mapping of concepts of improvement planning methods to identified generic concepts							
<i>Generic concepts</i>	<i>ASSIST</i>	<i>APG</i>	<i>QSIR</i>	<i>SAP</i>	<i>PSAT</i>	<i>CEAP</i>	<i>AHQR</i>
IMPROVEMENT AREA	TARGET AREA	=	DATA		DOMAIN		
GOAL	=				=		=
OBJECTIVE	=		=			=	
DIRECT INDICATOR	INDICATOR	SMART CRITERIA			MILESTONE	INDICATOR	
IMPROVEMENT ACTION	ACTIVITY	ACTION	ACTION STEP	ACTION STEP	ACTION STEP	ACTION	ACTION STEP
STAFF RESPONSIBILITY	=	OWNERSHIP	RESPONSIBILITY	RESPONSIBILITY	STAFF	RESPONSIBILITY	RESPONSIBILITY
RESOURCE					=	=	=
IMPROVEMENT PLAN DOCUMENT	IMPROVEMENT PLAN	ACTION PLAN				ACTION PLAN MATRIX	ACTION PLAN DOCUMENT

Table 13: Concept comparison table

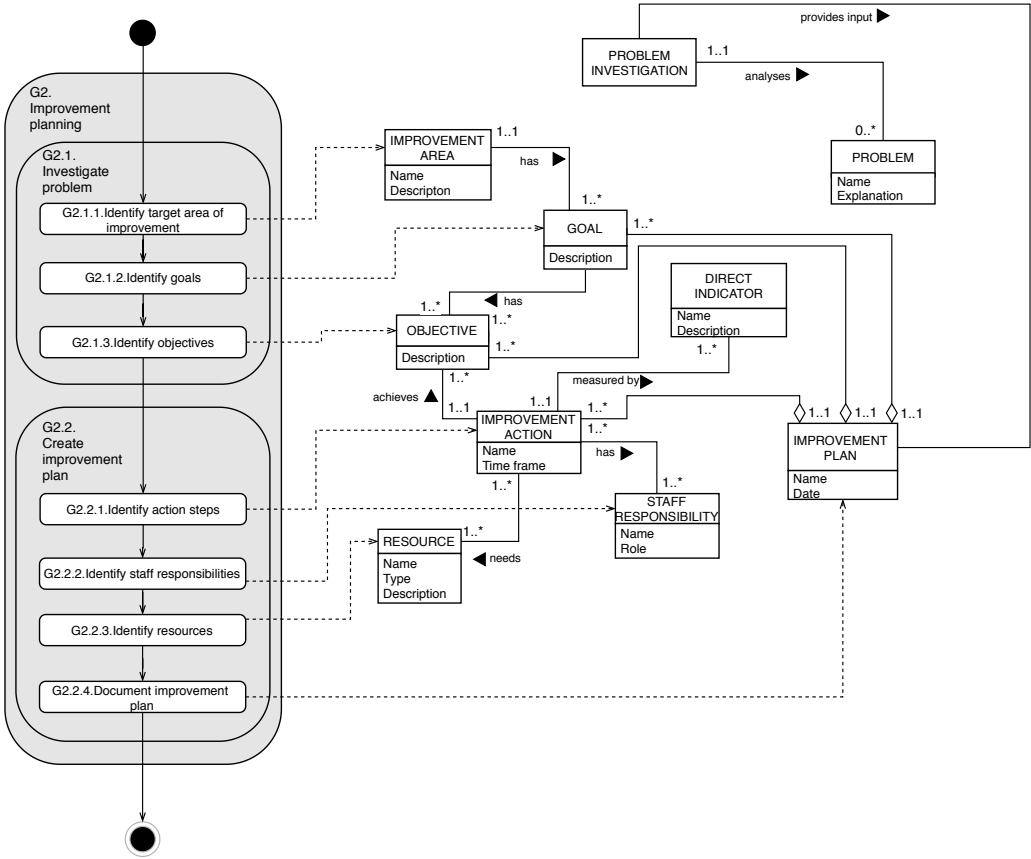


Figure 20. PDD of improvement planning activities super method: literature

4 | Case study

In this chapter, the case study includes a preparation, selection, results and validity issues section that are described in further detail. First of all, the selection criteria for the cases are defined. Subsequently, each case is described and followed by a result section. Finally, the same method comparison approach as adopted in Chapter 3 is conducted, in which the results of the cases are compared by using PDDs. As mentioned before, the case study is performed in order to create a super method of the state-of-practice in IP4ESET in responsible enterprises.

4.1 Case Study Preparation

Before analysing each case, data, materials and background information are required. This means that prior to each case, related documentation to the IP4ESET process and the organisation are analysed. In addition, since multiple cases are used in this case study, selection criteria are used and described in section 4.1.1 to ensure that they are comparable and similar to some extent. The exploratory document analysis prior to each case already provided us with insights on how an IP4ESET process is performed. Then, we conduct six semi-structured interviews on IP4ESET activities starting from the applied ESEA method to the actual IP4ESET phase.

With the intention to understand the process and problems that might occur in practice, we interview different types of organisations ranged from experts that have completed a CI cycle many times to an organisation who started their first CI cycle. We apply a grouping of questions that were defined prior to conducting the interviews. These questions can be found in section D.2 in Appendix D. However, as mentioned before these interviews are semi-structured. This means that we do not follow a predefined structure, however we only steer the interview when needed to ensure all relevant information is gathered in the end. Hence, subjects have the possibility to shift from one subject to another. The analyses per case are presented in individual case reports in sections 4.2 to 4.8.

4.1.1 Case Study Selection

The cases that are included in this research must conform to a set of criteria. First of all, the selected cases must have performed an assessment reporting on their social, environmental performance and business ethics. This assessment provides the input for the IP4ESET phase. Secondly, they must have completed an IP4ESET phase and hence the creation of an improvement plan and/or a social, environmental and business ethics report. Finally, the use of a method or (software) tool that supports the IP4ESET process, for example provided by a network or organisation, is desirable, however not required. Each case contains a description, data collection, process analysis, results and validity issues. In addition, the process of executing the case study is described in terms of how and what data is used, gathered and analysed. The IP4ESET process and the followed overall improvement cycle at seven different organisations are analysed and an overview of their descriptions is provided in Table 14.

The selection of these cases are based on convenience sampling. However, the sample includes cooperatives and organisations of any other legal forms embracing social and environmental values in their mission and/or vision. These organisations received an informed consent in order to grant permission for the use of the organisation their name and/or data. This informed consent can be found in Appendix D. No details may be disclosed about the name of the organisation of case 1 and will therefore be referred to as case 1. For each case, the legal entity, country, industrial sector, size, network type and the role of the interviewee are described. The type of organisation is documented according to the following categorisation as indicated in [13]; for-profit, non-profit and hybrid. In order to identify the industrial

sector and size of the cases, we checked the following three public directories: B CORP¹, ECG² and GRI³. These network directories can be found on the websites of the networks and are publicly available and accessible. Based on these directories and a research conducted by [49], it can be concluded that there are three different size organisations; a) small (10 to 49 employees), b) medium (50 to employees 249) and c) large (250 employees) sized organisations. For the industrial sector, we choose the taxonomy as used by the GRI database to indicate the industrial sector in order to be consistent with one taxonomy. Moreover, we believe that this taxonomy provides a clear understanding of existing industrial sectors.

ID	Legal entity	Country	Industrial sector	Size	Type	Network	Role Interviewee
<i>Case 1</i>	Sociedad Cooperativa (S.Coop.)	Spain	Construction	Small	Hybrid	REAS PV	Consultant
<i>Case 2</i>	Cooperative	U.S.	Civic & Social Organisation	Medium	Non-profit	B CORP	Consultant
<i>Case 3</i>	Société anonyme (SA)	Switzerland	Education	Small	For-profit	ECG	-
<i>Case 4</i>	Besloten Venootschap (BV)	Netherlands	Food and beverage Products	Large	Hybrid	B Corp, GRI	Manager
<i>Case 5</i>	Besloten Venootschap (BV)	Netherlands	Food and beverage Products	Large	Hybrid	MVO Netherlands, GRI	Director
<i>Case 6</i>	Besloten Venootschap (BV)	Netherlands	Education	Large	For-profit	GRI	Project manager
<i>Case 7</i>	Sociedad Limitada (S.L.)	Spain	Tourism	Medium	For-profit	ECG	Manager

Table 14: Overview cases included in the case study

4.2 Case 1

This section contains a description of *case 1*, through an overview of the CI cycle and P4ESET process followed by a hybrid cooperative that has completed a XES Social Balance (ESEA method), in order to create an improvement plan and an ESEA report. Furthermore, the results and validity issues of this case are described. A semi-structured interview is conducted with a consultant; the creator of the IP tool and who was present during the brain-storm session, which will be elaborated on in section 4.2.3. The latter is discussed in more detail in section 4.2.3.

4.2.1 Case Study Description

The first case that is selected is a hybrid cooperative specialised in maintenance work at height activities. This cooperative is operating from the standpoint of the Social and Solidarity Economy (SSE)⁴. Moreover, they are specialised at providing training on working at heights. As a worker cooperative, the welfare of the members and working people of their cooperative can be described as their main objective. The requirements for the work executed by this cooperative is high, either because it is a risky activity that is performed, as well as expected involvement of their working partners on the level of labour and corporate responsibility. This is why the detection and satisfaction of their needs is central to them. The priority stakeholder groups are depicted in Figure 21. We use the term stakeholder groups to categorise the stakeholders (e.g. workers, suppliers and consumers). In this case, a stakeholder would be an individual.

¹<https://bcorporation.net/directory/>

²<https://www.ecogood.org/en/movement/ecg-businesses-and-organisations/>

³<https://database.globalreporting.org/search/>

⁴<https://www.ilo.org>

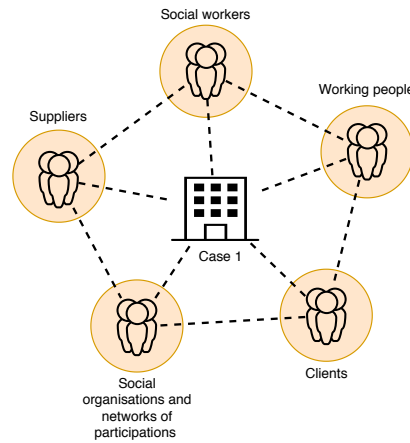


Figure 21. Stakeholder group involvement case 1

In reference to the social and community commitment, this cooperative participates in the REAS⁵ solidarity economy network, which consists of other networks such as REAS Valencia (REAS PV). Hence, the cooperative is committed to the SSE and to their membership of REAS PV⁶. In addition, they are a member of FEVECTA Valencian Federation of Associated Labor Cooperatives⁷. REAS PV is a network of organisations within REAS that promotes the following principles of SSE; principle of fairness, working principle, principle of environmental sustainability, principle of cooperative, principle “non-profit” and principle of commitment to the environment.

To verify the extent that this cooperative meets these principles, it has carried out a Social Balance of their performance during 2017. It has therefore requested support of REAS PV, which has provided training and support to them on executing a Social Balance for the creation of an improvement plan, the ESEA report and the final external audit. The realisation of the Social Balance results in a document called the “*Social Balance report*”. In this document, information about the questions that are answered through a series of indicators is collected. This report was the basis for this cooperative to analyse results and propose possible improvement actions. Accordingly, regarding their environmental strategy, their purpose is to monitor their activity with tools, such as the Social Balance of REAS-PV. In addition, other specific tools for measuring carbon footprint or energy efficiency.

4.2.2 Case Study Data

The analysed data considering this cooperative is their 2018 ESEA report⁸, which consists of the outcome of the Social Balance of 2018 and the corresponding improvement plan. In this improvement plan the activities that are followed after completing the Social Balance are described. In addition, the tool, that is used for the prioritisation of the improvement actions, is analysed. In addition, data is acquired in a semi-structured interview. This interview is concentrated on obtaining information about the cooperative in general, the activities and responsibilities in the IP process that proceed from the Social Balance and the prioritisation of improvement actions. The ESEA report presents the 2018-2019 Improvement Plan, which includes the improvement actions that are recommended to emphasise on REAS PV to stimulate the implementation of the principles of the Social and Solidarity Economy (ESS).

The cooperative commitment to the SSE and their membership REAS PV, have led to making a Social Balance that evaluates their performance in social, environmental and governance aspects, applying the tool developed by the the Xarxa de Economia Solidaria de Catalunya (XES)⁹, namely XES Social Balance (Balance Social de la XES). XES is a regional network of REAS, based in Catalonia. The Social Balance evaluates the following six elements of any organisations or entity that wants to be socially responsible: *Democracy*, *Equality*, *Environmental commitment*, *Social commitment*, *Quality of work* and *Professional quality*. This tool provides access to four types of surveys; a general questionnaire that the organisation has to fill out and also three sets of questionnaires that can be answered anonymously by working people, companies and/or users or customers and volunteers. This cooperative is committed to assess the professional quality of their cooperative by conducting the latter questionnaires with their

⁵<https://www.reasred.org/>

⁶<https://www.economiasolidaria.org/>

⁷<https://www.fevecta.coop/>

⁸https://www.altur.coop/wp-content/uploads/2018/11/MEMORIA_SOSTENIBILITAT_2018.pdf/

⁹<https://www.economiasolidaria.org/>

customers, partners and suppliers. The collection of information in these questionnaires were carried out while maintaining anonymity. The realisation of these questionnaires has shed light on several aspects that require improvement, with regard to the six elements as described above.

4.2.3 Case Study Process Analysis

As mentioned before, this cooperative has followed the social auditing process recommended by REAS PV (XES Social Balance). An **internal training (Case1.1)** has taken place in order to train the members of the cooperative on how to perform the XES Social Balance adopted by REAS PV. In the practical part of the training, a **Social Balance** is performed (**Case1.2**), while being mentored by an expert in the field. The questions that are posed in the Social Balance are arranged according to a number of indicators that provide insight in the level of compliance of the cooperative with the principles of the SSE as described in section 4.2.1. The realisation of the Social Balance results in a document called ‘*Social Balance report*’, in which the information, generated from the questions answered through a series of indicators, is collected. In Figure 16 (see Appendix D, section D.4), an excerpt of the of questions, indicators and results of the category ‘*Members of the organisation*’ is depicted.

After completion of the Social Balance, the **results of the indicators are analysed (Case1.3)**. In Table 15, an excerpt of these scores are depicted. In Appendix D in section D.4, a table that describes all the results of the indicators can be found. Subsequently, the owners of the cooperative are trained by experts in XES Social Balance on how to perform the task of analysing the results of this Social Balance. The owners in this case are; one Chief Executive Officer (CEO), one secretary and two technicians, who are project managers. After finalising this analysis, a technique called *brainstorming* is conducted with the four owners to identify improvement actions that could be implemented in order to improve the outcome of the indicators in a follow-up Social Balance.

First of all, a participatory process took place, in which they collectively thought about **the causes of the indicators with low results (Case1.4)**. Subsequently, **ideas for improvement actions (Case1.5)** are determined based on encountered problems during the brainstorm and the results of the questionnaire that were filled out by workers (members of the cooperative or hired). In the second phase, these ideas were **translated into concrete actions (Case1.6)** for improvement by; a) assessing the cause of the problem, b) the goal of improvement, c) what has been realised by the organisation so far and d) what they want to achieve on medium and long term including the necessary resources. Figure 16 illustrates an excerpt of the identified improvement actions. For each improvement action, the related principle and indicator or question are determined. In Appendix D in section D.4, a table containing all improvement actions can be found.

Indicator	Text Indicator	Score
<i>ind7</i>	Percentage of dependence on subsidies	6
<i>ind90</i>	In the exercise that your activity has yielded benefits, how are these shared	10
<i>ind3</i>	Percentage of people in the organisation (disaggregated by sex)	0
<i>ind12</i>	Percentage of people who have participated in the approval of the management plan and annual budget (disaggregated by sex)	10
<i>ind13</i>	Percentage of people who have participated in the approval of the management plan and annual budget	10

Table 15: List of indicators (excerpt)

Number	Improvement action	Related principle	Related indicator(s)/ question(s)
<i>01</i>	Free software change	Principle of cooperative	<i>ind75</i>
<i>02</i>	Extension of the term of the share capital contribution	Working principle	<i>q8501</i>
<i>03</i>	Knowledge generated “Creative Commons”	Principle of cooperative	<i>ind74</i>
<i>04</i>	Internal involvement with the movement of the Social Solidarity Economy	Principle of commitment to the environment	<i>ind23, ind24, ind25, ind89</i>
<i>05</i>	Provide scholarships for training women	Principle of fairness	<i>ind1, ind3, ind10, ind12, ind15, ind20, ind23, ind93, ind96</i>

Table 16: List of improvement actions (excerpt)

Finally, a *final prioritisation* is conducted by the same members via a questionnaire on the level of importance and difficulty for the cooperative to implement these improvement actions. The results of this questionnaire were then discussed to agree on the values. Each improvement action is given a

score on a scale of 1 to 10. Afterwards, the consultant performed an assessment to determine which of those improvement actions are most important for REAS-PV and the implementation of the SSE in the cooperative using the same scoring mechanism.

To summarise, the prioritisation of the improvement actions are based upon the following three variables, which are visualised in Figure 22; a) the **importance to the cooperative (Case1.7a)** to implement an improvement action, b) the **degree of difficulty (Case1.7b)** of implementing each and c) the **importance to REAS PV (Case1.7c)** to implement an improvement action, in terms of their potential to improve the overall weighted grade of future social balances improvement action. As can be seen in Figure 78b (see Appendix D), 94% of the members are men. This fact causes the rest of gender indicators to be negative towards women as well. For example, 90% of men involved in approving the management plan and annual budget; 90% of men participating in the annual meetings of the co-operation; only 14% of women in responsible positions and no women is occupying a corporate or political office position. REAS believes in fairness and hence introduces ethical principles of justice or equality. Hence, a) equal opportunities for all people and the need to create conditions that promote it effectively and b) mutual recognition of differences and diversity from equal rights. However, this involves developing actions to compensate the diversity of social disadvantages that many people actually have the same opportunities. After assessing the collection of improvement actions by prioritisation based on the values as stated above, it is recommended to emphasise on the following two improvement actions depicted in the right top corner of Figure 22:

1. *Provide training for women and make selection processes in fields and sectors where one can contact them more easily;* (5)
2. *Develop an improvement plan for the prevention and management of waste;* (11)

Regarding environmental policy, it is clear that the cooperative has implemented some measures, however does not have a plan for environmental management yet; a) they do not take control over CO2 emissions b) they do not have practices and/or procedures for energy efficiency and water saving c) nor have formal waste management practices. The **realisation of the Social Balance, the report and the improvement plan (Case1.8)** has verified the organisation's commitment to the principles of the SSE and simultaneously highlighted possible improvement areas. **This plan is shared** both internally and externally (**Case1.9**) and subsequently implemented (**Case1.10**). Consequently, they have provided a process of reflection on their social and environmental performance, based on the results of the Social Balance and the workers questionnaires, that generated a set of potential improvement areas and ideas for improvement actions. These actions allow this cooperative to enhance their social and environmental performance. However, they should consider the extent to which these improvement actions are feasible on short and long term, and the expected impact.

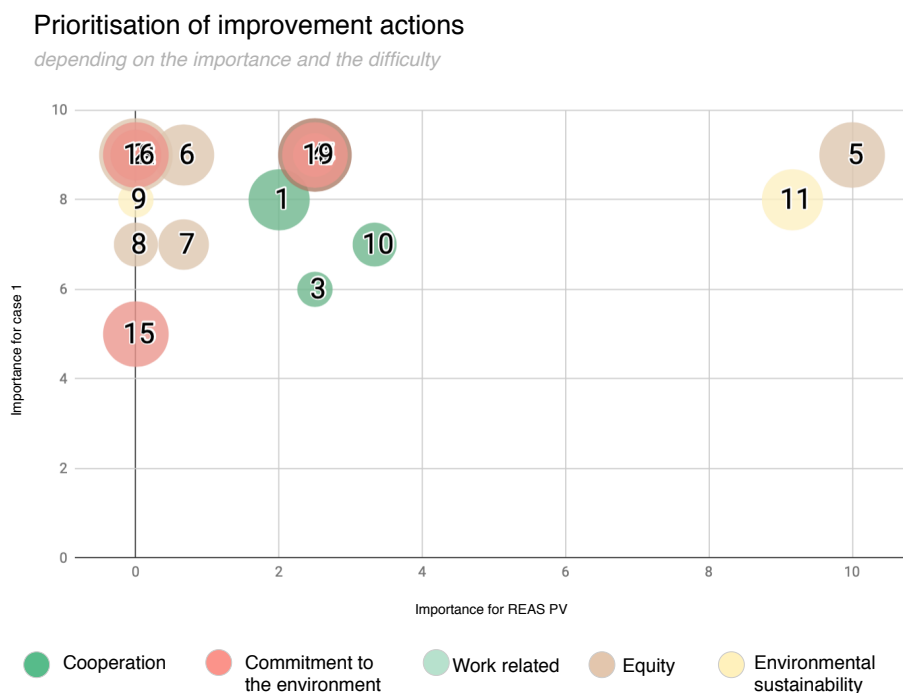


Figure 22. Prioritisation improvement actions case 1

4.2.4 Case Study Results

We specify the IP4ESET process, as it is carried out by case 1, by interpreting the information as a result of analysing the documentation and interview results using the technique of PDDs. The results of the case study are illustrated through the use of two PDDs; a) a PDD that illustrates the improvement cycle as followed by case 1 and b) a PDD focused on the IP4ESET process. The first PDD consists of three phases: Social auditing process, Improvement planning and implementation. The process consists of 10 activities, and 23 concepts. In Figure 23, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For instance, TRAINING is a result from the activity *Case1.1. Conduct a training on performing a XES Social Balance*.

The IP4ESET process as it is carried out at case 1 is divided into four phases: Social Balance analysis, Brainstorm session, Prioritise improvement actions by both REAS PV and the cooperative, and Documentation improvement plan. The process consists of 9 activities, and 18 concepts. In Figure 24, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For example, SOCIAL BALANCE REPORT results from the activity *Case1.3. Analyse Social Balance report*. For each phase, roles are added, which describe the actor(s) that carry out the activities. Roles in the IP4ESET process are: Owners and consultant. In Appendix D, the matching activity and concept table can be found in section D.4.

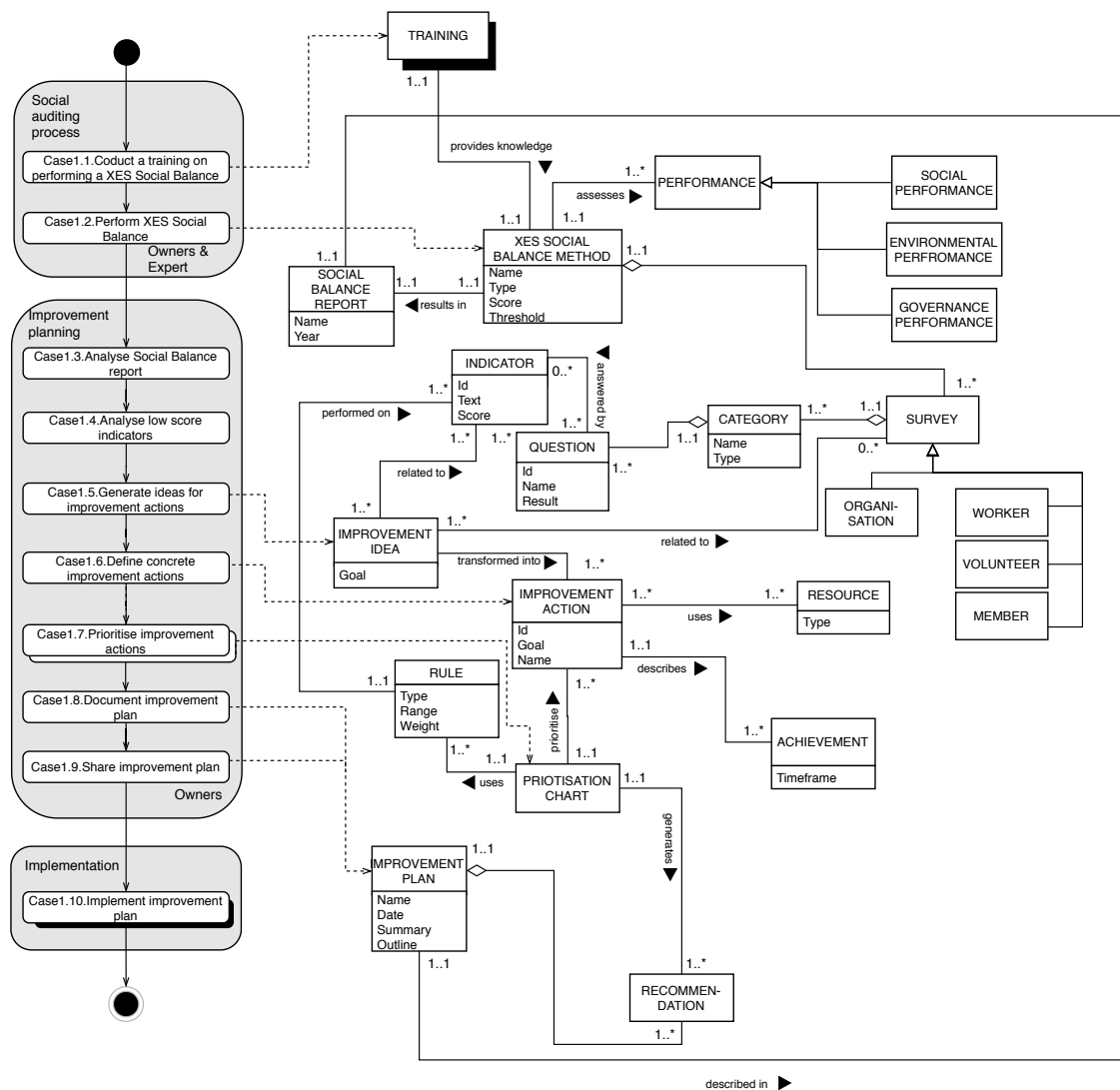


Figure 23. PDD of results case 1: Social, environmental and business ethics improvement cycle

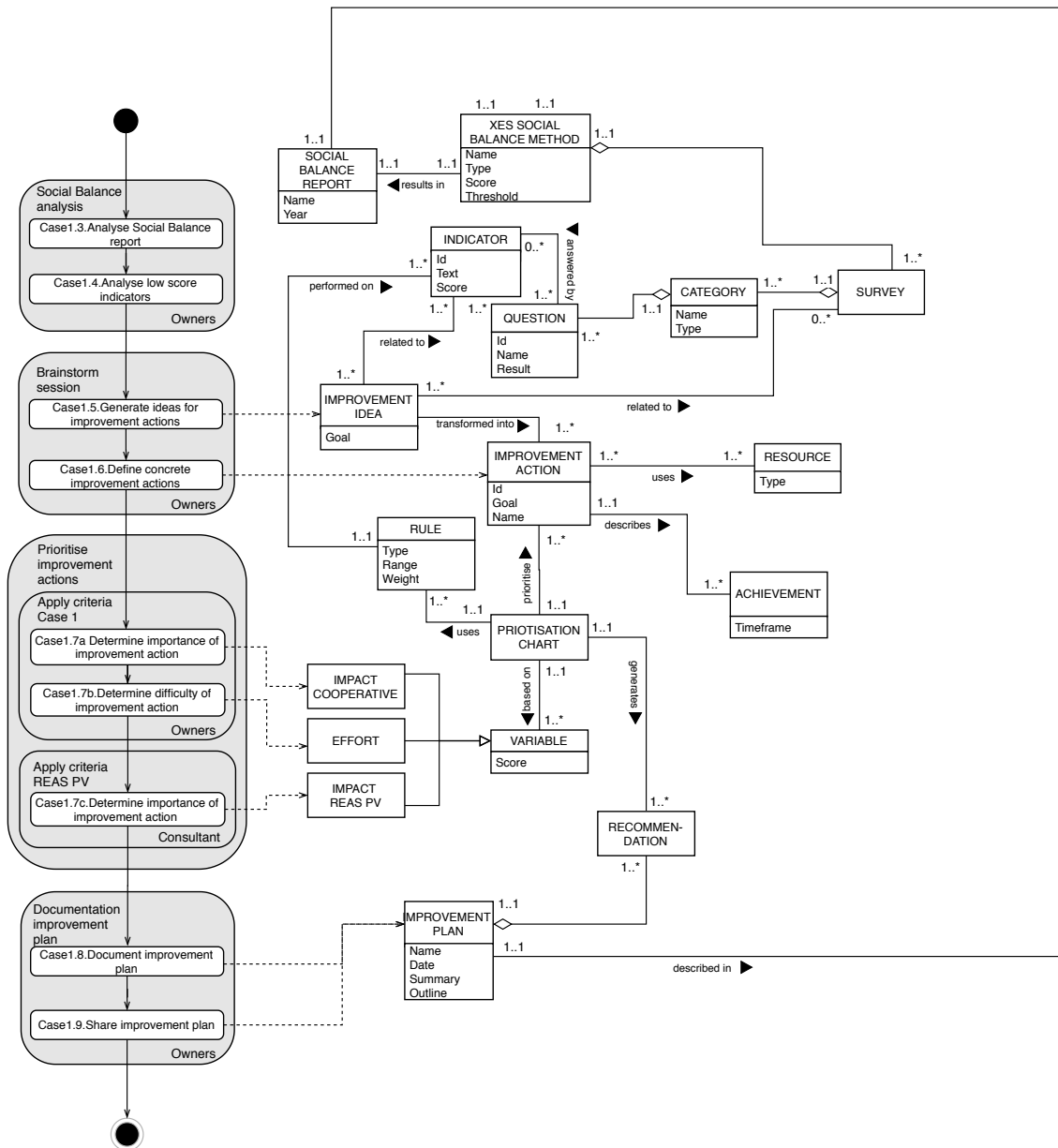


Figure 24. PDD of results case 1: Ethics, social and environmental improvement planning

4.2.5 Validity Issues

Validity is one of the main concerns when it comes to research: *"Any research can be affected by different kinds of factors which, while extraneous to the concerns of the research, can invalidate the findings"* [53]. Therefore, this section addresses the following tactics as defined by Yin [69] to ensure that the gathered information about the IP4ESET phase of case 1 is valid: construct validity, internal validity, external validity, and reliability [68]. The case study that was performed at case 1 can be described as a single-case study design, due to the use of only one source for the data collection.

For this type of study, external validity is difficult to obtain. External validity threats reduce the generalisability of the obtained results. Internal validity of the design is irrelevant, since this case study has an exploratory focus [69]. Yin [69] claims that external validity could be achieved from theoretical relationships, and from these generalisations could be made. Case 1 follows the ESEA method of XES, which is method that is followed by other organisations in the network of REAS¹⁰ or organisations that are part of other networks as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, or at least organisation's applying the same tool. However, limitations might exist to the extent we can generalise this method to organisations as part of other networks or organisations who are not part of a network, due to the different ESEA methods that can be applied [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks. So, we do not aim to compare within networks. Therefore, generalisation does not apply to other networks.

In order to guarantee for construct validity, the degree to which a study measures what it expected to measure, various sources of evidence were used to collect the data for the research; information was gathered from documentation, an interview and to some extent observations through information produced in the field. Hence, to discover whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. Unfortunately, we were not able to fully validate the PDD as depicted in Figure 23. The reliability of the case study is obtained by using a formal case study protocol and a case study database.

4.3 Case 2

This section contains a description of *case 2*, which provides an overview of the CI cycle and P4ESET process followed by completing a B Impact Assessment (BIA)¹¹, including the results and validity issues. The BIA is an assessment method created by the B Corp community¹², which is a global movement of people using business as a force for good rather than profit. The IP4ESET process followed by completing the BIA as described in this section is validated by a B Corp consultant, who provides services for supporting businesses in implementing social and environmental practices in accordance with B Corps. These services are based on experiences in order to find out what actually works for different kind of organisations in order to be effective and have a positive impact on their businesses.

4.3.1 Case Study Description

B Corps form a community of for-profit organisations certified by the non-profit B Lab¹³ to meet rigorous standards of social and environmental performance, accountability, and transparency. B Lab is a non-profit organisation presenting the global movement of B Corps. Furthermore, B Lab creates and awards the B Corporation certification for for-profit organisations. B Corps measure their impact by using the BIA to; 1) **assess** the strengths and weaknesses in an organisation's sustainability management system or the desire to create one by making use of best practices, 2) **compare** against organisations in comparable sectors, sizes and geographies and 3) **improve** by identifying gaps and improvement opportunities for creating a more positive impact through business operations, while simultaneously reducing the potential negative impact. The BIA measures both operational activities as well as the impact of products, services and business models. However, it should be noted that there are different reasons for an organisation to be involved in business. The focus could be solely on generating returns, or creating social impact simultaneously with financial returns. This means that the BIA can be used by different types of organisations to measure their impact. Consequently, there are three types of businesses that can be distinguished:

- **Ordinary Businesses:** The main objective of these type of businesses is mainly generating high

¹⁰<https://www.reasred.org/>

¹¹<https://bimpactassessment.net/>

¹²<https://bcorporation.net/>

¹³<https://bcorporation.net/about-b-lab/>

financial returns. However, these business may be interested in the possibility of using their business to gain a more positive impact regarding social and environmental aspects

- **Sustainable Businesses:** These businesses aim for a positive impact while simultaneously generate returns as their main objective. However, they may not have incorporated steps for measuring and evaluating their impact on social and environmental aspects
- **B Corporations:** Businesses that have their main focus on improving and sustaining their impact over time while generating profit simultaneously. All B Corps measure their impact by making use of the BIA

The BIA is a questionnaire based self-assessment tool that focuses on assessing the sustainability management system and sustainability performance of an organisation based on five impact areas; *governance, workers, community, environment* and *customers*. There are approximately 40 different versions tailored to the size, market (emerging or developed) and manufacturing or services industries of organisations. This self-assessment is facilitated by an online platform that guides an organisation through the questionnaire resulting in a score on a scale from 0-200. This score is presented in the *B Impact Report* and bench-marked against other organisations of the same size operating in the same industry and geography. This benchmark is performed on the levels of overall score, individual impact area scores and individual questions; presenting an average score and the organisation scores per impact area and question. In this way, organisational differences can be discovered and used to identify improvement areas. It should be noted that bench-marking against other organisations might not always be accurate, due to the fact that it depends on how many comparable organisations are available in the database.

Furthermore, the questions posed in the BIA can often serve as an inspiration of where an organisation could improve, while the bench-marking can highlight potential gaps in your current management system related to ethics, social and environmental topics. The assessment output as well as the process of going through the assessment itself, is useful for organisations to design strategies for improvement by identifying their specific areas of strengths and weaknesses. If an organisation achieves a score of 80 or higher on the assessment, the organisation becomes eligible to certify as a B Corporation. In this case, the assessment is audited by B Labs and becomes an attestation. A B Corp Certification¹⁴ proves that your business is meeting the highest standards of verified performance in accordance with the B Corp community.

4.3.2 Case Study Data

The data that is used for the second case study includes the B Impact Assessment Tool¹⁵, B Analytics¹⁶, the B Corp Handbook [24], and documentation of the BIA, B lab and B Corp as presented on their web-pages. Subsequently case study improvement reports provided by B Corp and data as a result of a semi-structured interview with a B Corp consultant. This interview is concentrated on obtaining information generating improvement actions based on features and results of the BIA. The BIA offers the following tools and features, which are analysed in this case study:

- **Best Practice Guide:** The B Impact Assessment has built-in resource guides that help organisations with creating new practices and policies
- **Customised Improvement Reports;** the assessment's built-in improvement report allows organisations to sort questions based upon topic, points available, or difficulty to implement. Via this report, improvement road-maps can be created and priorities can be set
- **Improvement Case Studies:** B Lab has assembled case studies of organisations that have improved their scores on the B Impact Assessment over time. Organisations can learn from practices other businesses have implemented to improve their impact and see the score improvements that directly resulted from these practices

As a summary, the BIA provides standards, tools and benchmarks. Furthermore, an additional tool can be used based on the data generated from the BIA, which is called B Analytics. B Analytics aggregates all the data collected from organisations through the BIA and visualises this in a platform. This platform makes it possible to measure, benchmark and improve the impact of organisations. Performance can be tracked over time, towards goals, against similar businesses and it can be aggregated against KPIs. This means that an organisation can analyse the portfolio or network's impact and export data to report to relevant stakeholders. In the B Analytics platform built-in tools and B Lab's resources are available to identify targets for improvement and provide organisations with the tools they need to meet these targets. So, B Analytics is a data platform that automatically aggregates and analyses B Impact Assessment

¹⁴<https://bcorporation.net/certification>

¹⁵<https://app.bimpactassessment.net/>

¹⁶<https://bcorporation.force.com/analytics/>

scores and data from the organisations you work with. In addition, it stores a database of social and environmental performance data on private organisations globally, which is collected from over 50,000 users of the B Impact Assessment. In the following section, we highlight some of the features of B Analytics that can be used for identifying improvement opportunities.

4.3.3 Case Study Process Analysis

In order to **perform a BIA (Case2.1-2.11)**, it is recommended that an organisation uses a 12 month period (last Fiscal Year) that most closely reflects their operations. In order to become a certified B Corp, an organisation uses the BIA to measure their impact. However, as mentioned before this assessment can be used by any organisation wishing to receive insights in the impact they are making, to identify improvement areas and set-up an improvement plan accordingly. Anyone that is interested, regardless of their title or responsibility with an organisation can lead the improvement and complete the assessment according to B Corp. However, they recommend appointing one person as a lead; this individual typically completes a first draft of the assessment and then gathers a supporting team to assist. The most common types of individuals involved with the assessment include CEOs, CFOs, HR Managers, COOs, Associates and/or Interns. The B Corp Handbook [24] prescribes a 6 week Quick Start Guide, which is illustrated in Figure 25. This process guides an organisation in implementing improvements to their business. It must be noted that, in for the case study, we only focus on the first three steps. As a results, these are highlighted in Figure 25. Meaning that the implementation and further actions are out of scope.

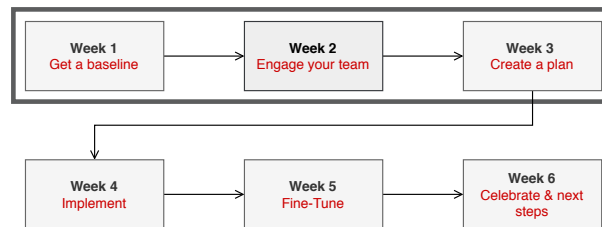


Figure 25. The Quick Start Guide according to the B Corp Handbook

The first step in this process is the establishment of a baseline. This is done by using the BIA to provide insights into the current standing of an organisation related to social and environmental performance. The results of this assessment sets the baseline for improvement. As mentioned before, this BIA results in a B Impact Report that provides an overview of the overall performance of your organisation including benchmarks. These benchmarks can be used to compare performances to other organisations that have completed the BIA. Accordingly, the main objective for the second week is to involve co-workers and establish a project and supporting team. In addition, this is the week in which you can update the B Impact Report with more accurate information by updating the answers to the questions (if needed). The results of the assessment are then discussed in order to find out strengths and weaknesses.

Subsequently, after completing the BIA, **the results are analysed (Case2.12)**. This provides the input for the *the creation of an improvement plan by Identifying improvement actions and practices that are suitable for implementation*. First of all, by analysing the scores of the questions of the BIA in the B Impact Report, potential improvement areas can be identified. The scores(s) that are above average, will highlight the sustainability management strengths of an organisation. Reviewing the questions with a score that is below average or where the fewest points are earned, will provide directions for improvement areas. Figure 26 provides an example of a score that is earned for the impact area Governance. As can be seen in this Figure, for Ethics & Transparency this organisation scored below the average of 2.1, which is an average of other organisations of the same size operating in the same industry and geography. The overall score of this organisation is 62.1, which is below the threshold of 80 for being certified as a B Corporation. This score is a summation of all the scores earned per impact area.

As mentioned in section 4.3.2, **three tools** can be used in order to **define improvement areas (Case2.13)**, through the data and scores resulting from the B Impact Assessment, in order to **define improvement actions (Case2.14)**. The assessment offers best practices guides that include tips, instructions and examples of how to implement these practices. An example of such a best practice guide can be found in Appendix D in section D.5. The best practices are linked to impact area and associated questions part of the BIA. The B Corp Consultant indicates here that: *“In most cases, these are fairly specific practices. I use these as a way to help businesses to identify and implement specific changes that they can make within their organisation that will have a positive social and environmental*

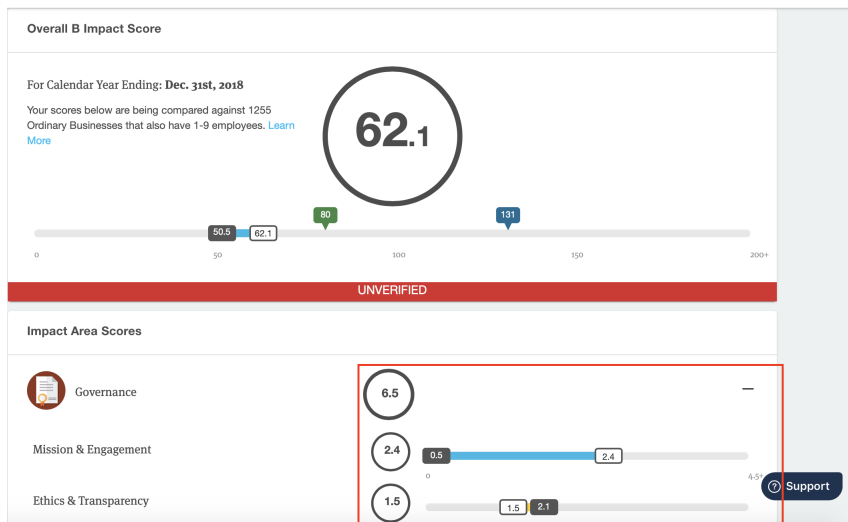


Figure 26. Screenshot example scores impact area Governance and total impact score

impact.” The customised improvement plan report can be used to help an organisation decide where to focus on based on impact area, question difficulty and question weighting referring to the amount of points that can be earned for each question. For each question, an explanation of the question and an example of implementation is given. The report will also highlight all operational questions where there is an opportunity for improvement, because an organisation has not earned full points for the selected questions.

A remark about this report is given by the B Corp consultant: *“Personally, I find it a good starting point, but the report is automatically generated and sometimes lacks the specificity needed for an individual company.”* However, in some cases the level of detail of the scores make general observations about the organisation difficult, since the BIA does not provide significant guidance on the next steps that the organisation could take. The B Corp consultant indicates that improvements are generally based upon best practices. Some practices from the BIA may not be relevant to a particular organisation, since every business is different. It is not uncommon for a business to do well in one area, but not so well in other areas. However, over time, a business can use the BIA to make improvements in those areas that they scored poorly on initially. For example, if they are not doing too well in the Community section, they can review that section and see if there are improvements that make sense for them. The Improvement Report is a guide for that. However, according to the B Corp consultant, it cannot take into account the unique operations of each business. *“So yes, I will make specific recommendations to clients, but it is based on a holistic view of the business of their organisation, their goals, their budget, their capacity, and their overall impact”.*

Furthermore, another tool called B Analytics provided by B Corp can be used for identifying improvement areas and creating an improvement report as mentioned in section 4.3.2. In the 2.2 release of the B Analytics platform of October 2018¹⁷, an Impact Improvement Model is introduced designed to help organisations identify improvement opportunities, to track the target goals for improvement that organisations set and meet, and to provide organisations with improvement resources associated with questions of the BIA to create a road-map. The following features published in this release are described below, which are part of the *Improvement Report*:

- The **Improvement Report** allows you to see the top 10 improvement opportunities or areas of excellence by impact area, for your organisation or for your entire network. However, the top 10 is a maximum, this can be customised to any number between 1 and 10, which makes it possible to tailor the report
- The **Impact Cloud** visualises the improvement opportunities or areas of excellence for each area of impact
- **Export the Improvement Report** to a PDF in order to provide an organisation with a clear action guide for the coming year or create an Impact Report of your Improvement Report, which will feature the 10 greatest strengths of the organisation by Impact Area. However, the top 10 is again a maximum, this can be customised to any number between 1 and 10

¹⁷<https://kb.b-analytics.net/support/solution>

A detailed explanation and examples of these features can be found in Appendix D in section D.5. It should be noted that the B Analytics platform has additional features. However, this case study focuses on the state-of-practice in IP4ESET. Hence, only the above features are taken into account in this research, since they are related to IP4ESET. After the identification of improvement practices, **people can be assigned to take the lead** on each action question (**Case2.15**) and a timeline for completion can be created for each improvement action.

4.3.4 Case Study Results

We specify the IP4ESET process, as it is carried out by following the BIA, by interpreting the information as a result of analysing the documentation and interview results using a PDD. It must be noted that the attributes and activities that are denoted in *Italic* are not explicitly present in the analysed method and method documentation. However, in order to enhance the understanding of the method properly, we decide to add these to the model. In this results section, two PDDs are created. The first one is an extension of the PDD of the B Impact Assessment as presented in [49]. We aim to provide an overview of one complete improvement cycle and therefore, we extend this PDD with the IP4ESET process that are analysed in this case study. The results of this are illustrated in Figure 27 and consist of eight phases: Set-up, Register, Complete BIA, BIA analysis, Create improvement plan, Implementation, Verification and Certification.

The IP4ESET process consist of two phases, BIA analysis and Create improvement plan, and consists of four activities, and 19 concepts. In Figure 28, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For instance, B IMPACT REPORT is a result from the activity *Case2.14.Analyse B Impact report*. For each phase, roles are added, which describe the actors that carry out the activities. Roles in the IP4ESET process are: Supporting Team. In Appendix D, the matching activity and concept Table can be found in section D.5.

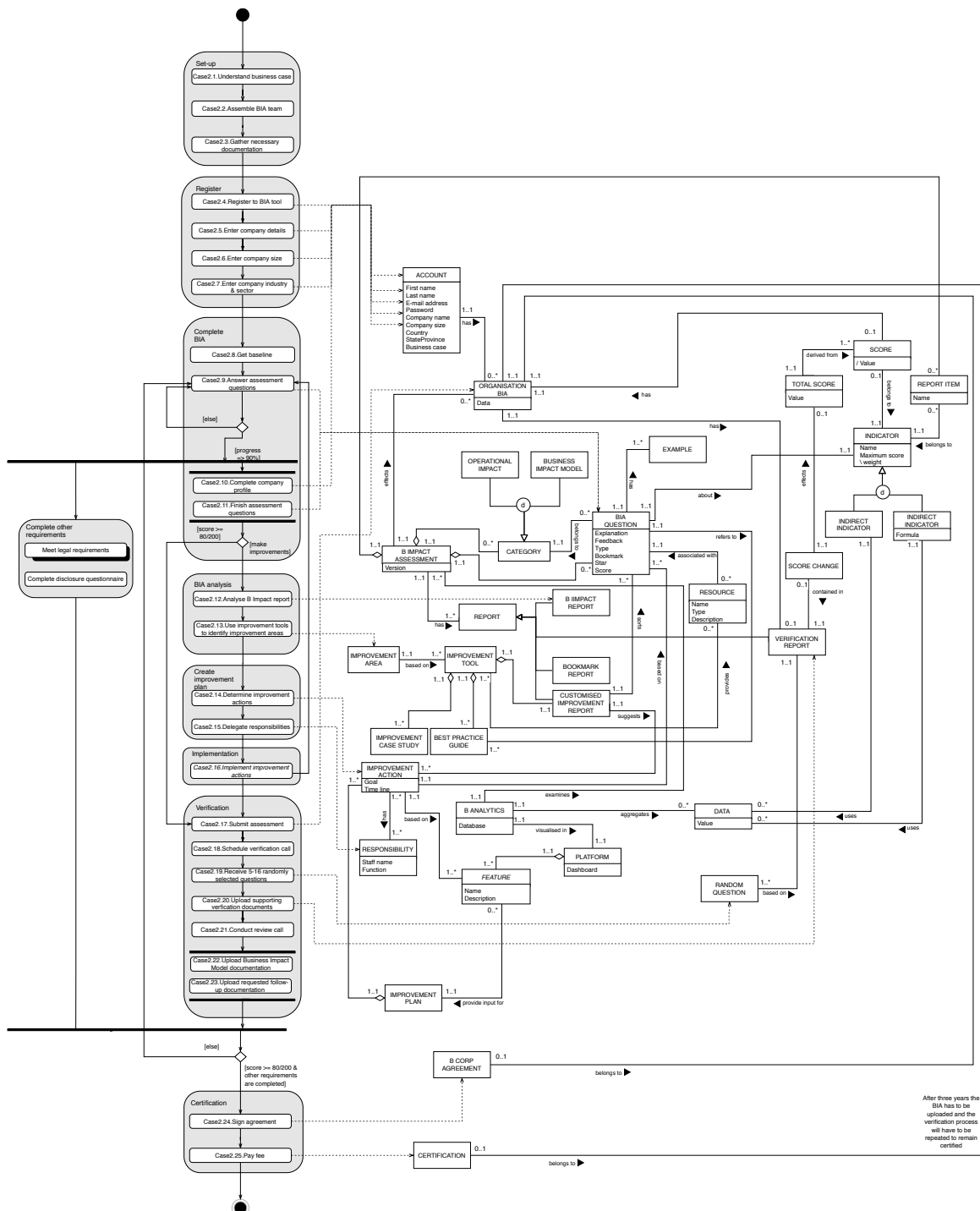


Figure 27. PDD of results case 2: Social, environmental and business ethics improvement cycle

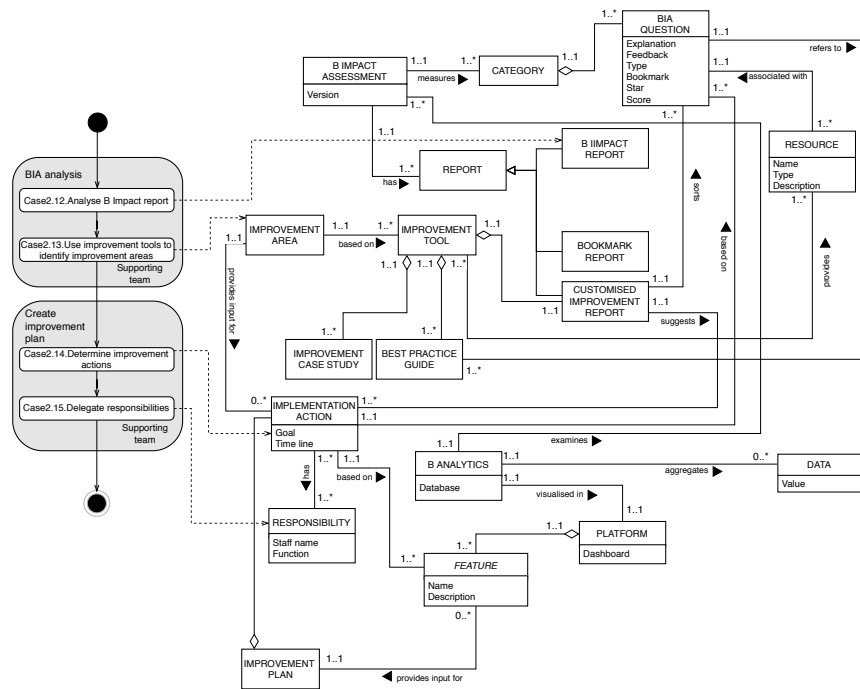


Figure 28. PDD of results case 2: Ethics, social and environmental improvement planning

4.3.5 Validity Issues

This section addresses the same tactics as in case 2 to ensure that the gathered information about the IP4ESET phase by following the BIA is valid [69]. The case study that was performed at case 2 can be described as a single-case study design, due to the use of only one source for the data collection. For this type of study, external validity is difficult to obtain. Internal validity of the design is irrelevant, since this case study has an exploratory focus [69]. B Corporations follows the BIA method, which is method that is followed by other organisations in this network as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, size and sector or at least organisations applying the same tool.

However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks. So, we do not aim to compare within networks. Therefore, generalisation does not apply to other networks.

In order to guarantee for construct validity, various sources of evidence were used to collect the data for the research. To discover whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. Unfortunately, we were not able to fully validate this PDD by an expert. However, the activities as modelled in Figure 28 follow the activities as presented in the Quick Start Guide presented of the B Corp Handbook. This guide proposed an ideal version of implementing improvements in an organisation based on the BIA. Therefore, we refer to this as the IP4ESET phase. Nonetheless, in practice this process could be slightly different. The reliability of the case study is obtained by using a formal case study protocol and a case study database.

4.4 Case 3

In this section, *case 3* is described containing an overview of the CI cycle and P4ESET process followed by Business School Lausanne (BSL)¹⁸ by using the Common Good Matrix (CGM), including the results and validity issues. In addition, the process of executing the case study is described in terms of how data is gathered and analysed. The CGM is an ESEA method as proposed by the ECG¹⁹. The ECG is a social movement promoting an alternative economic model, in which human being and all living entities are placed at the centre of economic activities.

¹⁸<https://www.bsl-lausanne.ch/>

¹⁹<https://www.ecogood.org/>

4.4.1 Case Study Description

The BSL is a private business school located in Switzerland. BSL’s innovative learning methodology combines experiential learning with highly interactive teaching focused on personalised attention. Hence, these students are learned several crucial hard and soft skills to make an immediate impact in the business world. The BSLs vision is to be an outstanding leader in the field of sustainability and responsibility as part of continuous development. This vision is collectively formulated with representatives of all stakeholder groups. In Figure 29, all relevant stakeholder groups for BSL are illustrated. Accordingly, their aim is to become a role model business school that makes a significantly positive impact on society and the environment in the following three domains; a) *research*, b) *education* and c) *societal engagement*. To be an innovative leader in business education, BSL is committed to:

- Contributing to a sustainable world through responsible leadership
- Embracing responsibility as management and business educators
- Educating and developing leaders able to deal with global challenges
- Providing a think tank of applied and future oriented research
- Participating in public debate to transform the economic system

The mission in accordance with their vision is stated as follows: “To provide a learning platform that enables individuals and organisations to thrive by co-creating viable business solutions for our planet and its people”²⁰. There are three pillars that assists BSL in building this educational approach; a) **responsibility**, b) **sustainability** and c) **entrepreneurship**. BSL cooperates with academic institutions worldwide with the purpose of promoting and raising social and ecological standards. In addition, sustainability courses are offered as part of the curriculum. At BSL, it is important to build a new generation of leadership; it has become essential to create learning programs that address the fundamental changes of working in the 21st century. Additionally, this includes focusing on how digital transformation, current economic trends, changes in societal structure and environmental concerns have transformed the context of business.

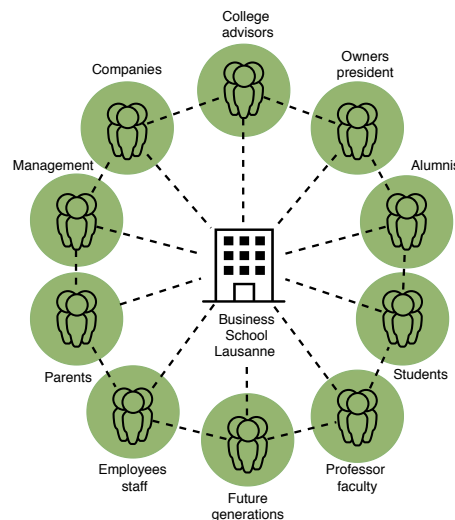


Figure 29. Stakeholder group involvement Business School Lausanne (BSL)

4.4.2 Case Study Data

The data that is used and analysed in this case study includes the workbook of the compact and the full balance sheet 5.0, the Common Good Matrix 5.0 (see Figure 30) and the Common Good Report of BSL. The main data is acquired from documentation of a workshop performed at BSL, who used the the CGM to identify “blind spots” and accordingly, sustainability potential and to initiate an internal journey of change. As mentioned before, the ECG supports a more ethical economic model, in which the well being of both people and the environment become the ultimate goal of business. A business, which promotes the values of human dignity, human rights, and ecological responsibility into day-to-day daily practice. The contribution to these values by organisations is assessed and scored through the CCM, which provides the basis for organisations to create a Common Good Balance Sheet (CGBS) and a Common Good Report. The Common Good Report evaluates how an organisation has implemented the aforementioned universal

²⁰<https://www.balance.ecogood.org/ecg-reports/bsls-contribution-to-society-ecg-audit-report-nov.pdf/view>

values and provides insight in the areas that need improvement. This will indicate how developed each value is within the organisation. Each theme describes how the individual values apply to the relevant stakeholder group. The contribution to the common good is assessed and scored through the CGM based on the following factors:

- The size of the organisation
- Financial flow to and from suppliers, investors and employees
- The social impact of the main primary products in their country of origin
- The industry sector and its associated environmental and social impact

COMMON GOOD MATRIX 5.0				
ECONOMY FOR THE COMMON GOOD <small>An economic model for the future</small>				
VALUE	HUMAN DIGNITY	SOLIDARITY AND SOCIAL JUSTICE	ENVIRONMENTAL SUSTAINABILITY	TRANSPARENCY AND CO-DETERMINATION
STAKEHOLDER				
A: SUPPLIERS	A1 Human dignity in the supply chain	A2 Solidarity and social justice in the supply chain	A3 Environmental sustainability in the supply chain	A4 Transparency and co-determination in the supply chain
B: OWNERS, EQUITY AND FINANCIAL SERVICE PROVIDERS	B1 Ethical position in relation to financial resources	B2 Social position in relation to financial resources	B3 Use of funds in relation to social and environmental impacts	B4 Ownership and co-determination
C: EMPLOYEES, INCLUDING CO-WORKING EMPLOYERS	C1 Human dignity in the workplace and working environment	C2 Self-determined working arrangements	C3 Environmentally-friendly behaviour of staff	C4 Co-determination and transparency within the organisation
D: CUSTOMERS AND OTHER COMPANIES	D1 Ethical customer relations	D2 Cooperation and solidarity with other companies	D3 Impact on the environment of the use and disposal of products and services	D4 Customer participation and product transparency
E: SOCIAL ENVIRONMENT	E1 Purpose of products and services and their effects on society	E2 Contribution to the community	E3 Reduction of environmental impact	E4 Social co-determination and transparency

Figure 30. Common Good Matrix

There are two types of CGBS; a) the Full Balance Sheet divides all the themes under different aspects, and is required for medium and large organisations for their second and subsequent balance sheets and b) the Compact Balance Sheet provides a summary of all the themes. Small organisations can use this version on a permanent basis; organisations with 11 - 50 employees (or their full-time equivalents) can use it twice; large organisations can use it for their first report. The purpose of this evaluation is to show the impact of corporate activities on the common good. In the assessment process, the organisation is rated on a scale, depending on how developed each value as presented in the CGM is in the organisation. The process of creating the report therefore promotes the further development of the organisation in a valuable way.

4.4.3 Case Study Process Analysis

A stakeholder engagement process took place at BSL consisting of three phases; a) evaluation of BSL’s performance relating to the CGM, b) identify and prioritise suggestions for improvement and c) select ideas and identify improvement actions for implementation. The IP4ESET phase at BSL is concerned with the identification of actionable improvement and has the following sub-activities: best practices companies/schools, co-operations with other institutions, identification of actionable improvement suggestions and prioritising by impact and effort. The latter two are described in this section, due to available data on these actions. After completing the CGM, some elements are identified by BSL:

- The benefit of the Common Good Matrix can be found in the consequent and independent approach that clearly explains on how to contribute to the common good in the dimensions of human dignity, solidarity, ecological sustainability, social justice and democratic co-determination and transparency
- Recent years show that the best institutions scored an average of 600 points in the first year. However most of these organisations were small local organisations (e.g. organic farmer, social network, etc.)

After (Case3.1-3.17) completion and Case3.18 evaluation of the CGM, the faculty, staff and management performed a brain storm session in two groups to Case3.19 identify improvement actions. The improvement actions were written down on post-its and placed in one of the quadrants of the impact and effort matrix. This matrix is illustrated in Figure 31. This brainstorm session lead to 37 improvement actions. These actions were grouped into three themes: vision/leadership, education

and supporting activities. Vision and leadership refer to powerful instruments in order to align thoughts, beliefs and improvement actions. Subsequently, education can be seen as the core competence and biggest leverage of BSL to make a positive impact. Finally, supporting activities are activities to proof importance, raise awareness and demonstrate a coherent picture. After this session, the two groups together try to **Case3.20 prioritise the identified improvement actions** by using a post-survey. In this survey the following question is answered; “please pick the 10 of the 37 “ideas of improvement” that are most relevant for you and rank them in terms of their importance.”

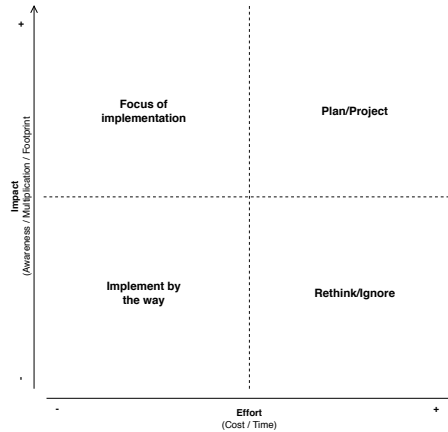


Figure 31. Prioritisation matrix as used in the workshop

The results of this survey led to a finalised list of improvement actions that are chosen as implementation projects. In Appendix D in section D.6, the implementation projects can be found that are mapped in the two top quadrants. Subsequently, for each action it is determined **who has the lead (Case3.21-3.22)** and **team accordingly**. Moreover, the actions are mapped to the fields in the matrix (example C1). Finally, **challenges are identified for each improvement action (Case3.23)** categorised in a) motivation, b) presence and communication and c) time. The matrix and the assessment shed light on where BSL can improve and offers interesting insights. This is **documented (Case3.24)** and **shared (Case3.25)** in the Common Good Report of BSL. In the future, BSL desires to create a culture and an environment that supports and foster the implementation of the new sustainability mission and vision statement. For now, it is recommended to focus on the following improvements:

1. *Keep the motivation level up*
2. *Control vs. Support – find the right balance*
3. *Sustainability management system – track BSL’s success and make it visible*
4. *Marketing and Communication strategy – ensure that the new vision and the objectives of BSL are the leader in sustainability education*

4.4.4 Case Study Results

We specify the IP4ESET process, as it is carried out by BSL, by interpreting the information as a result of analysing the documentation and interview results using a PDD. It must be noted that the activities that are denoted in *Italic* are not explicitly present in the analysed method and method documentation. However, in order to enhance the understanding of the method properly, we decide to add these to the model. In this results section, two PDDs are created. The first one is an extension of the PDD that illustrates the processes and deliverables as part of the CGBS (compact) PDD as presented in [49]. We aim to provide an overview of the activities in the improvement cycle by using the CGM as proposed by ECG method and therefore, we extend this PDD with the IP4ESET process that are analysed in this case study. The results of this are illustrated in Figure 32 and consist of nine phases: Become member, Initial assessment, Assess common good contributions, audit, Certification, Evaluation matrix, Suggestions for improvement, Documentation and Implementation.

The second PDD, illustrates the IP4ESET process as it is carried out by BSL (see Figure 32) and consists of three phases: Evaluation matrix, Suggestions for improvement and Documentation. The IP4ESET process consists of eight activities, and 20 concepts. In Figure 33, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For instance, the deliverable COMMON GOOD MATRIX is a result from the activity *Case3.18. Evaluate Common Good Matrix*. It must be noted that there are multiple roles involved in each of the three identified phases.

Therefore, the roles in this diagram are omitted. In Appendix D, the matching activity and concept table can be found in section D.6.

4.4.5 Validity Issues

In order to make sure that the gathered information about the IP4ESET process as performed by BSL is valid, the same tactics are addresses as for case 1 and 2. This case study can be classified as a single-case study design as well, because there is only one source for the data collected from the case study. For this type of study, external validity is difficult to obtain. Internal validity of the design is irrelevant as well, due to the fact that this case study has an exploratory focus. Yin [69] claims that external validity could be achieved from theoretical relationships, and from these generalisations could be made. The ECG uses the ECG matrix in order to measure sustainability performance. This method is followed by other organisations in this network as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, or at least organisations applying the same tool. However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks and that uses different ESEA methods and other assessment tools. So, we do not aim to compare within networks.

To guarantee construct validity various sources of evidence were used to collect the data for the research; information was gathered from documentation and to some extent observations through information produced in the field. To discover whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. In this research, only the activities and deliverables that are part of the ESEA method (CGBS) are validated in [49]. We refer to activities Case3.1 till Case.3.17 and deliverables in Figure 32. However, the activities as part of Figure 33, illustrates the phases of the stakeholder engagement process as documented in the Common Good Report of BSL (see section 4.4.3). The reliability of the case study is obtained by using a formal case study protocol and developing a case study database.

4.5 Case 4

This section describes *case 4*, which contains an overview of the CI cycle and P4ESET process followed by Tony's Chocolonely²¹, including the results and validity issues. In addition, the process of executing the case study is described in terms of how data is gathered and analysed. An interview is conducted with a manager from Tony's Chocolonely.

4.5.1 Case Study Description

Tony's Chocolonely emerged as a social impact organisation. Over the past 14 years their focus has shifted towards changing the cocoa and chocolate industry and their vision has become 100% slave-free chocolate in all the produced chocolate worldwide. According to Tony's Chocolonely, the economic system within this industry is mostly driven by maximising profits. For Cocoa farmers in West Africa, in most cases, this leads to serious problems. As a result of this system, they are compensated with low prices for their beans, they live in extreme poverty and are in most cases forced to allow children to be involved in dangerous work or employ unpaid forced labour on their cocoa plantations. For this reason, Tony's Chocolonely is committed to equality in the chocolate supply chain from farmer to customer. This requires a change in the entire system involved in the supply chain. Every year, an annual FAIR report is created in which all the stakeholder groups in the supply chain are discussed, starting with the farmers and ending with the consumers. The key stakeholders in the supply chain are depicted in Figure 34. Thus, these key stakeholders can be regarded as the stakeholder groups.

Tony's Chocolonely has defined a strategy, their road-map, which consists of three pillars; a) Tony's creates awareness, b) Tony's leads by example and c) Tony's inspires to act. For each pillar, a number of goals and sub-strategies are defined that are in line with their mission. In order to systematically restructure the supply chain and create a fair system, it needs to be approached from several angles simultaneously. Furthermore, Tony's Chocolonely has defined five rules for the main stakeholder groups in the supply chain, known as the *5 Sourcing Principles*; a) higher price for cacao beans, b) strong farmers: professionalise farming cooperatives, c) the long term and d) quality and productivity (professional farming). As emphasised by the manager: "*You cannot cherry pick these principles, you have to apply them all*". So, to make the cocoa supply chain more equally divided, these principles need to become the new industry standard in the chocolate industry. Tony's Chocolonely monitors the effects of their activities in order to see what impact they are having as an organisation: "*It is not a matter of assigning blame, but about who is responsible and who assumes responsibility for tackling the injustices in the industry.*"

²¹<https://www.tonyschocolonely.com/>

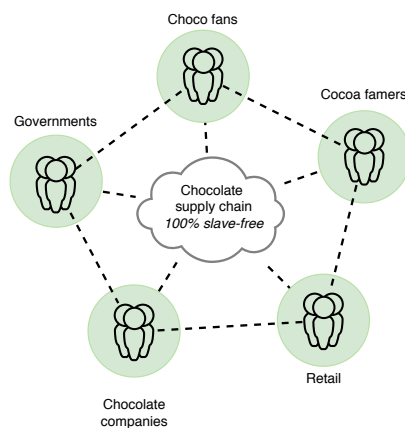


Figure 34. Stakeholder groups Tony's Chokolonely

For example, they use the Child Labour Monitoring and Remediation System to identify cases of illegal child labour to find alternative solutions and to prevent the use of illegal child labour. Furthermore, the areas of the land of the cocoa farmers, who sell to Tony's Chokolonely, are mapped by GPS in order to calculate the size in hectares. This is done to explore how much work force and equipment is needed to farm the land in an efficient and professional manner. The process from bean to chocolate bar is scalable, transparent and regarded as an open chain, which should be the standard for all stakeholder groups in the chain. Tony's Chokolonely indicates that governments play a key role here, since they ought to make transparency and responsibility obligatory throughout the entire chain. In addition, they need to introduce laws and legislation to be able to change the system. Climate change is another issue that Tony's Chokolonely finds important to engage in. For instance, by reducing carbon emissions in their supply chain from bean to bar. Tony's Chokolonely has several partners involved throughout the supply chain and hence does not work in isolation to achieve their mission. Some examples of partners are: Just Diggitt²², GoodShipping²³, B Corp²⁴, Fairtrade²⁵, ICI²⁶, TruePrice²⁷, Soil and more²⁸, and Scope insight²⁹. Tony's Chokolonely is a certified B Corporation, since the BIA measures impact areas that are highly valued by them. Hence, the BIA is another guideline used for measuring their impact, however it is not their main method used for performing an assessment. Due to the fact that Tony's Chokolonely is a mission-driven impact organisation, it is clear for them how to measure their impact and how to decrease the gap between the current industry and the new industry standard. According to the manager, Tony's Chokolonely wants to indicate that it is possible to be a profitable organisation, while at the same time be a certified B Corporation. Tony's Chokolonely wants to increase their impact in two ways:

- **Direct**; chocolate consumers choose chocolate made in accordance with their 5 Sourcing Principles. The more people buy this type of chocolate, the more farmers are able to earn a living income
- **Indirect**; people become aware of abuses in the cocoa industry and the more pressure they can apply when people actively put pressure on the stakeholder groups in the supply chain

4.5.2 Case Study Data

The analysed data for the fourth case study includes Tony's Chokolonely annual FAIR report 2018/2019, covering the period from October 1, 2018 to September 30, 2019. October 1 marks the start of the new cocoa season for the farmer cooperatives in West Africa and the start of their financial year. In this report, achievements of that year in accordance with the mission of Tony's Chokolonely are described; what is being done to take action on the aforementioned problems in the chocolate and cocoa industry, and it is made clear what is expected from governments, retailers, consumers and the stakeholder groups in the supply chain. This annual FAIR report is written for the stakeholder groups in the supply chain. In addition, data is acquired from the Assurance Report, Tony's Open Chain Platform³⁰ and a semi-structured interview

²²<https://www.justdiggitt.org/nl/>

²³<https://www.goodshipping.com/>

²⁴<https://www.bcorporation.net/>

²⁵<https://www.fairtrade.net/>

²⁶<https://www.ici.org/>

²⁷<https://www.trueprice.org/>

²⁸<https://www.soilandmore.com/>

²⁹<https://www.scopeinsight.com/>

³⁰<https://www.tonysopenchain.com/>

with a manager at Tony's Chocolonely. This interview concentrates on obtaining information about Tony's Chocolonely in general, the activities and responsibilities in the IP4ESET process that proceed from the assessment phase and the prioritisation of improvement actions. The Assurance Report contains a list of measured KPIs related to the three pillars as described in the previous section. PwC³¹ provides assurance on the measurements, however they do not actually measure these KPIs. This is done by the monitor systems of Tony's Chocolonely. For example, Tony's Chocolonely wants to know how many farmers supply them with cocoa every year. This is done by checking their 'Beantracker' system and the number of deliveries per farmer. The Open Chain Platform is an open source collaboration and knowledge sharing platform that functions as a guidance for allies on how to achieve and adopt the five sourcing principles. Tony's Open Chain consists of the five sourcing principles that all need to be implemented to make the cocoa chain more equally divided and to make sure cocoa farmers can earn a living income. Tony's Open Chain is open for all chocolate making organisations to implement.

4.5.3 Case Study Process Analysis

Tony's Chocolonely reporting method consists of *data collection*, *data estimation* where measured data is unavailable, *data quality scoring*, *monitoring frequency* (BIA annually) and *reporting in the annual FIAR report*. The latter report describes the operations and financial results of Tony's Chocolonely. They are a **mission-driven social impact organisation** and as mentioned before **their strategy, goals and actions** are in line with their mission (**Case4.1-4.3**). In order to identify the impact of the activities in the supply chain **KPIs are defined, measured and observed** (**Case4.4, 4.5, 4.8**) through measuring systems. For each KPI, there is a responsible team, who is in charge of reporting and documentation of an assigned KPI. For example, Tony's Chocolonely keeps track of the progress of their road-map throughout the year to; a) identify what is going well, b) to identify gaps and c) to determine improvement areas. These KPIs are mapped to GRI standards and are based on their three pillars (see section 4.5.1). Tony's Chocolonely uses the same indicators from one year to the next in order to compare their latest results with past performances. The audit firm PwC performs an audit once per year to check and fine-tune the KPIs. Every year Tony's Chocolonely **performs the BIA** (**Case4.6**) as a monitoring tool and for measuring their impact. However as mentioned before, it is not their main method used for performing an assessment. In order to improve on a yearly basis in accordance with the annual FAIR report, Tony's Chocolonely tries to identify what the gaps are in the current way of working and how to work on this in order to improve.

Accordingly, each year Tony's Chocolonely **conduct and receives input** from stakeholder groups, the key stakeholders in the supply chain through **surveys** (**Case4.7, 4.9**) on what they think are the main issues Tony's Chocolonely needs to work on. In Appendix D in section 4.5 a table can be found that illustrates these main issues and the method of contact. The input received from the stakeholders helps them to understand the issues they feel are important and increases their understanding of the impact they are making. These issues are **written down and plot in a matrix** (**Case4.10, 4.11**) as can be seen in Figure 35 to determine what needs to be prioritised in Tony's Chocolonely's day-to-day work. Moreover, it determines the main focus of the annual FAIR report. The interests of the stakeholder groups are weighted against the issues that Tony's Chocolonely considers to be important for the future of their organisation. The stakeholders' interests are weighted against Tony's Chocolonely interests in relation to each issue. As a result, stakeholder groups are involved in the determining the content of the annual FAIR report every year. In addition, **the annual FAIR report is made** (**Case4.12, 4.13**) in accordance with the GRI standards³². This means that this report is organised in the same way as other large chocolate organisations in the chocolate industry. Furthermore, Tony's Chocolonely is actively involved in understanding the chocolate industry they are engaged in, since the context surrounding this industry is the reason for their existence. Thus, to improve their understanding and interpretation of this context, Tony's Chocolonely engages in discussions with parties at each stage of the chocolate supply chain. As a result, they acquire a lot of knowledge regarding each stakeholder group and activities in the supply chain. This is needed to be able to reach their mission of *100% slave-free chocolate* by identifying improvement actions needed to restructure the supply chain in a *fair system*. Moreover, they attend conferences, read research reports and conduct their own research.

The issues in the top-right quadrant of the matrix are important to both the stakeholder groups and Tony's Chocolonely. The *welfare of the farmers* and *structural change in the cocoa industry* are both in the top-right quadrant. Additionally, the welfare of the cocoa farmers includes the *welfare of their families* as well. Here, a higher income and the prevention of forced and illegal child labour play an essential role. *Environmental impact*: The need to protect the environment and mitigate impacts of climate change that

³¹<https://www.pwc.com/gx/en/>

³²<https://www.globalreporting.org/standards/> and shared internally as well as externally

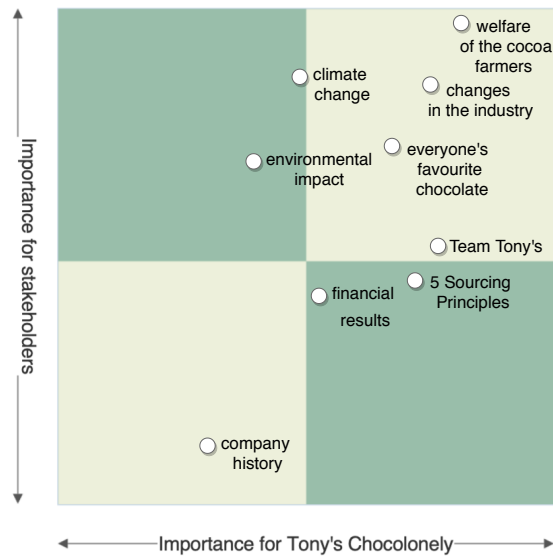


Figure 35. Issue matrix Tony's Chocolonely

affect farmers and their families are central here. *Everyone's favourite chocolate*: This issue includes aspects such as new flavours, product development, the product range and product quality. There are a couple of things that Tony's Chocolonely considers to be important as well, which are not addressed by the stakeholder groups. First of all, the *5 Sourcing Principles*, which requires that all stakeholder groups in the supply chain assume responsibility, can also be applied by other organisations, the ultimate goal is to influence and change the entire industry. Secondly, *commercial success* and *financial results* are important in order to survive as an organisation. Also to be an example for other chocolate organisations.

4.5.4 Case Study Results

We specify the IP4ESET process, as it is carried out by Tony's Chocolonely, by interpreting the information as a result of analysing the documentation and interview results using a PDD. It must be noted that the activities that are denoted in *Italic* are not explicitly present in the analysed method and method documentation. However, in order to enhance the understanding of the method properly, we decide to add these to the model. Two PDDs are created: The first PDD provides an overview of six phases as part of the overall followed CI cycle by Tony's Chocolonely: Materiality assessment, General assessment, Supply chain analysis, Improvement planning, Implementation and documentation. It must be noted that the activity *Case4.6.Perform BIA* is modelled as an open activity, since their sub-activities are modelled in Figure 27 in section 4.3.4. As mentioned before, the BIA is another guideline used by Tony's Chocolonely for measuring their impact, however it is not their main method used for performing an assessment. Therefore, we decide to model this phase as 'General assessment'.

The IP4ESET process as it is carried out at Tony's Chocolonely is divided into three phases: Supply chain analysis, Improvement planning and Documentation. This process consists of six activities, and 23 concepts. A PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For instance, MATRIX is a result from the activity *Case4.10.Plot issues in matrix*. It must be noted that there are multiple roles involved in each of the three identified phases. Therefore, the roles in this diagram are omitted. In Appendix D, the matching activity and concept table can be found in section D.7.

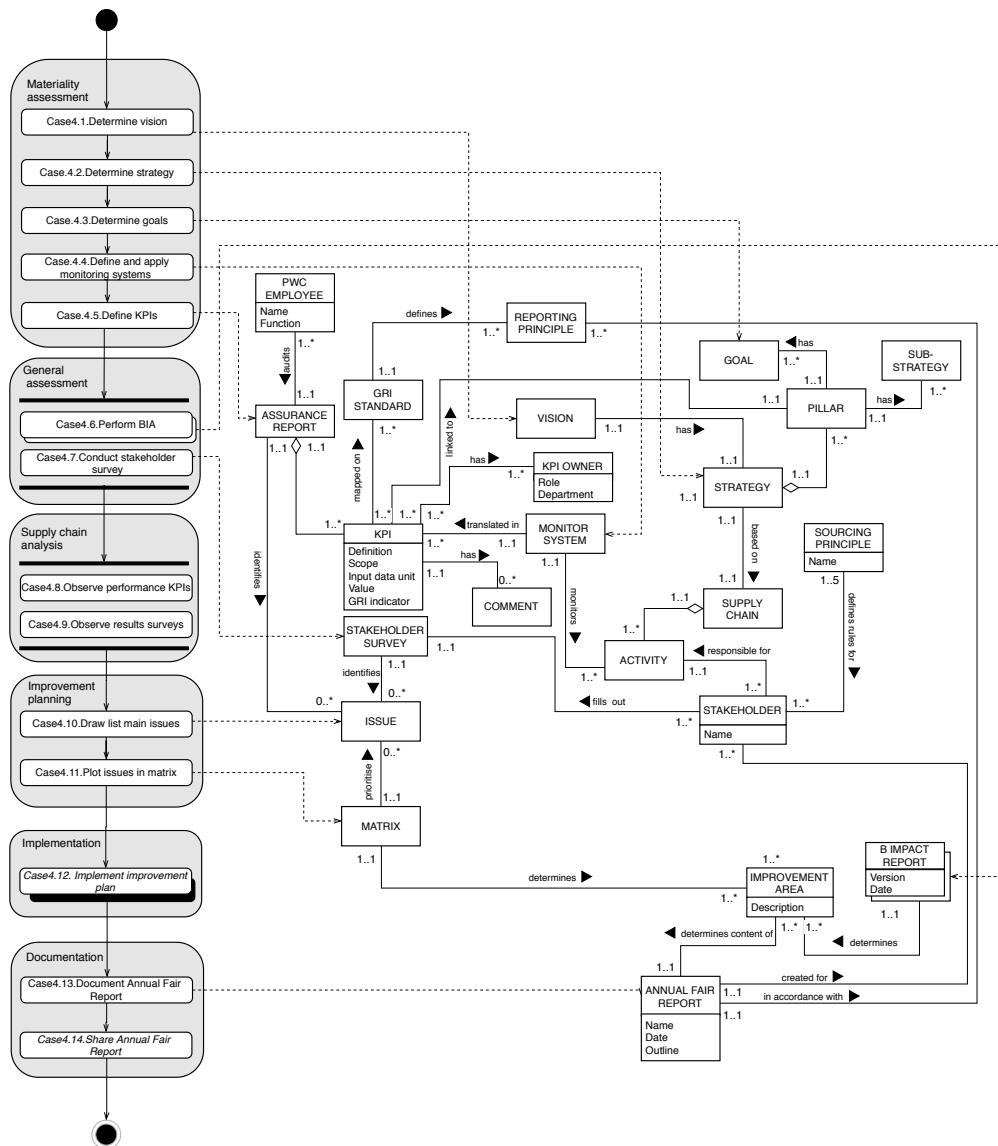


Figure 36. PDD of results case 4: Social, environmental and business ethics improvement cycle

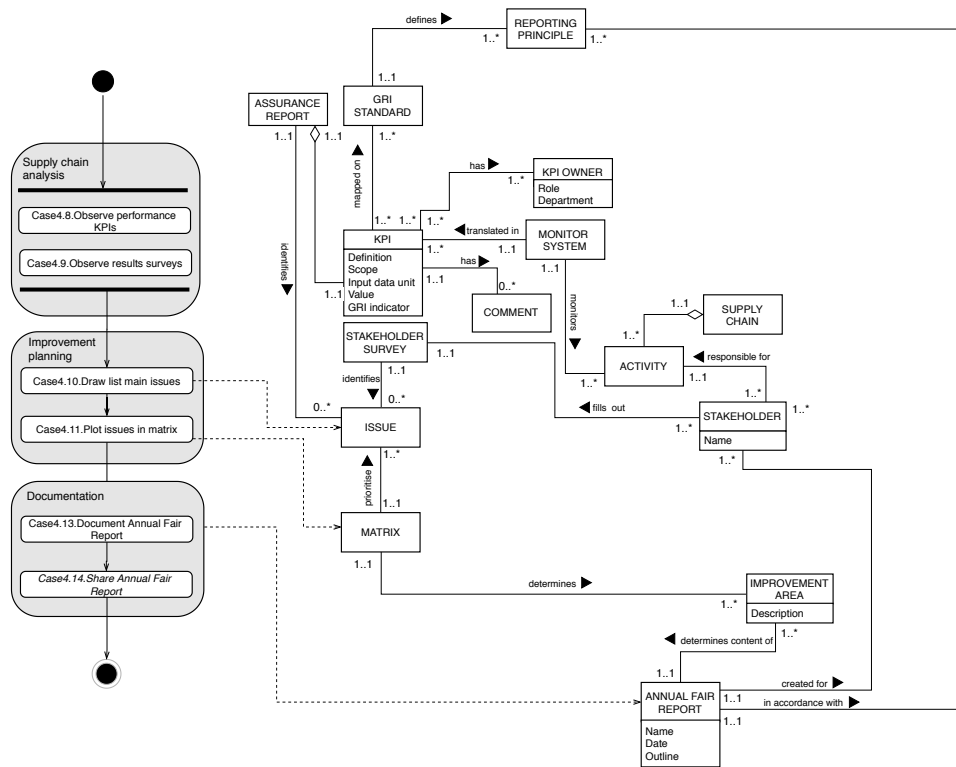


Figure 37. PDD of results case 4: Ethics, social and environmental improvement planning

4.5.5 Validity Issues

In order to make sure that the gathered information about the IP4ESET process at Tony's Chocolonely is valid, the research design addresses the same case study tactics as case 1, case 2 and case 3. Again, this case study performed at Tony's Chocolonely can be classified as a single-case study design as well, due to the use of no more than one source for the data collected from the case study. For this type of study, external validity is difficult to obtain. Internal validity of the design is irrelevant, since this case study has an exploratory focus. Yin [69] claims that external validity could be achieved from theoretical relationships, and from these generalisations could be made. Tony's Chocolonely follows among others the BIA method, which is method that is followed by other organisations in this network as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, size and sector, or at least organisations applying the same tool.

However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks and that uses different ESEA methods and other assessment tools. So, we do not aim to compare within networks.

Finally, the reliability of the case study is obtained by using a formal case study protocol and developing a case study database. In order to guarantee for construct validity, various sources of evidence were used to collect the data for the research; information was gathered from documentation, an interview and to some extent observations through information produced in the field. Unfortunately, we were not able to validate the PDD in Figure 36. The reliability of the case study is obtained by using a formal case study protocol and a case study database.

4.6 Case 5

In this section, we describe *case 5*, which contains an overview of the CI cycle and P4ESET process followed by Verstegen Spices & Sauces (Verstegen)³³, including the results and validity issues. In addition, the process of executing the case study is described in terms of how data is gathered and analysed. An interview is conducted with a director at Verstegen.

³³<https://verstegen.eu/>

4.6.1 Case Description

Verstegen is a family business since 1886 in the herbs and spices industry. They are proud of their unique and sustainable cooperation with local farmers in the countries of origin, where they find the best ingredients that form the basis for high quality herbs and spices. Hence, their mission is stated as follows: “*Verstegen wants everyone to enjoy responsible, healthy and, above all, tasty food. Anywhere in the world.*” The overall vision of Verstegen in accordance with their mission is: “*Verstegen Spices & Sauces wants to be a sustainable, technologically developed and self-sufficient organisation with the highest quality standards, which contributes to the well-being of people, society and our earth.*” Verstegen takes their responsibility to make the herbs and spices market more sustainable. The chain from farmer to consumer must be transparent, fair and sustainable for people, the environment and society. That is why Verstegen is constantly looking for ways in which they can have a positive impact on the world. For this, the UN Sustainable Development Goals, also known as SDGs are used. However, the director implies that the SDGs were not used to determine what is relevant for Verstegen, since they were already implementing sustainability practices. Therefore, they used these SDGs to compare them with what they were already doing and what SDGs are related to this. Hence, of these 17 SDGs, Verstegen focuses on the following five goals that are in line with their mission and vision:

- No poverty
- No hunger
- Good health
- Responsible consumption
- Climate action

Sustainability management is one of the core aspects of Verstegen Spices & Sauces. Verstegen believes it is important to learn from other organisations and to encourage them to do engage in a more sustainable business. Collaboration is of great importance, since Verstegen is involved in a supply chain from farmer to consumer involving multiple stakeholders. Real impact is created by working together with all stakeholders involved. For example, Verstegen is a partner of MVO Nederland³⁴ and the Sustainable Spice (SSI) Initiative³⁵.

There are two important themes that are central to Verstegen. One of the themes is a CO₂ neutral organisation. CO₂ emissions are an important cause of climate change, which is one of the five focused SDGs of Verstegen. To achieve a CO₂-neutral organisation, CO₂ emissions must be reduced by making the process more sustainable by compensating emissions. Verstegen has started a CO₂ compensation project in collaboration with CO₂ Operate B.V.; a) Verstegen uses trucks with Euro 5 or 6 engines, b) at the Rotterdam head office there is LED lighting with presence sensors, heat recovery systems, c) Verstegen is aiming at a paperless working environment and d) the electricity consumed is product by wind and the sun. For example, Verstegen has their own windmill and one roof is covered with 876 solar panels. By generating green electricity, hardly any polluting substances are released. The second theme is concerned with placing the herb and spice farmer in the centre of the chain and encouraging entrepreneurship. The focus will be on a better negotiating position of the farmer and a good income, also for future generations. The director states that the first theme is easy; a) you can measure your CO₂ emission relatively easy, b) you could make nice charts and c) see where high emission is located and what has the most impact.

As can be seen in Figure 38 on page 72, there are three type of stakeholder groups collaborating with Verstegen; internal stakeholder, external stakeholders and NGOs. Verstegen employees are involved in various ways with Verstegen’s CSR policy; presentations during the work meeting, articles in the monthly internal newsletter, internal sounding board group meetings, where policy and sustainable actions are tested and sustainable lunches. The external stakeholder are the customers of Verstegen, which are involved in conversation about sustainability and knowledge is shared with them. NGOs know better than anyone what is going on in the field of sustainable issues. For example, Fairfood³⁶ knows a lot about living income and wage in relation to the supply chains of raw materials for the food industry. Verstegen works together with this organisation on making the supply chains more transparent. The International Cocoa Organisation ICCO³⁷ is an NGO specialised in making the agricultural sector sustainable in developing countries. Together with this NGO, Verstegen works on the SpiceUp project, which is explained in more detail in section 4.6.3.

Verstegen has chosen for the CSR Performance Ladder³⁸ in the past in order to examine in which ways Verstegen meets certain criteria and standards. The CSR Performance Ladder allows for the continuous

³⁴<https://www.mvonderland.nl/>

³⁵<https://www.idhsustainabletrade.com/initiative/sustainable-spices-initiative/>

³⁶<https://fairfood.nl/>

³⁷<https://www.icco.org/>

³⁸<http://www.mvoprestatieladder.nl/en/what-is-csr-performance-ladder/>

development of 33 CSR indicators by means of a Management System and by deliberating with the stakeholders. This ensures doing business sustainability with a right balance between People, Planet and Profit. The CSR Performance Ladder is a Management System and certification standard for Corporate Social Responsibility. In order to address the outside world: *“It is useful to have somebody else saying that you are doing good.”* However, the CSR Performance Ladder is oriented to the Netherlands only. According to the director, there is a lack of international perspective within this CSR Performance Ladder. Therefore, Verstegen has used EcoVadis for the past two years. EcoVadis³⁹ is an international instrument of which you can get certain score based on sustainability criteria; there is a checklist and you can see how you perform relative to your competitors. EcoVadis measures seven management indicators (policies, endorsements, measures, certifications, coverage, reporting and 360 degrees watch findings) across 21 sustainability criteria grouped in four themes: *Environment, Ethics, Labour and Human Rights and Sustainability Procurement*. The results are published in a scorecard along with benchmarks, detailed feedback about strengths and improvement areas in each of the four themes. Verstegen primarily uses this assessment to document their practices and performances as a means of communication with externals.

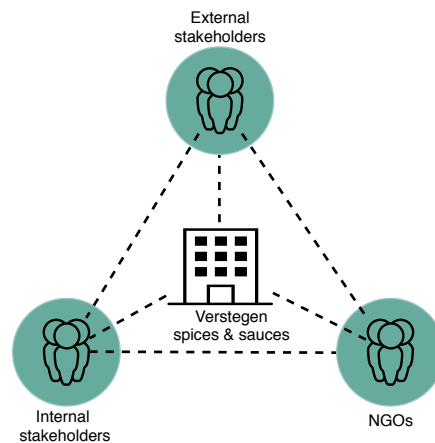


Figure 38. Stakeholder group involvement Verstegen

4.6.2 Case Study Data

The analysed data for the fourth case study includes the CSR Sustainability Report 2018⁴⁰ of Verstegen. In this report, the achievements of Verstegen regarding the five SDGs and central themes are described. Moreover, their expectations of 2019 are reported on. In addition, data is required from a semi-structured interview with a director of Verstegen. This interview concentrates on obtaining information general information about Verstegen, the activities and responsibilities in the IP4ESET process that proceed from the assessment phase and the prioritisation of improvement actions. Also, documentation about Verstegen, their partners, certificates and agreements are used in order to analysis and document the results of the IP4ESET phase.

4.6.3 Case Study Process Analysis

The CSR Sustainability Report 2018 describes the achievements and results of Verstegen in accordance with their **mission and vision (Case5.1, 5.2)**. As mentioned before, Verstegen has embraced **two themes (Case5.3)** and **works in terms of five SDGs (Case5.4)**. Hence, for Verstegen these elements indicate their focus for defining improvement actions. In order to receive information and insights about their supply chain, Verstegen **communicates with their stakeholders in the supply chain (Case5.6)** about sustainability policies. Moreover, **research is conducted (Case5.7)** by internal stakeholders or NGO's commissioned by Verstegen about CSR topics related to the SDGs. These are used as input for defining improvements actions. Internally, Verstegen employs CSR ambassadors who are **responsible for reporting on practical topics (case 5.11)** linked to the chosen SDGs. For example, this could be a specific stakeholder or a topic like “waste separation and production”. However, the data collection and knowledge sharing for these topics is an ad hoc process, meaning that there is no format used for this process. Also, Verstegen is very active in networks to gain knowledge and insights in how others address the same type of issues from a different point of view. For example the director indicates that: *“We are an*

³⁹<https://www.ecovadis.com/>

⁴⁰<https://algemeen.verstegen.eu/wp-content/uploads/sites/8/2019/12/MVO-Jaarverslag-2018.pdf>

active member of the Sustainable Science Institute⁴¹ and this is a network where I am currently promoting the action against child labour. This is a topic that you have to address in the supply chain.” The director emphasises the importance of SDG17 that encourages a sustainable development knowledge platform. As mentioned before, Verstegen uses **EcoVadis (Case5.5)** to detect in which way certain criteria and standards are met. However, the director explains that, since they are a family organisation they would sooner look at their own ambitions than being lead by a checklist. Furthermore, as the director explains: “We also know what we stand for and where we have impact now we have chosen the five SDGs that suit us.”

Verstegen signed an IRBC Agreement for the food products sector in 2018. This means that parties in this sector and the supply chain must work together on the IRBC Agreement for the food products sector important CSR issues. Verstegen is a member of “De Koninklijke Nederlandse Specerijenvereniging” (KNSV), which is a party within the IRBC Agreement for the food products. The aim of this covenant is primarily for spice organisations **to identify CSR risks in their international chains (Case5.8)** and to make an effort in reducing these risks. This process is called due diligence. In anticipation of this IMVO covenant, KNSV members Verstegen Spices & Sauces, Epos and P. Visser & Zoon took the initiative to map the risks of child labour in a number of spice chains, namely cumin from Turkey, cardamom from Guatemala and turmeric from India. Part of this initiative was the development of a Due Diligence Toolkit for Responsible Business Conduct. This toolkit consists of two modules; a) one module of this toolkit describes how organisations can introduce due diligence in their business operations and b) a module is specifically about the prevention of child labour in spice supply chains.

According to the director there are problems concerning IP4ESET. As mentioned before, Verstegen embraces 2 important themes: CO₂ negativity and the farmer as an entrepreneurial partner. The first one is relatively easy to measure, since you can measure your CO₂ emission, processing this data and information in charts. All this can be used to indicate where the emission and impact are located. This is specific information on which, according to the director, **specific targets and actions can be formulated (Case5.9, 5.10)**. However, the second theme is relatively complex, leading to subjects such as a living income: “How do you define a living income and how can we contribute”. This is a really difficult thing to measure according to the director and hence to determine specific targets. Verstegen uses programs about blockchain, Spice Up and agroforestry to improve on the complexity of this theme. By means of *blockchain technology*, Verstegen intends to make the chain from farmer to consumer fair, transparent and sustainable. With this blockchain technology a fair distribution and good cooperation is ensured. The interest of the farmer plays an important role in the investment of future generations. Verstegen wants to contribute to a better income for farmers; if the farmer has no money for planting new trees, both the quality and the supply will decrease.

SpiceUp is a so-called consortium, consisting of eight Dutch and Indonesian partners. Verstegen is in charge of this. With SpiceUp, geo-information is made available to support 100,000 pepper farmers in Indonesia. This information is used to improve the quality and quantity of pepper production. This improvement ultimately contributes to a viable income, food security and optimises the consumption of water and fertiliser. The pepper farmers in Indonesia receive geo-information through a SMS or mobile application. This information contains advice on drought, irrigation, fertilisation and the optimisation of professional agricultural techniques. The advice is also supplemented with market information. With SpiceUp, it is expected that there will be less local poverty and greater resilience of farmers, both in connection with climate change and with a higher income.

Agroforestry is a sustainable agricultural system that is officially called “regenerative agroforestry”. With this system, different crops absorb CO₂ from the air on the same piece of land. In addition to the CO₂ intake, this agricultural method also yields more biodiversity, higher returns for farmers, healthier plants, better harvest quality and better soil conditions. Verstegen wants to leave the world better for the next generation by increasing agricultural productivity, strengthening biodiversity and combating climate change. Agroforestry is applied by planting different crops in several layers. The bottom layer are vegetables and herbs, such as ginger and turmeric. The middle layer consists of shrubs with spices, such as white pepper, berries and fruits. The top layer consists of trees including fruit and nuts. This means that pesticides and fertilisers are superfluous and are therefore not used. It also contributes to CO₂ absorption from the air.

Verstegen is convinced that the business approach they conduct will pay off in the long term, however it is difficult to say what that is. They are not financially driven, so in that sense, sometimes you have to accept that what you do does not have measurable benefits in the short term. The following **improvements** have been carried out by Verstegen per SDG (see Table 17) **are documented and shared (Case5.12, 5.13)** through the CSR report. For the future, there are a number of questions that Verstegen wants to provide an answer to. First of all, how Verstegen is going to give an interpretation to

⁴¹<https://www.sustainablesocieties.org/>

the concept of transparency is not yet clear. Issues such as “*what exactly do you want to know*”, “*how do you record and measure that*” and “*how does this fit in with the privacy law?*”, needs to be answered.

Indicator	SDG	Improvement action(s)
1	No poverty	Living Wage Lab initiative to analyse the living income of farmers Training program to teach farmers the principles of Good Agricultural Practices
2	No hunger	An agroforestry developer is hired to investigate how products can be purchased from local farmers in a more sustainable way
3	Good health	Healthy food policy
12	Responsible consumption	Sustainable procurement policy Spicy-Up project Blockchain IREC Agreement (food products sector)
13	Climate action	Wind energy Solar panels Led lights Compensate CO ₂ emission

Table 17: List of improvement action(s) per SDG

4.6.4 Case Study Results

We specify the IP4ESET process, as it is carried out by Verstegen, by interpreting the information as a result of analysing the documentation and interview results using a PDD. It must be noted that the attributes and activities that are denoted in *Italic* are not explicitly present in the analysed method and method documentation. However, in order to enhance the understanding of the method properly, we decide to add these to the model. Two PDDs are created that provide an overview of the IP cycle as followed at Verstegen. The first PDD provides an overview of six phases: Materiality assessment, General assessment, Supply chain analysis, Improvement planning, Implementation and Documentation. It must be noted that the activity *Case4.6.Perform EcoVadis* is modelled as a closed activity, since their sub-activities are unknown due to the fact that we do not have access to this tool. As mentioned before, Verstegen uses EcoVadis as a guideline for measuring their impact, however this assessment is mainly used to document their practices and performances as a means of communication with externals. Therefore, we decide to model this phase as ‘General assessment’.

The IP4ESET process as it is carried out at Verstegen is divided into two phases: Improvement planning and Documentation. This process consists of five activities, and 20 concepts. In Figure 40, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For example, DUE DILIGENCE TOOLKIT is a result from the activity *Case5.8.Identify CSR risks in supply chain*. The director is responsible for the entire IP4ESET process. The roles in this diagram are omitted, since there are multiple roles involved in each of the three identified phases. In Appendix D, the matching activity and concept table can be found in section D.8.1.

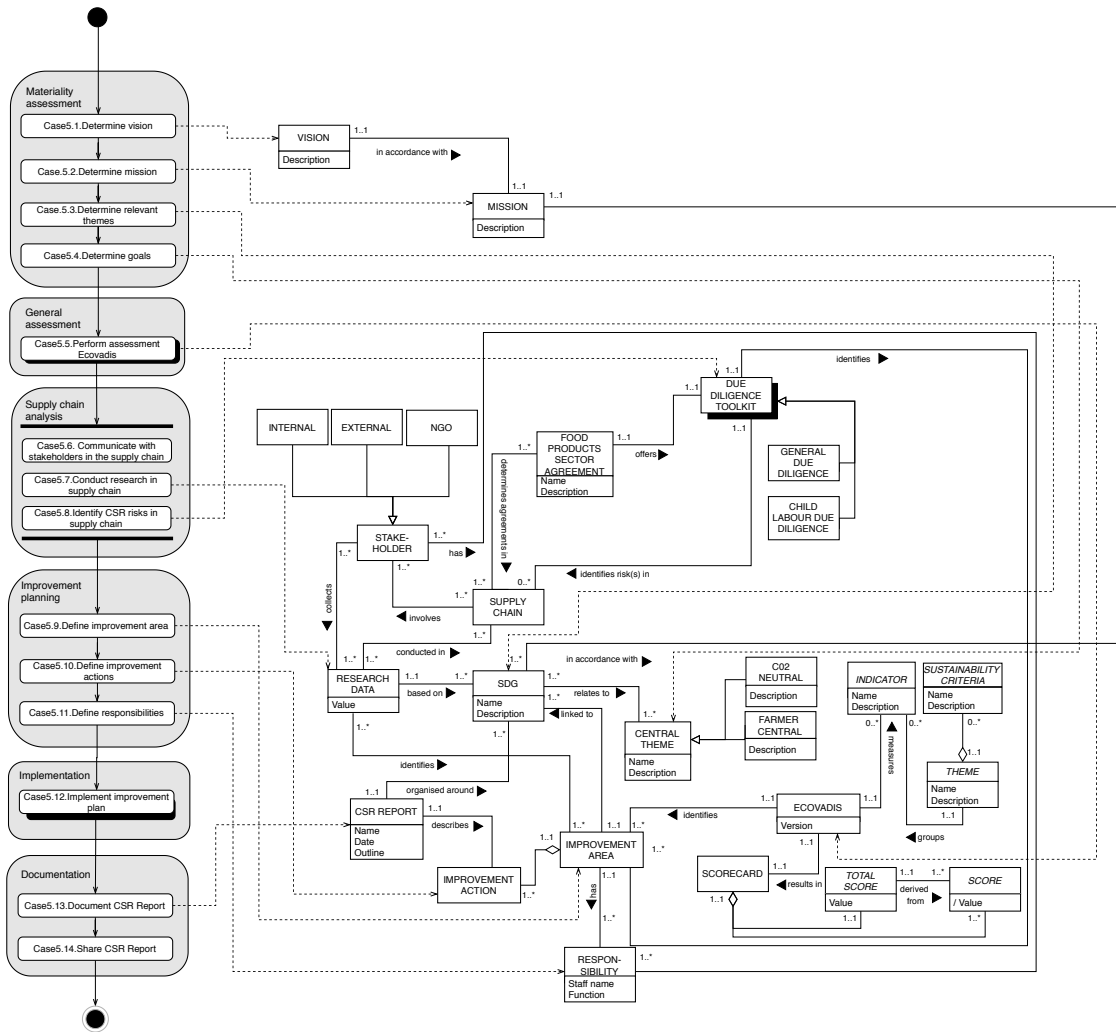


Figure 39. PDD of results case 5: Social, environmental and business ethics improvement cycle

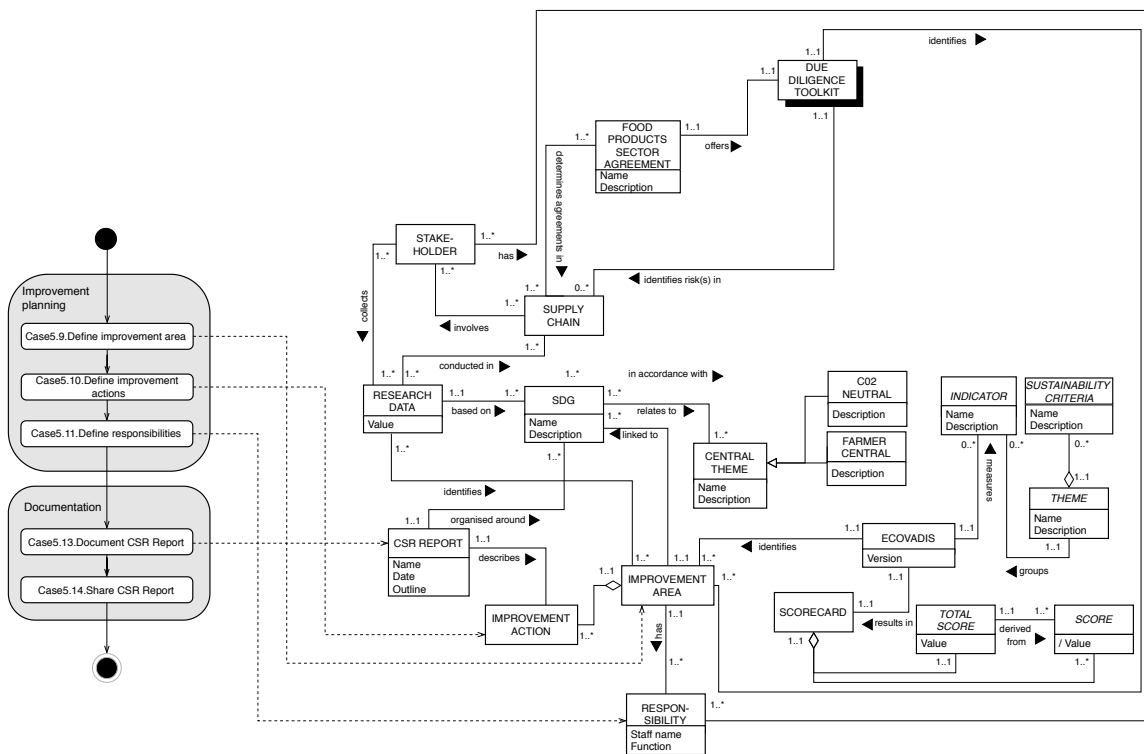


Figure 40. PDD of results case 5: Ethics, social and environmental improvement planning

4.6.5 Validity Issues

In order to make sure that the gathered information about the IP4ESET process at Verstegen is valid, the research design addresses the same case study tactics as case 1, case 2, case 3 and case 4. The case study that was performed at Verstegen can be classified as a single-case study design as well. For this type of study, external validity is difficult to obtain. In this study, internal validity of the design is irrelevant, due to its exploratory focus. Yin [69] claims that external validity could be achieved from theoretical relationships, and from these generalisations could be made. Verstegen uses EcoVadis to identify improvement areas, which is method that is followed by other organisations as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations using this method of the same size and sector.

However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Moreover, Verstegen as mentioned before is focused on their own mission and vision statement and uses EcoVadis mainly to communicate performance with externals. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks and that uses different ESEA methods and other assessment tools. So, we do not aim to compare within networks.

In order to guarantee for construct validity, various sources of evidence were used to collect the data for the research; information was gathered from documentation, an interview and to some extent observations through information produced in the field. To discover whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. Unfortunately, we were not able to validate the full PDD in Figure 39. Hence, only the process part of this PDD is validated by the interviewed Director. The reliability of the case study is obtained by using a formal case study protocol and a case study database.

4.7 Case 6

This section contains a description of *case 6*, which provides an overview of the CI cycle and P4ESET process followed by Utrecht University (UU), including the results and validity issues. In addition, the process of executing the case study is described in terms of how data is gathered and analysed. An interview is conducted with a project manager at UU.

4.7.1 Case Description

Sustainability is an important concept for University of Utrecht regarding their main tasks and business operations. The university wants to contribute through this aspect through education and research: “*Utrecht University is working on a better world.*” This is the first sentence of the mission of the university. The transition to a sustainable society has become one of their main challenges and hence UU wants to be an “agent of change” in the transition to a sustainable society. As a public institution with an educational and research task, the university has the resources to fulfil this role. The university wants to contribute to a sustainable society through their own business operations to improve the social and environmental impact of the organisation. Moreover, to encourage students, employees, regional partners and suppliers to become part of the transition to a more sustainable society. The sustainability ambitions are documented in the following strategic documents from the university; a) Strategic Plan 2016-2020, b) CO2 Strategy 2016-2020, c) Integrated Energy Strategy, d) Note Future-proof Buildings and e) Sustainability Program Plan 2019-2022. In the end, what is reported on in the first edition of the Sustainable Report of 2018, is interconnected with many different domains of the university and therefore different business documents. The University chooses to apply GRI standards to report in a reliable, uniform and professional manner on the economic, social and ecological impact of the university. The following eight themes are selected from an analysis with stakeholder groups, which are depicted in Figure 41:

1. Sustainability in Education & Research
2. Connection Education, Research and Management (Living Lab)
3. Energy and Emissions
4. Future Proof Buildings
5. Green Campus
6. Mobility
7. Catering
8. Sustainable Awareness

Hence, in accordance with the GRI guidelines and on the basis of eight themes, the university monitors their own sustainability ambitions and performance. The university has developed indicators (KPIs) for each theme to monitor this progress. The project manager emphasises that the university has to monitor the sustainability performance more extensively and structurally. In this way the organisation can account internally and externally and keep track of whether sustainability goals are being achieved. Within the context of sustainability, the university is working on integrating the following three roles: research, education and management. The aim is for the university to function as a single Living Lab where researchers, students and managers work together on solutions for a sustainable campus and society. As mentioned before, this is one of their selected themes.

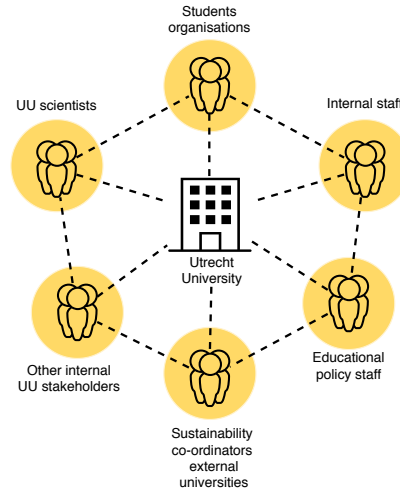


Figure 41. Stakeholder group involvement Utrecht University

4.7.2 Case Study Data

The analysed data for the fourth case study includes the Sustainability Report 2018 of UU. This form of non-financial reporting provides an integral picture of the sustainability activities of the university; a) important milestones achieved in 2018 and b) plans for 2019. The Sustainability Report 2018 consists of three parts:

1. **A digital sustainability report 2018**⁴²: This Online Magazine offers an overview of the sustainability efforts of 2018. With an info-graphic, background articles and a series of "highlights", the magazine is a compact overview of results achieved in the past year.
2. **A CO₂ footprint 2018**⁴³: The CO₂ footprint measures how much CO₂ the university emits annually and whether this amount has increased or decreased compared to previous years. The footprint is part of the online magazine.
3. **A GRI reporting**: According to the GRI guidelines and on the basis of eight themes, the university monitors their sustainability ambitions and performance

Each chapter starts with an introduction to the theme and what UU aims to achieve with that theme. For each theme, KPIs are defined. This report is used as a monitoring dashboard that enables managers and employees to manage results more effectively. For external stakeholders, it is a way to see how the university is currently performing and their future ambitions. This report is written in accordance with the guidelines of the GRI, a globally accepted and widely used method for organisations to report on sustainability. The university chooses to apply GRI to report in a reliable, uniform and professional manner on the economic, social and ecological impact that UU makes. However, the GRI rapport is not publicly available.

Finally, data is required from a semi-structured interview with a project manager at the University of Utrecht. This interview concentrates on obtaining general information about UU, the overall followed CI cycle and the activities related to IP4ESET, followed by and responsibilities in the IP4ESET process that proceed from the materiality analysis and the prioritisation of improvement actions. The analysis of these document already gave us some impressions and ideas about how the IP4ESET process is carried out at UU.

⁴²<https://www.uu.nl/organisatie/duurzaamheidsjaarverslag>

⁴³<https://www.uu.nl/organisatie/duurzaamheidsjaarverslag/co2-footprint-2018>

4.7.3 Case Study Process Analysis

In 2018, UU has carried out a *materiality analysis* in line with the GRI Standards, with the aim of selecting sustainability themes for reporting. Based on 11 **interviews** with stakeholders from education, research (**Case6.2**) and management, and a **survey (Case6.3)** sent to 350 both internal and external stakeholder groups. For the interviews and the survey, a prior selection was made to **determine the relevant stakeholders (Case6.1)**, in order to set a good representation baseline of internal and external target groups, who from their position are involved in the sustainability policy of UU and/or have expertise about sustainability in organisations. As mentioned before, these stakeholder groups are depicted in Figure 41.

UU reports quantitatively on the most material topics that were chosen as relevant. These were selected based on the results of the interviews and surveys with both internal and external stakeholder groups. This led to **7 highest scoring themes that were selected in 2018 (Case6.4)**. In addition, the Sustainability Program has chosen, based on existing guidance and monitoring, to include the topics "Sustainable Mobility" and "Connection Education, Research and Operations" as the most material. The selection of indicators (KPIs) are based on one-to-one conversations with a project manager and the person who has the assigned responsibility for this KPI. The project manager has an overview of the indicators and who is responsible. In addition, the project manager ensures that these people provide information through figures and an explanation related to a specific KPI: "*This year, I have re-organised this process in a structured by selecting theme owners who will be responsible per indicator.*" So, for each theme **KPIs are determined (Case6.5)**. In addition, for each determined KPIs **a vision and goal(s) are determined (Case6.6, 6.7)** by its responsible owners. For instance, in the case of the theme "mobility" and in specific about an electric vehicle fleet: "*I have a discussion with the person who is in charge of the university fleet and subsequently I am going to determine if there are already goals set for 2019/2020, since all contracts expire so we want to replace everything with electric cars.*" At this moment, it is written down how many cars there are at this moment and how many of them are now electric. After a year, the same will be **reported and data will be controlled and documented (Case6.8-6.10)**. However, this is an ad hoc process and according to the project manager, there are no uniform processes in place, since the selected themes require highly diverse process throughout the university and the faculties, departments and research groups. Likewise, different subjects are based on different levels.

For CO₂ there has been a CO₂ footprint since 2014, there is a CO₂ strategy and there is an energy strategy. For these topics, goals and a vision are set. However, for other themes within the university, there is no vision at all. For instance, the university wants to be CO₂ neutral in 2030 including 100% striving 100% local and renewable generation. This is clear, but in order to translate this into the **right actions to achieve that goal (Case6.11)**, is where a huge gap arises. The project manager indicates that it is relatively easy to set such a future goal, however it does not immediately involve specific actions. In the case of a fleet, it is fairly clear that lease contracts, for example, will expire in 2019/2020. This indicates that these can be replaced, that is a way of planning. With catering, you can say that you notice that there is still too much meat purchase and not enough vegetarian options. However, if there is a contract that ends in 2020, this could be a bottleneck.

In addition, *how to prioritise improvement actions* is unclear. Therefore, the project manager emphasises that a tool for prioritising improvement actions is generally needed and valuable for UU. This process of non-financial reporting provides an integral picture of the sustainability activities of the university in terms of important milestones achieved in 2018 and plans for 2019. This is **documented in an sustainability plan (Case6.12)** and **shared on the website (Case6.13)** of UU.

4.7.4 Case Study Results

We specify the IP4ESET process, as it is carried out by UU, by interpreting the information as a result of analysing the documentation and interview results using a PDD. In this results section, two PDDs are created. The first one is an overview of the IP cycle as followed by UU. The results of this are illustrated in Figure 42 and consist of five phases: GRI materiality assessment, KPI analysis, Improvement action, Documentation and Implementation.

Secondly, the IP4ESET processes (see Figure 43) as it is carried out at UU is divided into two phases: Improvement action and Documentation. This process consists of three activities, and 14 concepts. In Figure 43, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). For instance, IMPROVEMENT ACTION is a result from the activity *Case6.11.Determine improvement actions*. For each phase, roles are added, which describe the actor(s) that carry out the activities. Roles in the IP4ESET process are: Project-manager, KPI owner and Department. In Appendix D, the matching activity and concept table can be found in section D.9.1.

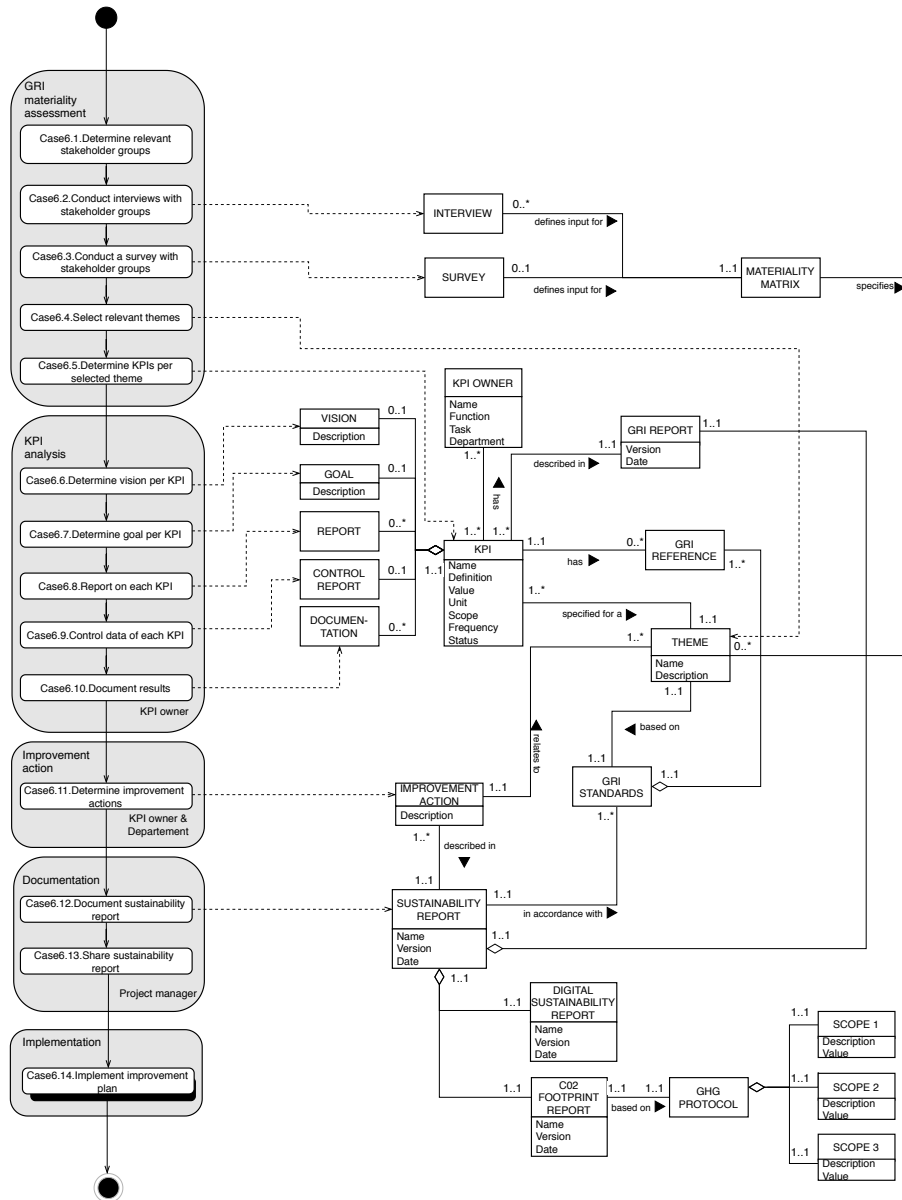


Figure 42. PDD of results case 6: Social, environmental and business ethics improvement cycle

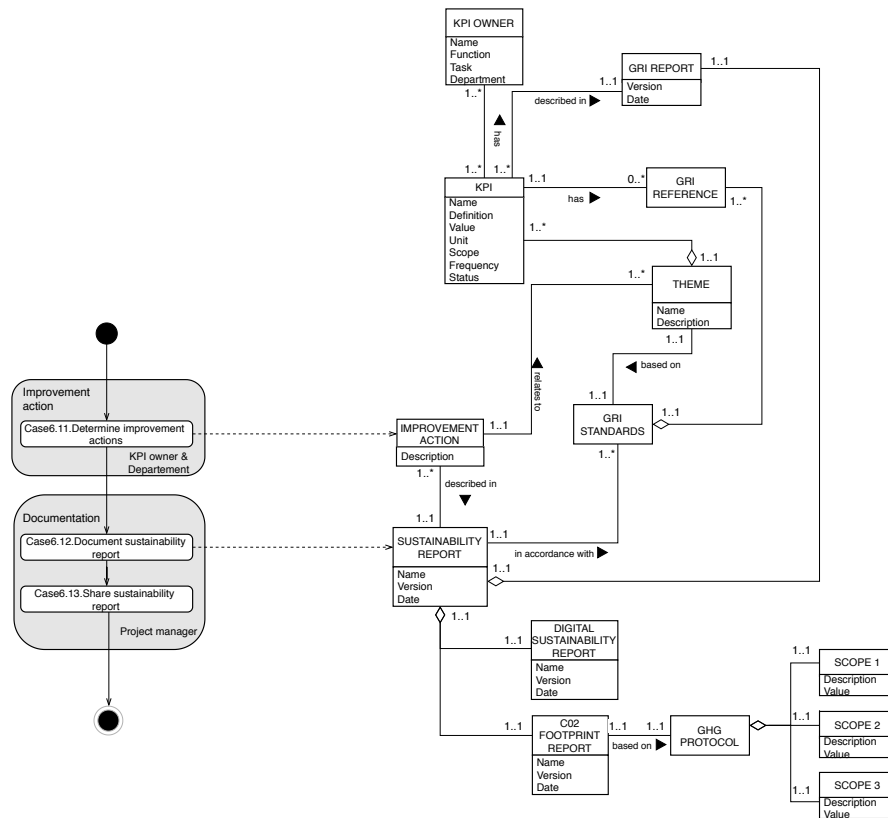


Figure 43. PDD of results case 6: Ethics, social and environmental improvement planning

4.7.5 Validity Issues

In order to make sure that the gathered information about the IP4ESET process at UU is valid, the research design addresses the same case study tactics as case 1 till case 5. The case study that was performed at the university can be classified as a single-case study design as well, since there is no more than one source for the data collected from the case study. For this type of study, external validity is difficult to obtain. The university uses among others the GRI standards, which is method that is followed by other organisations in this network as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, size and sector, or at least organisations applying the same tool. However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks. So, we do not aim to compare within networks. Therefore, generalisation does not apply to other networks. Internal validity of the design is irrelevant, since this case study has an exploratory focus.

In order to guarantee for construct validity, various sources of evidence were used to collect the data for the research; information was gathered from documentation, an interview and to some extent observations through information produced in the field. Hence, to find out whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. In this research, only the process part of the PDD in Figure 42 is validated by the project manager. Finally, the reliability of the case study is obtained by using a formal case study protocol and developing a case study database.

4.8 Case 7

This section contains a description of case 7, resulting in an overview of the CI cycle and P4ESET process followed by Hotel Voramar⁴⁴, including the results and validity issues. In addition, the process of executing the case study is described in terms of how data is gathered and analysed. Voramar is part of the ECG and hence, uses the Common Good Balance Sheet for measuring their social and environmental performance. A more detailed description of this method can be found in section 4.4.2. The information shown in

⁴⁴<https://www.voramarnet/>

this section has been obtained from the Common Good Report prepared in 2015 by the Hotel Voramar, extracting the most significant information for the objectives of this research. This document has been audited in 2019. In addition, an interview is conducted with a manager of the Voramar group called Raco Voramar SRL.

4.8.1 Case Description

Hotel Voramar is located on the Pilar Coloma Promenade in Benicasim and was built in 1930 as a restaurant and bathhouse by Juan Pallarés Picón, the great-grandfather of the current manager. Since then, it has transitioned from bathhouse to a restaurant. Currently it is used as a hotel. Voramar is an organisation called Raco Voramar SRL and has 3 shareholders; the director Juan Pallarés Dols, the brother of the director and Ana Dols Moreno. The current director of the Hotel, Rafel Pallarés Dols, maintains a policy of continuous improvement. By becoming aware of the impact tourism has on the environment and community, Voramar focuses on improving on sustainability performance and as mentioned before uses the method provided by the EGC to measure their performances. As indicated by the manager of Voramar, they have been defining themselves as an organisation committed to society and the well-being of their customers since 1930. The values that guide Voramar's daily activities, both internally and externally, are as follows:

- *Orientation to people:* stakeholders are the main assets for Voramar. In Figure 44 the stakeholder groups are depicted. Therefore, the aim of building a transparent organisation is central, in which each and every one of their stakeholders feel part by incorporating needs proposed by each one of them
- *Leadership and the continuous search for innovation:* Voramar tries to lead actions that add value in the society and allow them to set an example to other organisations in the tourism sector, thus promoting growth and differentiation in the provision of each of our services
- *Commitment:* Being responsible for their results, trying to adopt efficient and responsible management practices that allow Voramar to develop their activity guaranteeing human rights, equal opportunities, transparency and non-corruption, solidarity, social justice and protection of the environment in order to ensure sustainable development

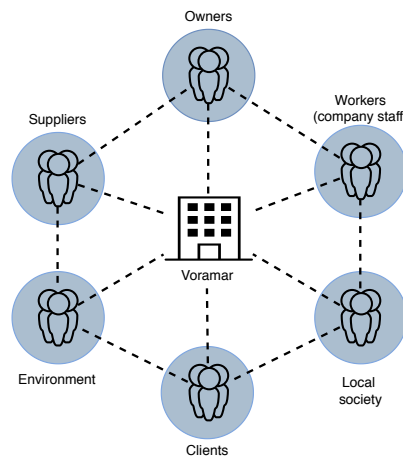


Figure 44. Stakeholder group involvement Voramar

The mission of Voramar is “to contribute to the well-being of all people by offering accommodation and catering services aiming at high quality, efficiency and sustainability.” The main interest is that Voramar is a pleasant, warm place and in general, a refuge for all people who wish to visit us. To provide sensations; to inspire moments of joy and happiness among friends, families and co-workers and to create values; values of respect and commitment that can serve as an example and help to create healthy and responsible organisations. The vision of Voramar is “to compensate our clients, our team, our suppliers, shareholders and society in general for their trust and time.” Hence, their businesses is to offer excellent service in all areas and they make it possible through a fully committed and integrated team. Voramar is based on respect for culture, people, the environment or the local economy itself and, for this reason, they consider themselves to be the fundamental basis that have been sustaining Hotel Voramar since their foundation. In fact, the organisation believes that they have managed to develop a philosophy that allows the growth and sustainability of their environment. This philosophy has created an awareness

that the organisation has a duty to act on the social and environmental problems that currently exist. Their activities focuses on accommodation and catering services divided in: Hotel Voramar, Restaurant Voramar, Cafeteria Voramar, Cafeteria Torreón, Events and Catering. In each of these services a series of priority sustainability criteria are integrated:

- Compliance with all legal requirements and voluntary commitments to ensure sustainable development and the well-being of their clients
- The promotion of the values of respect, equality and unity in their work team to ensure a healthy work environment
- Choosing local suppliers that guarantee more sustainable and quality products and services, compatible with their principles of sustainability
- Responsibility for their results, always acting for the benefit of the common good
- The adoption of criteria of sufficiency in all their activities, which guarantee a sustainable use and consumption of resources in time
- The incorporation of environmental plans that allow the organisation to reduce their carbon footprint
- The daily effort to set an example, educating and raising awareness among their customers, their suppliers and their staff of the importance of protecting and respecting natural resources
- Leadership in the sector and the constant search for innovative and creative strategies that guarantee business development continuous
- Active communication and transparency in their results, as well as the integration of the recommendations and concerns suggested by all the interest groups that may be affected by their activities

For all of the above reasons, in 2015 they began implementing a Strategic Sustainability Plan, which was based on ECG's fundamental principles and which was in the same line with those of the organisation. With this plan they wanted to minimise the possible negative environmental, social and economic impacts of their activity and will guarantee sustainable development at all levels. As mentioned before, ECG promotes an ethical model of the economy. This model is based on five principles that should be implicit in the management of all enterprises; a) to guarantee human dignity in each of the activities carried out by an organisation, including all those related to the ethical management of suppliers, shareholders, employees, customers and, in general, all persons likely to be affected by the organisation's activity, b) promote solidarity between organisations, to prioritise cooperation over competition and to encourage unity in order to build a fair market c) to assume responsibility for the results of the organisations and to establish a firm commitment to act ethically for the benefit of the common good d) to inform all interest groups in a transparent manner and e) to protect natural resources, adopting organisation policies of sufficiency and efficient management of the use and consumption of these resources and to stop the negative effects on the environment, guaranteeing its conservation and availability for future generations.

Through the Sustainability Plan, Voramar has determined five guidelines that will allow them to improve their sustainability development over the years: Reduction of energy consumption and the use and consumption of natural resources, minimising waste generation, reducing carbon footprint and committing with their society. This sustainability policy provides the framework for establishing and reviewing the sustainability objectives and goals assumed by Hotel Voramar. The philosophy of the Hotel Voramar has many similarities with the ECG, these coincidences made them decide to carry out the CGBS. The Hotel Voramar decided voluntarily to start with this in 2015, with the aim of achieving a continuous improvement over time. For this reason, after this first step, year after year they continue setting new objectives that allow them to develop their activity in a sustainable way.

4.8.2 Case Study Data

The analysed data for this case study consists of the Sustainability Plan⁴⁵ and the Common Good Report⁴⁶ as represented on their webpage. In this report the results achieved, referring to the year 2015, related to the indicators of the Balance of the Common Good are described in a voluntary and transparent manner. The objective of Hotel Voramar is to continuously improve over time, and for this reason, year after year new objectives and goals are established that allow them to develop activity in a sustainable manner. The CGM reflects the sustainability policies of Hotel Voramar, required to guarantee human dignity, solidarity and social justice, environmental sustainability, and transparency and co-determination with all their suppliers and clients. In addition, the KPI report describing the indicators that are measured and an example of an improvement plan for a stakeholder group. We were not able to gain access to these KPI reports and improvement plans, since these are not publicly available.

⁴⁵<https://www.voramar.net/wp-content/uploads/2015/09/plan-sostenibilidad.pdf>

⁴⁶https://www.voramar.net/app_voramar/dossier/dossierEBC2015.pdf

Finally, data is required from a semi-structured interview with the manager of the Voramar group. This interview concentrates on obtaining information general information about Hotel Voramar, their history, the activities and responsibilities in the IP process that follows after completing the CGBS and the prioritisation of improvement actions.

4.8.3 Case Study Process Analysis

Since 1930, Hotel Voramar has provided their accommodation and catering services **motivated by the mission and vision (Case7.1, 7.2)** of the organisation aimed at the well-being of their clients. Their work and the constant trust of their customers and suppliers throughout all these years has allowed Hotel Voramar to grow towards a consolidated and stable organisation. Respect for culture, for people, for the environment and for the local economy have been the pillars of the organisation philosophy and have strengthened a constant intention to make their development compatible with the sustainability of the planet. In 2015, Hotel Voramar started with **the creation of an improvement plan (Case7.3)** According to the manager, the owner wanted to do things differently in 2015. First of all, they started with the creation of a sustainability plan: *“We carried out and documented an Sustainability Plan, but we believe it was not enough.”* This sustainability plan was created without the involvement of stakeholder groups, meaning that it was carried out by the managers of Hotel Voramar. The content of this plan was related to the environment and focused on practices in order to reduce their carbon footprint. The manager indicates that prior to this plan the staff was involved in practices such as registering garbage. However, this was not enough according to Hotel Voramar. Therefore, a sustainability plan was created.

In addition, Hotel Voramar decided to use the CGBS as proposed by the ECG to create an improved and specialised sustainability improvement plan. In order to measure the activities of Hotel Voramar, **KPIs are defined (Case7.3)** for each stakeholder. **These KPIs are measured (Case7.7)** every year. By using the CGM, Hotel Voramar noticed that it is a very good tool for measuring performances. In 2019, they did an external audit and the peer-group for the first time. The process and its activities as part of the peer to peer group are illustrated in Appendix D in section 4.8. Hence, Hotel Voramar met with other organisations that are part of the ECG and audited each other. After completing the CGM, some **issues were discovered (Case7.5, 7.9)**. An example is given by the manager: *“The field related to people, when we did the survey, we had bad results and so we started to improve our relationship with the staff. We hired psychologists in our organisation just in order to get support for our staff and we start giving them opportunities for teleworking and flexibility on working hours.”*

In order to receive feedback, **Hotel Voramar conducts a survey with their suppliers (Case7.6)**. The manager indicates that it is very important for them to have a supply chain, because it is related to the carbon footprint. In addition, they have one meeting with them each year in order to get feedback about their relationships. So, it is important to listen to the stakeholders in order to implement stakeholder management. *“You should always choose priority, which means that sometimes you have to go for the needs of the supplier and sometimes for the needs of the clients”*. The manager indicated that this depends on the available resources for that year.

Both the results of the survey, the measured and observed KPIs and results of the ECG identify **improvement areas for which improvement actions are defined (Case7.10, 7.11)**. An example related to workers, is for instance that Hotel Voramar is very worried about the mobility, so they are developing an APP in order to make car sharing available within the organisation. The people who drive the car and carry with him other workers are getting paid. *“Why, because in this way we can reduce our footprint and it is better for them because they do not have to pay money for transport”*. The manager has a plan of improvement for each stakeholder (Case7.12) and for each plan **a responsibility is given (Case7.13)** to a person in the organisation that should be responsible for this project. **This plan is documented in a document shared within the organisation (Case7.14, 7.15)**. The manager is responsible for each stakeholder. However, for example the supply chain manager is the responsible for the supplier, which means that this person should make a plan in order to improve the relationship with the suppliers. *“So, this person determines the priorities, what we should do”*. In order to document data that is involved in the IP4ESET, the manager uses Microsoft Excel in order to provide an overview of all the KPIs. In addition, some information is integrated in this ERP, however this is not prepared to manage an organisation that has a sustainability plan.

4.8.4 Case Study Results

We specify the IP4ESET process, as it is carried out by Hotel Voramar, by interpreting the information as a result of analysing the documentation and interview results using a PDD. It must be noted that the activities that are denoted in *Italic* are not explicitly present in the analysed method and method

documentation. However, in order to enhance the understanding of the method properly, we decide to add these to the model. In this results section, two PDDs are created. The first one is an extension of the PDD that illustrated the processes and deliverables as part of the CGBS (full) PDD. This PDD is presented in Figure 88 that can be found in Appendix D. We aim to provide an overview of one complete improvement cycle by following the CGBS as proposed by ECG method and therefore, we extend this PDD with the IP4ESET process that are analysed in this case study. The results of this are illustrated in Figure 32 and consist of six phases: Materiality Assessment, Social and environmental assessment, Supply chain analysis, Improvement planning, Documentation and Implementation.

Secondly, the IP4ESET process as it is carried out by Hotel Voramar is divided into three phases as presented in Figure 45: Supply chain analysis, Improvement planning and Documentation. This process consists of nine activities, and 10 concepts. In Figure 46, a PDD is created that illustrates the activities of this process. An activity results in a deliverable (concept). So, for instance, IMPROVEMENT PLAN is a result of the activity *Case7.11.Determine improvement plan per stakeholder*. There are no roles assigned in the PDD, since the activities are either carried out by multiple roles or it is unknown. In Appendix D, the matching activity and concept table can be found in section D.10.

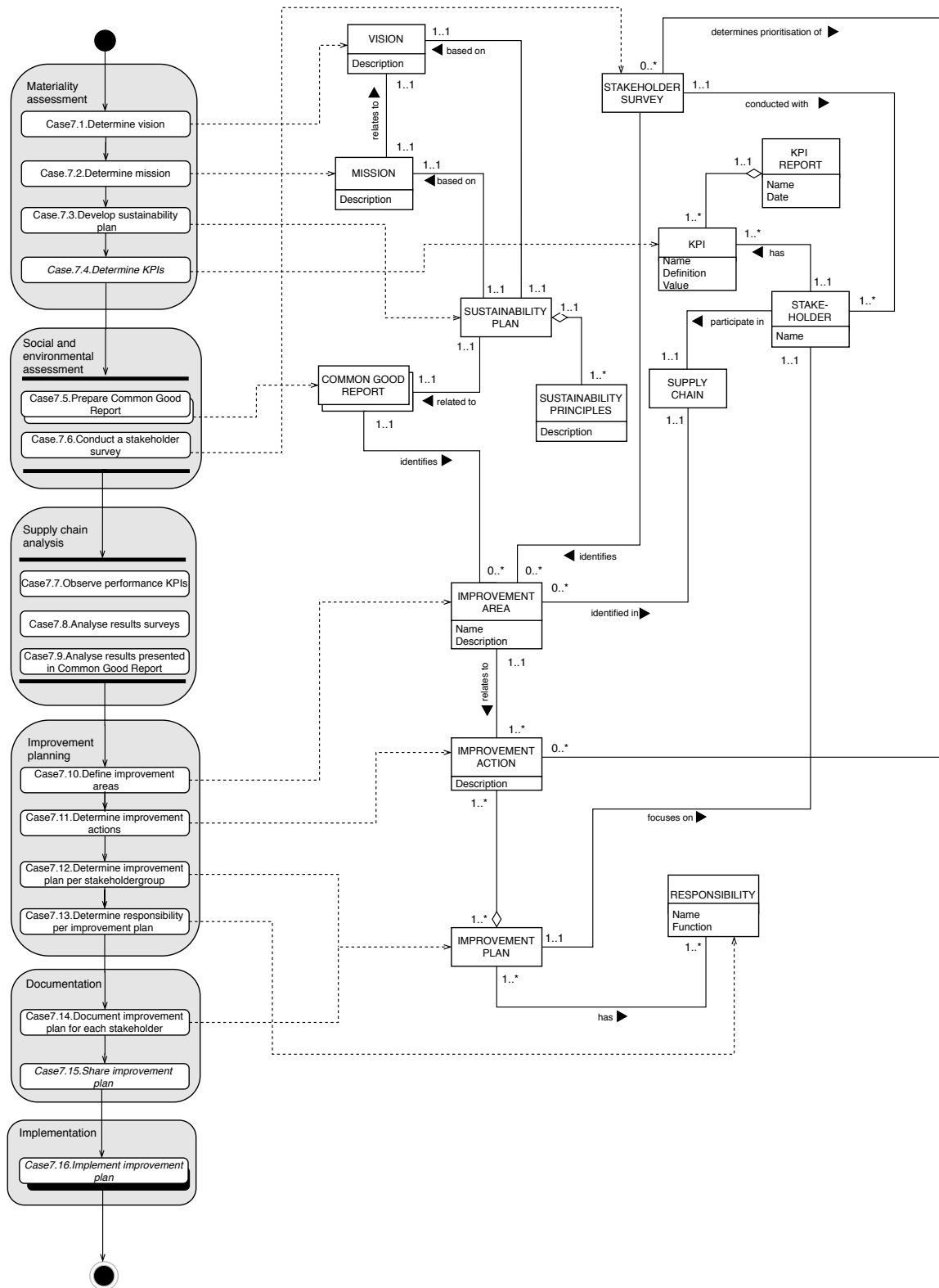


Figure 45. PDD of results case 7: Social, environmental and business ethics improvement cycle

4.8.5 Validation

In order to make sure that the gathered information about the IP4ESET process at Voramar is valid, the research design addresses the same case study tactics as the previous cases. The case study that was performed at the university can be classified as a single-case study design as well, since there is no more than one source for the data collected from the case study. For this type of study, external validity is difficult to obtain. Internal validity of the design is irrelevant, since this case study has an exploratory focus. The ECG uses the ECG matrix in order to measure sustainability performance. This method is followed by other organisations in this network as well. Hence, we believe that this enhances the ability to generalise the results of this case study to other organisations in the same network, or at least organisations applying the same tool. However, limitations might exist to the extent we can generalise this method to organisations as part of other networks, due to the different ESEA methods that exist [49]. Nevertheless, we do not believe that this is a major issue, since the goal of this case study is to compare the results of the case studies that arises from different networks. So, we do not aim to compare within networks. Therefore, generalisation does not apply to other networks.

In order to guarantee for construct validity, various sources of evidence were used to collect the data for the research; information was gathered from documentation, an interview and to some extent observations through information produced in the field. To discover whether the PDDs reflect the correct interpretation of the IP4ESET phase they should be validated by experts. In this research, we were not able to fully validate the PDD. Finally, the reliability of the case study is obtained by using a formal case study protocol and developing a case study database.

4.9 Method Comparison Results Case Study

4.9.1 Method Comparison Continuous Improvement Cycle

In this section, we apply the same formal comparison approach for method comparison as described in Chapter 2. So, the results of the case study are treated as methods. We compare seven CI cycles, as a result of the case study, which we treat as methods. In Table 18, we give an overview of the amount of activities, sub-activities and concepts per method. The same abbreviations for the methods are used as in Table 14. We use the steps that are described in the method documentation and the interviews in order to construct the process part of the PDD. The deliverables (concepts) of a method are often unclear and hence explained in less detail. Therefore, we have to use the description and outcomes of each activity of the overall followed CI method combined with common sense in order to be able to model this part of the PDD. By using this information, we can to investigate the relations between the concepts. The process part and the deliverables are explained through the use of activity and concept tables, in which all activities and deliverables are described (see Appendix D).

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Activities	3	8	9	6	6	5	6
Sub-activities	10	25	26	14	14	14	16
Concepts	23	35	31	23	27	22	14

Table 18: Statistics of each case study

4.9.2 Creation of Super Method: tabulation and comparison

In order to create the super method that resembles the overall followed CI cycle process in practice, we construct a tabulation of the analysed seven methods using the indicators provided for each case as described in Table 14. We create two tables; an activity comparison table (see Table 19) and a concept comparison table (see Table 20). Again, we apply two steps of a reference modelling approach as described in section 3.4.2:

- Identify common elements *and*;
- Group elements

We identify eight generic sub-activities. These generic activities, we consider as a “*super method*”. Therefore, the activities and concepts of the analysed methods are compared with these generic activities. Subsequently, we apply a grouping of elements, in which we group sub-activities that are enclosed in a main activity. We identify four generic grouped elements that we treat as main activities; **2G1.Materiality**

assessment, 2G2.ESEA, 2G3.IP4ESET and 2G4.Organisational re-engineering. Again, we decide to adopt the name of the fourth activity (organisational re-engineering) of the SBEIC (see Figure 2) to refer to *implementation*.

In the activity table (see Table 19), the procedure is as follows; each activity of the analysed methods is mapped to a generic activity. A blank field indicates that the generic activity does not occur in one of the case methods. An activity is considered as generic if it occurs, in accordance with the comparison symbols, at least four out of the seven methods. As a result, we define a frequency threshold of $\approx 60\%$. It should be noted that an activity can be referred to with different names regarding the different methods, while having the same meaning and description. Accordingly, the names of the generic activity arise from the descriptions and main purpose of these activities (see Appendix D).

For the approach of the concept table (see Table 20), a similar approach is used; a super set of concepts is derived from the deliverable part of the created PDDs and forms the basis for the comparison of concepts. The concepts are depicted in capital letters. A concept is added to the table if it occurs at least in three out of the seven methods, meaning that we define a frequency threshold of $\approx 40\%$. As with the activities, it should be noted that the same concept can have different names, while having the same definition. This is indicated in the table. For instance, it can be noticed that cases apply different ESEA methods resulting in different ESEA reports.

Mapping of activities of cycles to identified generic activities								
Generic activities		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
2G1.Materiality assessment	2G1.1. Determine vision				Case4.1 =	Case5.1 =	Case6.6 ><	Case7.1 =
	2G1.2.Determine relevant topic(s)			Case3.5 ><	Case4.2 ><	Case5.3 =	Case6.4 ><	Case7.3 ><
	2G1.3. Determine goal(s)				Case4.3 =	Case5.4 =	Case6.7 ><	Case7.3 ><
2G2.ESEA	2G2.1.Monitoring	Case1.2 ><	Case.2.8 >< Case.2.9 >< Case.2.10 ><	Case3.6 >< Case3.7 >< Case3.8 >< Case3.9 ><	Case4.6 =	Case5.5 =	Case6.8 =	Case7.5 =
	2G2.2.Evaluation		Case2.11 ><	Case3.11 >< Case3.12 ><	Case4.7 ><	Case5.6 >< Case5.7 >< Case5.8 ><	Case6.9 =	Case7.6 =
2G3.IP4ESET	2G3.1. Analyse assessment results	Case1.3 = Case1.4 ><	Case2.12 =	Case3.12 ><	Case4.8 >< Case4.9 ><		Case6.10 ><	Case7.7 >< Case7.8 >< Case7.9 =
	2G3.2.Create improvement plan	Case1.8 ><	Case2.13 >< Case2.14 >< Case2.15 ><	Case3.24 ><	Case4.13 ><	Case5.13 ><	Case6.12 ><	Case7.14 ><
2G4.Organisational re-engineering	2G4.1.Implement improvement plan	Case1.10 =	Case2.16 =	Case3.16 =	Case4.12 =	Case5.12 =	Case6.14 =	Case7.15

Table 19: Activity comparison table

An important observation is that the majority of methods start with the performing a **2G1.Materiality assessment** in order to determine what should be measured in the ESEA phase. In other words, creating a vision, determining relevant topics and stating high-level goals that provide the road-map for a responsible enterprise. In some case, this is explicitly done prior to conducting an assessment in the ESEA phase. However, in other cases this MA can be found within an ESEA METHOD, since this method measures certain values and principles promoted by the network that provides this method. In this case, the network performs MA and not the responsible enterprise conducting the ESEA method.

An assessment is done by monitoring and evaluating a current situation, level or standing based on social and environmental performance and business ethics in an organisation in order to become more responsible. In most cases, solely an ESEA METHOD is conducted for monitoring and evaluating. However, an important observation from practice is that an ESEA method is not the only way for an organisation to assess their performances. In some cases conduct STAKEHOLDER SURVEYS or analyse KPI REPORTs in order to evaluate current performances additionally to the results of an ESEA METHOD. For instance, in order to enhance the understanding of the supply chain these organisations are involved

in. Therefore, we decide to add these as concepts as a type of ASSESSMENT REPORT by using an inheritance relation.

Figure 47 on page 90 illustrates the PDD of the created super method of the CI methods, based on the descriptions of the followed CI methods as a result of the analysed cases, the comparison analysis and gathered knowledge. In Appendix D, the corresponding activity and concept tables can be found in section D.11.1. The activity *2G3.1.Analyse assessment results* and *2G3.2.Create improvement plan* are modelled as open activities, meaning that their sub-activities are depicted elsewhere. For the comparison of the IP4ESET activities, performed in the analysed cases in particular, we zoom in on these sub-activities. Accordingly, a super method is created in section 4.9.4 that depicts the sub-activities of both activities (see Figure 48). Also, *2G4.1.Implement improvement plan*, is modelled as a closed activity, since their sub-activities are unknown and not relevant for the context and scope of this research. As can be observed from this super method, there are both OPEN CONCEPTs and CLOSED CONCEPTs used. We use a CLOSED CONCEPT (visualised with a black border) if we are not interested in the sub concepts of a particular concept since it is not relevant for the scope, context and understanding of the method. For instance, ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN is modelled as an open concept, since the sub-concept will be elaborated on in Figure 48.

Moreover, it can be observed in the concept table that there is one activity missing that is included in Figure 47; ASSESSMENT ANALYSIS. We modelled this concept in *Italic* to indicate that this concept is not explicitly mentioned in the analysed methods, however the existing of activities referring to the sub-activity *2G3.1.Analyse assessment results* can be found. Therefore, we decide to add this concept to emphasise the existence of this activity.

Mapping of concepts of case study methods to identified generic concepts							
Generic concepts	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
VISION				=	=	=	=
TOPIC	CATEGORY	CATEGORY	THEME		CENTRAL THEME, THEME	THEME	
GOAL				=	SDG	=	SUSTAINABILITY PRINCIPLE
INDICATOR	=	=	=	=	=		=
DIRECT INDICATOR		=	=	=			=
INDIRECT INDICATOR		=	=	=			=
ESEA METHOD	XES SOCIAL BALANCE METHOD	B IMPACT ASSESSMENT	COMMON GOOD BALANCE SHEET	B IMPACT	ECOVADIS	GRI STANDARDS	COMMON GOOD BALANCE SHEET
ESEA REPORT	SOCIAL BALANCE REPORT	B IMPACT REPORT	COMMON GOOD REPORT	ASSESSMENT	SCORECARD	GRI REPORT	COMMON GOOD REPORT
KPI				=	=		=
KPI REPORT				ASSURANCE REPORT	=	=	=
STAKEHOLDER SURVEY	SURVEY			=		SURVEY	=
IMPROVEMENT AREA	IMPROVEMENT IDEA	=		=	=		
IMPROVEMENT ACTION	=	=	=	=	=	=	=
ETHICS SOCIAL AND ENVIRONMENTAL IMPROVEMENT PLAN	IMPROVEMENT PLAN	CUSTOMISED IMPROVEMENT REPORT	ECG REPORT	ANNUAL FAIR REPORT	CSR REPORT	=	=

Table 20: Concept comparison table

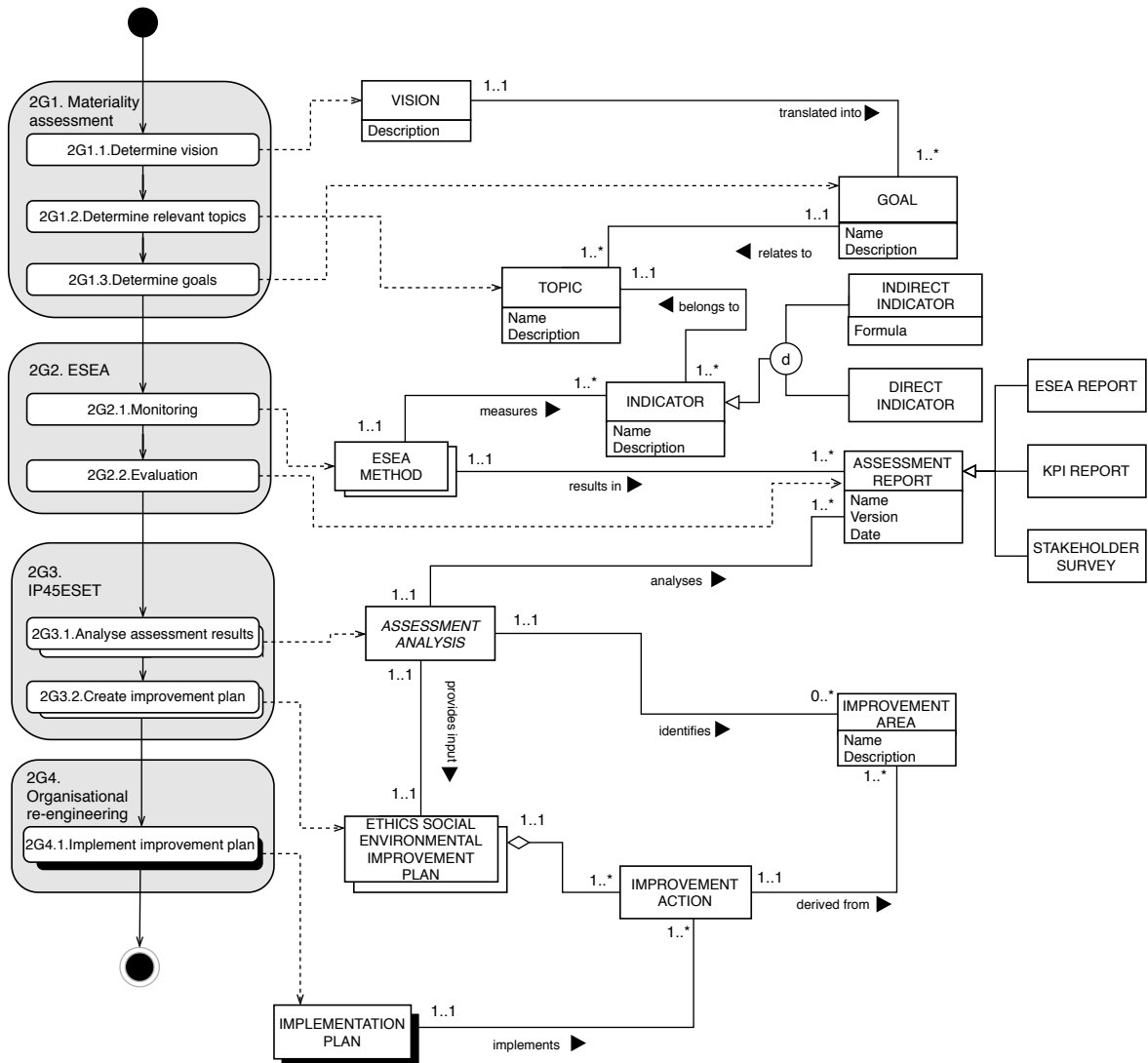


Figure 47. PDD of continuous improvement cycle super method: practice

4.9.3 Method Comparison Improvement Planning Activities

In this section, we compare the seven methods as part of the case study, in which we focus on the IP4ESET in particularly. We specify the IP4ESET methods by interpreting the information as it is found in the case documentation and the interviews and subsequently translating these to PDDs. We use the steps that are described in the method documentation and the interviews in order to construct the process part of the PDD. The deliverables (concepts) of a method are often unclear and hence explained in less detail. Hence, we have to use the description and outcomes of each activity of the IP4ESET method combined with common sense in order to be able to model this part of the PDD. By using this information, we are able to investigate the relations between the concepts. The process part and the deliverables are explained through the use of activity and concept tables, in which all activities and deliverables are described (see Appendix D). In Table 21, we give an overview of the amount of activities, sub-activities and concepts per method.

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Activities	6	3	4	4	3	3	4
Sub-activities	5	8	9	7	6	4	10
Concepts	18	19	19	15	19	14	10

Table 21: Statistics of each case study

4.9.4 Creation of Super Method: tabulation and comparison

In order to create the super method that resembles the IP4ESET process in practice, we construct a tabulation of the analysed methods resulting in the following two tables; an activity comparison table (see Table 22) and a concept comparison table (see Table 23). We elaborate on the sub-activities and deliverables (concepts) of **2G3.1.Analyse assessment results** and **2G3.2.Create improvement plan** as part of the super method presented in Figure 47. We consider these two activities both as an individual group. The sub-activities as part of this group are considered as the generic activities and therefore are considered as the super method of IP4ESET. Accordingly, the activities and concepts of the analysed methods are compared with these activities. The first group **2G3.1.Analyse assessment results** consists of the following sub-activity: **2G3.1.1.Identify improvement area**. Subsequently, the next group **2G3.2.Create improvement plan** consists of:

- **2G3.2.1.Identify improvement actions**
- **2G3.2.2.Prioritise improvement actions**
- **2G3.2.3.Determine responsibilities**
- **2G3.2.4.Document improvement plan**

An activity is considered as generic if it occurs at least in three out of the seven methods. Hence, we define a frequency threshold of $\approx 40\%$. It should be noted that an activity can be referred to with different names regarding the different methods, while having the same description. Accordingly, the names of the generic activity arise from the descriptions and main purpose of the activities as described for each case individually. These descriptions can be found in Appendix D.

For the approach of the concept table (see Table 23), a similar approach is used; a super set of concepts is derived from the deliverable part of the PDDs and forms the basis for the comparison of concepts. The concepts are depicted in capital letters. A concept is added to the table if it occurs at least in three out of the seven methods, meaning that we define the same frequency threshold of $\approx 40\%$. As with the activities, it should be noted that the same concept can have different names, while having same definition. This is indicated in the table. For example, the IMPROVEMENT AREA in case 1 is referred as an IMPROVEMENT IDEA. A blank field means that a concept from the super method is not available in the concerning method.

Mapping of activities of case studies to identified generic activities								
Generic activities		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
2G3.1. Analyse assessment results	2G3.1.1. Identify improvement area	Case1.4 ><	Case2.12 >< Case2.13 ><	Case3.18 ><	Case4.8 >< Case4.9 ><	Case5.9 =	Case6.8 >< Case6.9 >< Case6.10 ><	Case7.10 =
	2G3.2.1. Identify improvement actions	Case1.5 >< Case1.6 ><	Case2.14 =	Case3.19 =	Case4.10 ><	Case5.10 =	Case6.11 =	Case7.11 =
2G3.2. Create improvement plan	2G3.2.2. Prioritise improvement actions	Case1.7 =		Case3.20 =	Case4.11 =			
	2G3.2.3. Determine responsibilities		Case2.15 =	Case3.21 >< Case3.22 ><		Case5.11 =		Case7.13 =
	2G3.2.4. Document improvement plan	Case1.8 =		Case3.24 =	Case4.13 =	Case5.13 =	Case6.12 =	Case7.14 =

Table 22: Activity comparison table

One important observation from the comparison of activities of the different methods is that some methods cover specific activities in the IP4ESET process that are neglected by other methods; *prioritisation* and *determination of responsibilities*. It can be concluded that case 1, case 4 and case 6 do not have formal process in place for determining responsibilities for improvement actions. Moreover, case 5 and case 6 do not have explicit activities that are concerned with prioritisation.

Another important observation is that during the analysis of assessment data, improvement areas are already identified to some extent. Therefore, we decide to model **2G3.1.1. Identify improvement area** as a sub-activity of **2G3.1. Analyse assessment results**. It can be concluded based on the analysed documents, gathered knowledge, insights and information during the semi-structured interviews that there is no explicit distinction between these activities. Accordingly, the analysed ESEA methods in the case studies are intended to identify and suggest improvement opportunities during the answering of the questions as presented by the assessment method and the monitoring of activities and data. For example, in the BIA, the generated B IMPACT REPORT offers suggestions for improvement areas. Moreover, a BEST PRACTICE GUIDE can be consulted, which provides suggestions for improvements that are linked to impact areas (improvement areas) as measured by the assessment.

Furthermore, it should be noted that the improvement areas related to social and environmental performance and business ethics depend on what is measured by the ESEA method that is applied. For instance, the B IMPACT ASSESSMENT, assesses five impact areas known as; *governance, workers, community, environment* and *customers*. However, in case 4 and 5, a clear vision and mission mainly marks the scope for improvement areas. The method applied by case 6 contains a very detailed description of the KPI analysis, due to the fact that this is the first IP4ESET carried out by this organisation. It covers important parts of the KPI analysis process and the analysis of assessment data. As with the other cases, the precise KPI set-up is unknown and modelled as a single activity called “Determine KPIs”.

To conclude, the key elements of each method are performing an assessment results analysis by identifying improvement areas, that are further explored by defining improvement actions and responsibilities related to an improvement area. Finally, these actions are documented in a so called ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN. It must be noted that there is a difference between an improvement plan in literature and as observed in practice. For instance, in case 1 the improvement plan is a separate chapter as part of the ESEA report 2018. However, in the other cases, there is no separate improvement plan in place that is shared internally and/or externally within the responsible enterprise. In most cases, this is processed in the annual report or CSR report. These reports describe a yearly overview what a responsible enterprise has done related to their mission, vision and goals. Moreover, in literature, an improvement plan provides an overview of improvement actions and related information such as resources, responsibilities and a time frame. This report is used for implementation.

Furthermore, there are different ways in which such an annual report is documented. For example, case 5 structures the document in accordance with the chosen SDGs and for each improvement actions are described. Also, the mission and vision of the organisation are elaborated on. In other cases GRI guidelines are followed. Figure 48 illustrates the PDD of the created super method of the IP4ESET in practice consisting of five activities and seven deliverables. In Appendix D, the corresponding activity and concept tables can be found in section D.11.2.

Mapping of activities of case studies to identified generic activities							
Generic concepts	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
IMPROVEMENT AREA	IMPROVEMENT IDEA	=			=	=	
IMPROVEMENT ACTION	=	=	=		=	=	=
ETHICS SOCIAL AND ENVIRONMENTAL IMPROVEMENT PLAN	IMPROVEMENT PLAN	CUSTOMISED IMPROVEMENT REPORT	ECG REPORT	ANNUAL FAIR REPORT	CSR REPORT	IMPROVEMENT PLAN	SUSTAINABILITY REPORT
PRIORITISATION	PRIORITISATION CHART		POST-SURVEY	MATRIX			
STAFF RESPONSIBILITY		=	LEAD, TEAM		=		=

Table 23: Concept comparison table

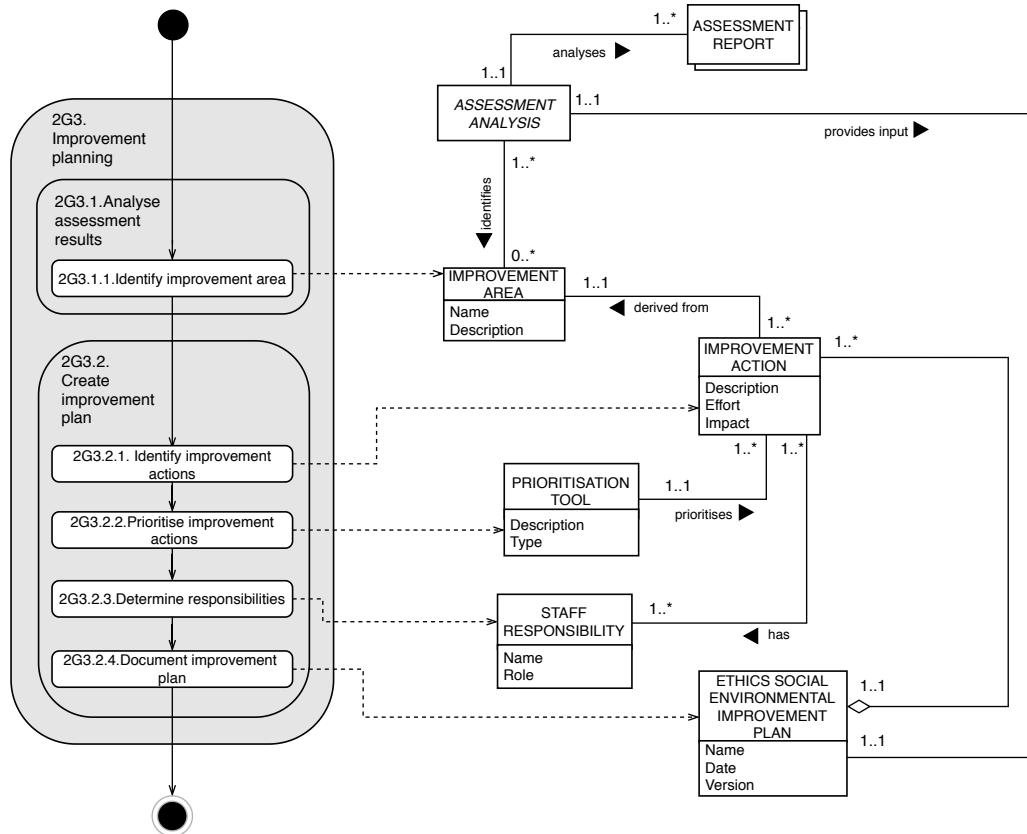


Figure 48. PDD of improvement planning activities super method: practice

5 | Framework ICT-Support Tool

The goal of this study is to provide an overview of the IP4ESET phase in both literature and practice in order to lay the groundwork for an ICT-tool that could potentially support this process. Having created this overview through the use of PDDs and a method comparison approach, next, we describe a super method of the CI process and the IP4ESET process in particular combining the super methods of Chapter 3 and Chapter 4. Subsequently, a variability model is proposed based on the IP4ESET super method in order to provide a framework that serves as input for an ICT-support tool that is both versatile and model-driven.

5.1 Super Method Ethics, Social and Environmental Continuous Improvement Cycle

In Figure 49, we provide a merged super method of the analysed CI methods consisting of four main activities and eight sub activities, which result in 18 deliverables. This PDD combines the activities and concepts of the created super method of the CI activities in literature (see Figure 16) and in practice (see Figure 47). Hence, this PDD presents the super method for CI activities. To elaborate on this super method a bit more in detail, we added a legend in Figure 49 in order to understand the merging process of this super method. Therefore, as can be observed in Figure 51, the activities, attributes and concepts that are identified as a result of the case study, are annotated with either a blue- or green colour. As can be observed in the added legend, this means that they are either added to the super method of the CI activities method based on literature or changed as a result of findings in practice.

One of the findings in the case study is that a distinction can be made between responsible enterprises who started out with ‘sustainable’ goals in principle or organisations who want to become more responsible. For the latter, these type of organisations potentially have to change their current processes in order to make them fit with these principles. For responsible enterprises, this is easier, since they started with a clear vision related to social, environmental and/or business ethics principles. Following a clear vision, goals and strategies, facilitate the identification of improvement areas. In most cases, these responsible enterprises are well informed and have sufficient knowledge about the supply chain or business context they are involved in, in order to identify improvement areas and specific actions.

The determination of a vision, goals and relevant topics for a responsible enterprise to measure, is referred to as the MA phase (*activity G1*). In most analysed cases, this phase is explicitly performed prior to conducting an ESEA method in order to determine what method should be conducted that is in line with the vision, goals and relevant topics of a responsible enterprise. It can be noted that during the analyses of the CI activity methods in literature, this phase is not explicitly mentioned in the documentation of these methods. However, these cycles are to be applied in a certain business context, which can to some extent be understood as a type of MA. In the case of a predefined ESEA method, as encountered in the case study, the determination of relevant topics is done by the network and hence in the method itself. This means that the MA phase is not explicitly visible, as it is already predefined by the used method, nonetheless it is in-explicitly performed by the network that provides the ESEA method.

Also, during the analysis of CI cycles in literature, we found that most of these cycles use the term investigation of a problem in order to determine what needs to be improved on followed by specific improvement actions. On the contrary, in practice, responsible enterprises are more focused on identifying improvement areas by analysing assessment results instead of referring to this as problems that needs to be addressed. So, the ESEA phase aims to discover potential improvement areas and as a result a problem is rather seen as an improvement area.

Therefore, we decide to replace the concept INVESTIGATE PROBLEM into ASSESSMENT ANALYSIS, and PROBLEM into IMPROVEMENT AREA. As a result, an ASSESSMENT ANALYSIS *identifies* an IMPROVEMENT AREA instead of *analyses* a PROBLEM. In this situation, an ASSESSMENT ANALYSIS analyses the results as stated in an ASSESSMENT REPORT to determine what needs to

be improvement on instead of considering it as bad performance indicators. Also, instead of the activity *investigate problem*, we use the activity *G3.1. Analyse assessment results*. It can also be observed that we replaced the concept CONTEXT by TOPIC, since an ESEA method measures INDICATORS, which can be either a DIRECT INDICATOR (see explanation section 3.4.2) or an INDIRECT INDICATOR, which belongs to a certain TOPIC on which the ASSESSMENT REPORT reports. An INDIRECT INDICATOR requires a formula in order to calculate the value of the indicator. For instance, gender ratio in an organisation, which requires the following formula: $\text{Total female employees} / \text{Total male employees}$.

As mentioned before, these TOPICs are determined on in the MA phase (either by an organisation or the network), which in the case of CI in general would be referred to as the business CONTEXT in which this cycle is to be applied. Additionally, the CONTEXT that is reported on by the ASSESSMENT REPORT. In Figure 50 on page 96, we present the social, environmental and business ethics improvement cycle (SEBEIC), which illustrates the main activities of the PDD presented in Figure 49.

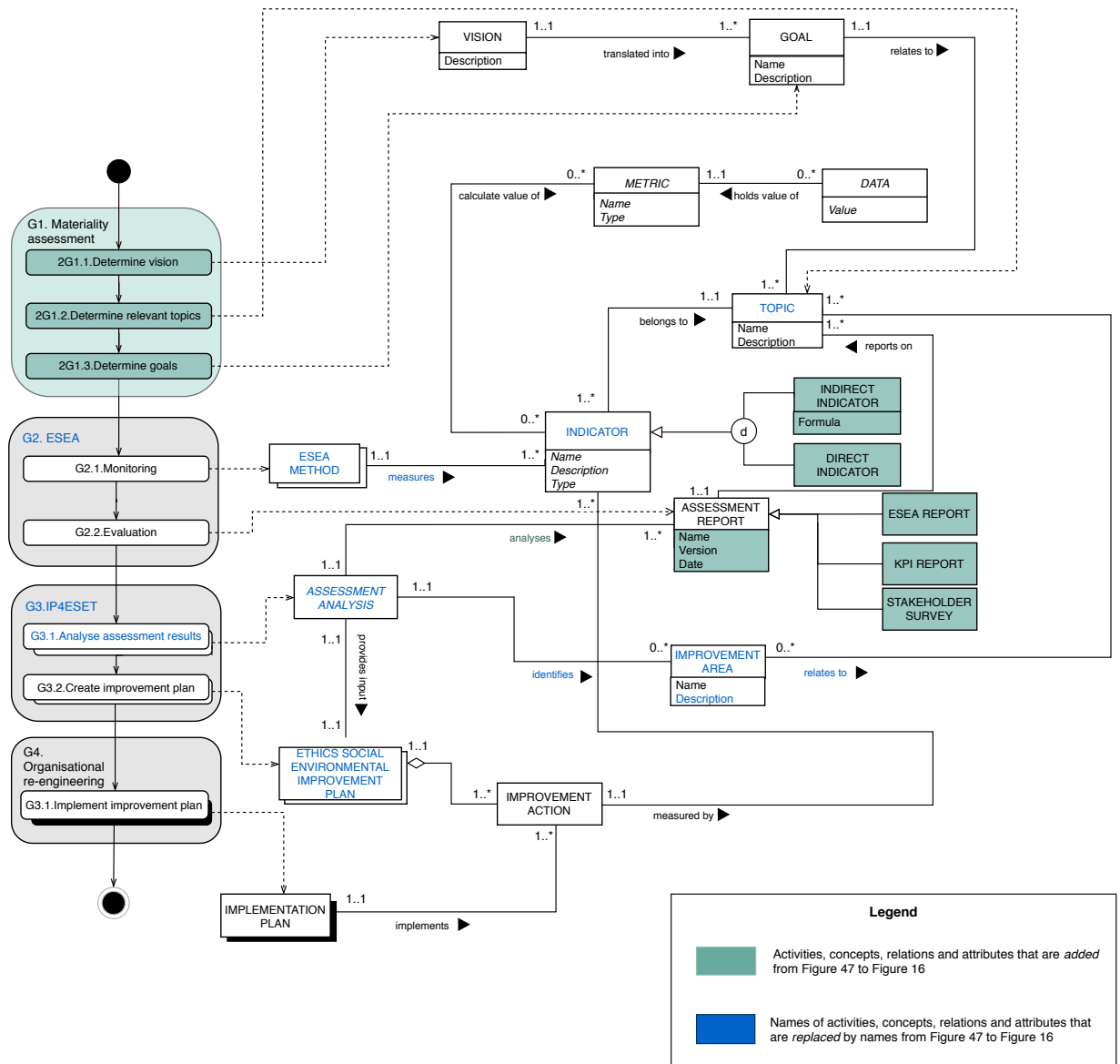


Figure 49. PDD of continuous improvement activities super method: literature and practice

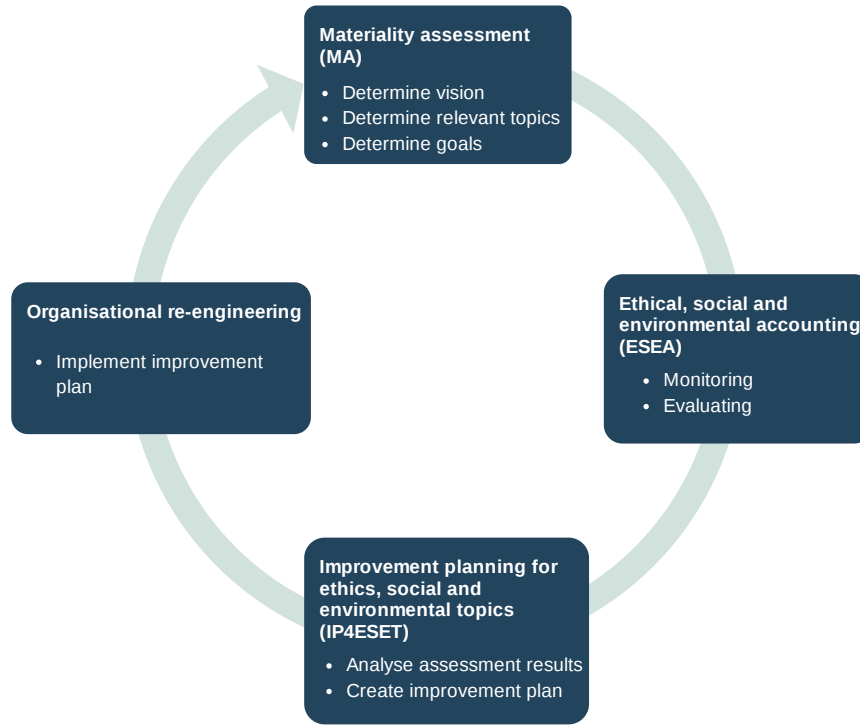


Figure 50. The social, environmental and business ethics improvement cycle

5.2 Super Method Ethics, Social and Environmental Improvement Planning

In Figure 51, we provide a merged super method of the analysed IP4ESET methods comprising two main activities and eight sub activities, which result in 11 deliverables. This PDD combines the activities and concepts of the created super methods of the IP4ESET in literature (see Figure 20) and in practice (see Figure 48). We noticed that the super method from practice has more deliverables and the super method from literature has more activities. Still, they are partly the same as the deliverables that appear in the opposite super method. Therefore, as can be observed in Figure 51, the activities, attributes and concepts that are identified as a result of the case study, are annotated with either a blue- or green colour, are added (or changed) to the super method of the CI activities method based on literature. Here, we added the same legend as in Figure 49 to Figure 51 in order to understand the merging process of this super method.

As resulted from the case study, we can see that it is often difficult for responsible enterprises to define concrete actions. For instance, the project manager of the Utrecht University indicates that: *“It is relatively easy to set a high-level future goal, however it does not immediately involve specific actions.”*. In addition, in agreement with Ahmed et al. [2], decision making can be a rather difficult task in a transitioning process to becoming a responsible organisation seeing that it involves various dimensions (social, environmental and business ethics), decision-making dimensions (strategic, tactical and operational) and different perspectives [2].

Furthermore, it can be observed based upon the case study that unlike the ESEA phase, no explicit tools are used on an equal scale related to an ESEA method prescribing how an improvement plan can be created. Also, from the case studies it became clear that in some cases there is a gap between translating a goal into the rights actions for achieving that goal. Additionally, an important issue is the prioritisation of improvement actions, which is missing in the super method from literature. Moreover, the concept IMPROVEMENT PLAN is changed to ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN, since this plan reports on IP4ESET.

All things considered, the results of the super methods show high resemblance. Thus, this super method is an executable method that includes method fragments of both super methods.

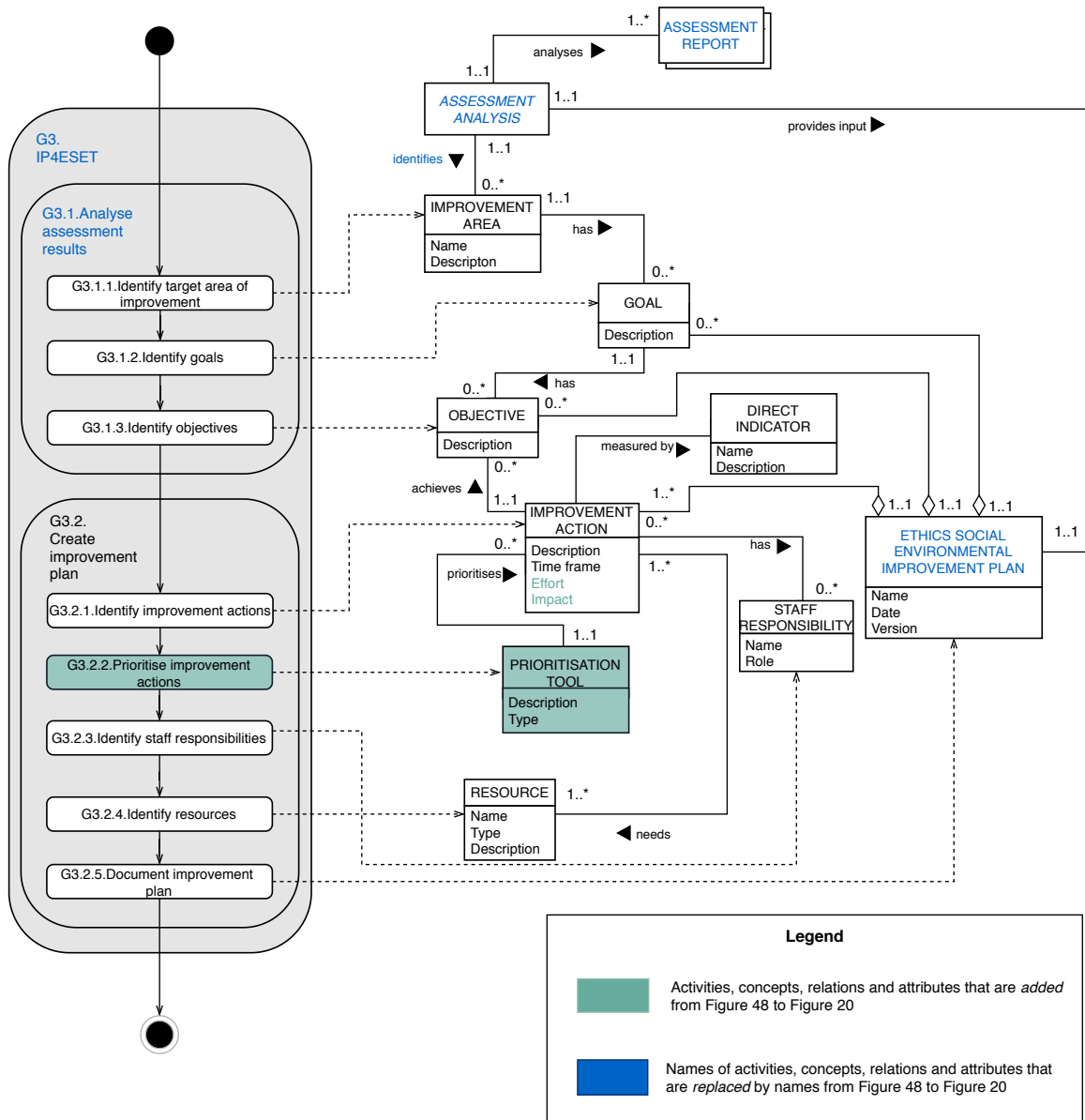


Figure 51. PDD of improvement planning activities super method: literature and practice

5.3 Variability Model

So far, we have created two super methods for both the CI process and the IP4ESET process. In this section, we focus on the single super method of the different IP4ESET methods as a result of a literature study and a case study by using the modelling technique of PDDs. This allows us to identify the most common activities and corresponding deliverables among these methods. Here, the goal is to propose a generic approach that fits within the generic nature of an IP4ESET process and model it in an efficient way. As can be observed in Figure 51 the following high level activities are performed:

- The *analysis of assessment data* that is represented in a report. For instance, an ESEA report, a KPI report or stakeholder group surveys that provide an overview of the performance of a responsible enterprise related to social, environmental and business ethics topics. This assessment data is used in order to identify improvement areas related to a certain business context
- This analysis is followed by the *creation of an improvement plan*; consisting of identifying appropriate improvement actions. For instance, ideas for improvement actions can be suggested by the performed ESEA method, through the use of a best practice guide, or by conducting a brainstorm session. Followed by a documentation of the activities related to the IP, including the improvement actions in a report. This document is then used for the follow-up phase; implementation (organisational re-engineering)

The literature study and case study show us that different variations throughout the same process can be distinguished. Now that we have modelled a generic approach for IP4ESET, we need to consider variability in our model. Variability is a key concept to efficiently deal with business processes of which the goal(s) and objective(s) are similar to one another in some ways, however may differ in others [70]. Thus, it will provide a business process improvement technique in order to realise more efficient results in different business situations. In addition, with the aim of creating a versatile tool, we need to update the model for it to be changeable and have the capacity to be tailored for it to be used in a tool or system [61].

Therefore, we adopt an approach as described in [70] for managing variability within a business process in BPMN. Accordingly, the variability model focuses on the process part of the super method as depicted in Figure 51. In addition, we examine each activity individually. This approach uses three elements; a variable business process (VBP), a variable partition and a variability objective. A VBP can be described as a business process embedding variability by means of at least one variable partition (VP). Accordingly, each variable partition is notable by a variability objective (e.g. perform an ESEA method) describing the variation handled by the variable partition [70]. For instance, a variable partition could be the XES Social Balance in the example as mentioned above. The created generic super method can be used as a pattern in which variants can be added to implement new business requirement(s). Hence, this pattern formulates the activities in which variability are to be implemented, which makes it easier to grasp for business process modellers and information system designers.

5.3.1 Variability Business Process at Design Time

As can be observed in the case study, the IP4ESET process is characterised by both generic activities as well as multiple variants. Figure 52 shows the configurable process model of IP4ESET. This model encloses six VPs, in which multiple variants occur. We use the same activity names as found in the super methods to indicate the VPs. As can be noted in this figure, we also include the type of assessment that is performed, since this is a crucial step and provides the input for the activities that follow in the IP4ESET process. Thus, the ESEA - and improvement planning phase of the SEBEIC, as depicted in Figure 50, are used in the variability model. This is modelled as VP1: G2.ESEA. This activity is derived from the super method depicted in Figure 16.

The following grouping marks the variable partitions and its variability objective; **VP1:** The variability objective for VP1 is *G1.ESEA*, in which a choice can be made for an ESEA method that is used. **VP2:** The variability objective for VP2 *G3.1.1.Identify target area of improvement*. Here, different approaches can be taken. **VP3:** The variability objective for VP3 *G3.1.2.Identify goals*. As observed in the case study, a goal can be set in general or for an identified improvement area, which in most cases refers to social, environmental and business ethics topics. **VP4:** The variability objective for VP4 *G3.1.3.Identify objectives*. The objectives are linked to a goal depending on the type of goal **VP5:** The variability objective for VP5 *G3.2.1.Identify improvement actions* in which different tactics can be distinguished. **VP6:** The variability objective for VP6 *G3.2.2.Prioritise improvement actions*. Again, a choice between different visualisation of the prioritisation can be made. **VP7:** The variability objective for VP7 *G3.2.3.Identify staff responsibilities*. For this objective a choice can be made to identify the main responsibility and/or responsible team. For instance, if both a main responsibility and a team is chosen, the main responsibility

becomes the team leader. Due to the fact that we use an inclusive gateway, multiple variants can be chosen.

The goal of this variability model is not to show all variants that are possible, nonetheless to provide insights of variants that could be taken in order to provide a changeable model. As a result, in this variability model, we use high-level variants that can be extended in the future. For instance, an organisation that is performing an assessment followed by IP for the first time could use this model as a guideline. In this research, the variants are a result of the activities found in the case study. For example, we have seen various approaches for identifying improvement areas. Nevertheless, as mentioned before modelling all possible variants is not the aim of this model. It shows us that we have a generic pattern that could be extended in any way possible, which makes this a step towards a versatile and model-driven tool. By using this approach, we aim to avoid confusion and ambiguity.

5.3.2 Variability Business Process at Run Time

In this section, we describe a VBP in more detail at run time in which we apply the following business requirements:

- VP1 → XES Social Balance
- VP2 → Low score results, Analyse results stakeholder group survey
- VP3 → Set goal per improvement area
- VP4 → Set objective(s) per goal
- VP5 → Generate ideas in a brainstorm session, Transform ideas in concrete actions
- VP6 → Determine importance score for network for implementing an action, Determine importance score for organisation for implementing an action, Determine effort score of an action, Generate an impact/effort bubble chart
- VP7 → Determine the team who is responsible for the improvement action

In Figure 53, the derived process model of the model presented in Figure 52 is depicted. We visualise all the activities that are part of the generic IP4ESET process (see Figure 51), however they do not all contain VPs. We refer to the following activities: *G2.2.4. Identify resources* and *G2.2.5. Document improvement plan*. Note, the inclusive gateway in the variable partition, whose variability objective at design-time was **VP2: G2.1.1. Identify target area of improvement**, changed to a parallel gateway, as in this case multiple variants are selected.

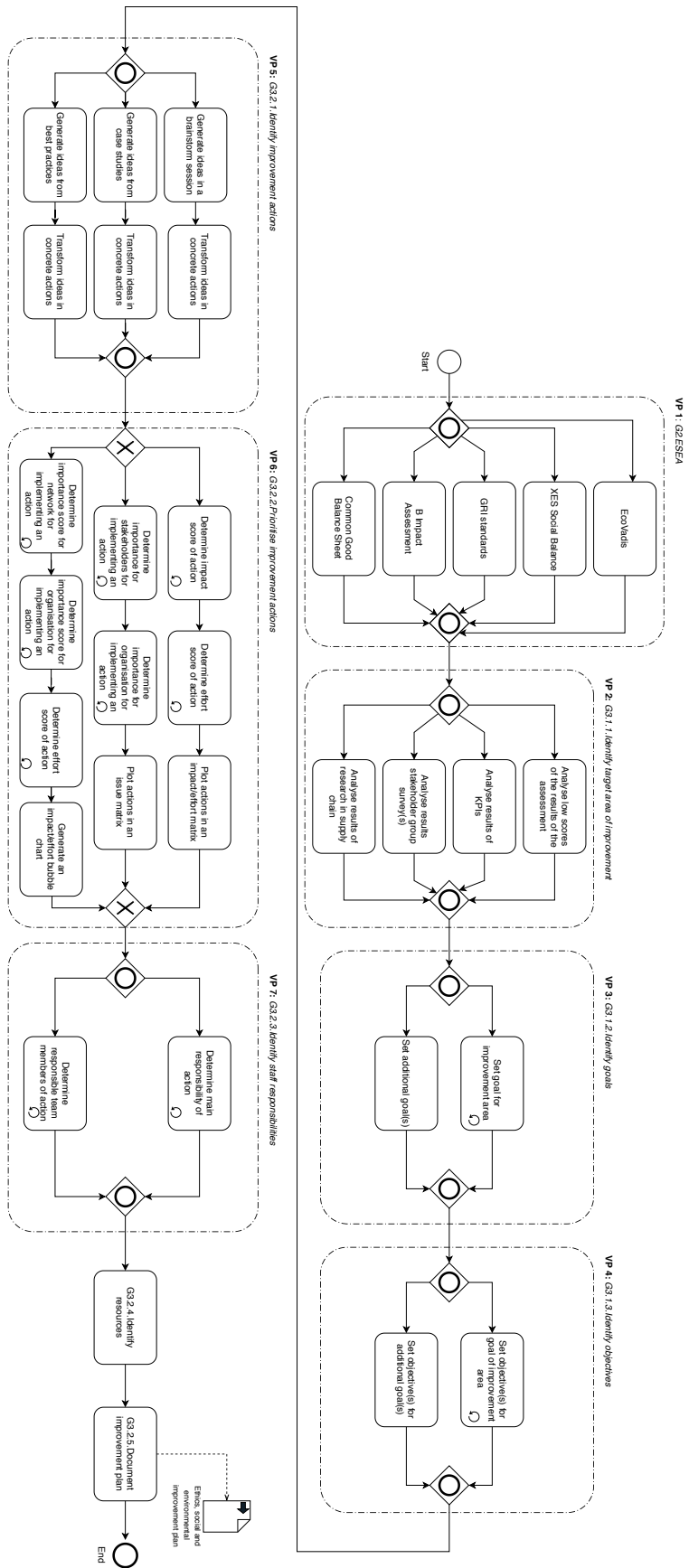


Figure 52. Variability model in BPMN

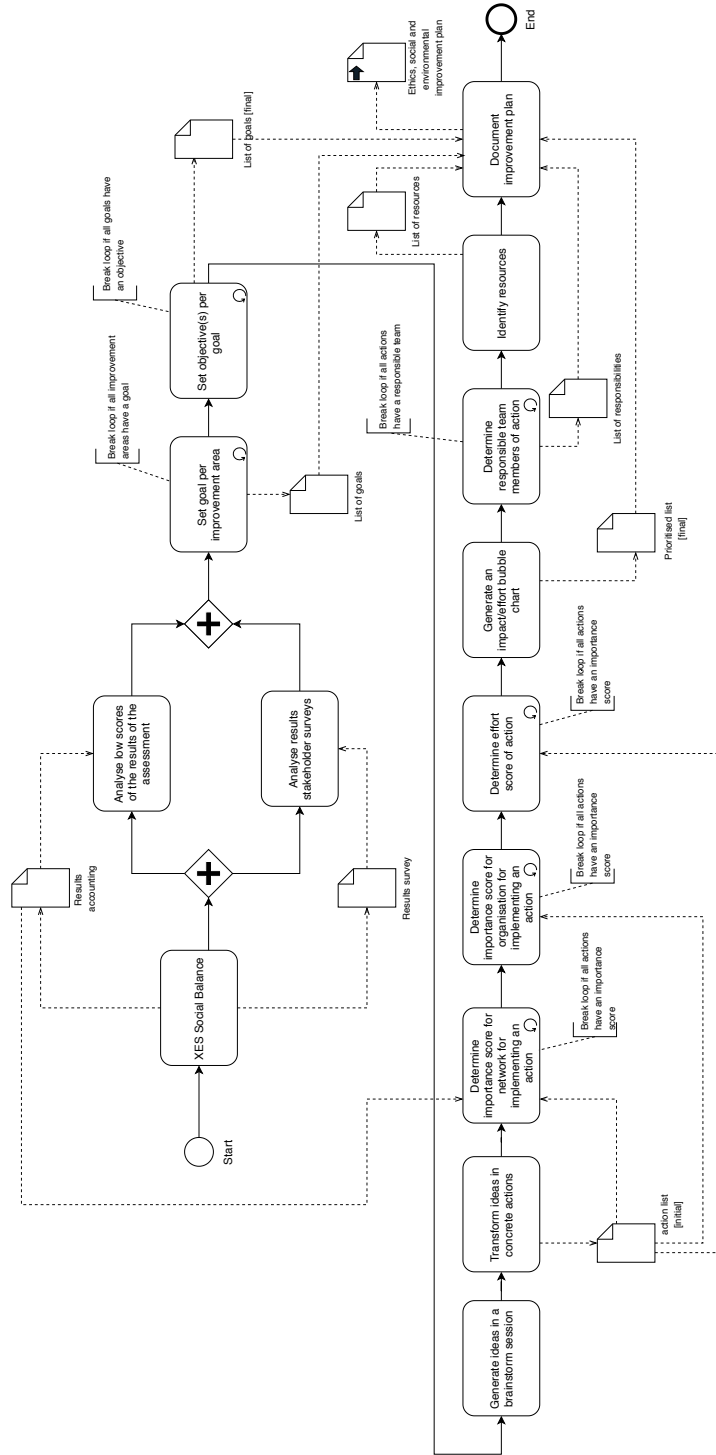


Figure 53. Variable business process for improvement planning for ethics, social and environmental topics at run time

6 | ICT-Support Tool

This chapter elaborates on features and findings of existing ICT-support tools resulted from literature and practice related to the IP4ESET process. Subsequently, we present a concept version of openESEIP, a new tool for IP4ESET, through sample input and output. This concept version is considered as a pathway towards a versatile and model-driven tool for IP4ESET.

6.1 Shortcomings Current Improvement Planning Tools

In this section, existing software tools are analysed that are related to IP and IP4ESET as a result of a literature study and case study. When analysing the existing tools as a result of literature, it can be observed that their main purpose is to provide templates that organisations can use for documenting an improvement plan. This plan includes a description of improvement actions and relevant information such as related goals, objectives, resources and responsibilities. These templates are available in a Word or Excel file or presented in the shape of a matrix that can be filled out. It offers guidelines in creating a potential improvement plan by documenting improvement actions and related information. Thus, these templates are only used for filling out all the information related to an improvement action. The generated templates have a generic character, however they lack features such as the prioritisation and identification of actions. Also, there are no suggestions for improvements given. For instance, such as a link to best practices or case studies as seen in the BIA method. During the case study analysis and data gathering, three type of tools are found that are used for parts of the IP4ESET process: the Google Sheet tool that uses for instance an impact prioritisation bubble chart (case 1), an impact cloud (highlight impact area) as part of B Analytics (case 2) and an impact/effort prioritisation matrix (case 2 and case 4).

As mentioned before, the ESEA phase and the IP4ESET phase overlap to some extent. This means that during the performance of an ESEA method, improvement areas are highlighted by answering the questions that are proposed by such a method. For instance, the BIA, which offers best practices guidelines, customised improvement reports and by using B Analytics impact areas can be highlighted and downloaded in an automatically generated improvement report. Moreover, in the BIA during the answering of the questions ideas for improvements can be generated and in addition questions can be marked for improvement. However, these best practices are often too general. The prioritise matrix as used by Tony's Chocolonely and Business School Lausanne, is a nice way to plan focus, although it does not assign responsibilities or generate associated resources. It can solely be used for the prioritisation of improvement actions.

In Table 24 on page 103, an overview of the all features of the IP tools, as resulted from both literature and practice, is presented. This overview indicates which features are supported by which IP4ESET method. Here, it can be observed that B Impact Assessment (B Analytics) supports the highest number of features, while QSIR supports the lowest number. However, as can be seen in this table, no tool supports all features.

Features	Improvement planning tools								
	Literature						Practice		
	SAP	PSAT	CEAP	APG	QSIR	ASSIST	Prioritisation Matrix	Google Sheet Tool case 1	B Analytics
Access assessment data	x	x	x	x	x	x	x	✓	✓
Set goals (objectives) for improvement	x	✓	✓	x	✓	✓	x	✓	x
Offer suggestions for improvement	x	x	x	x	x	x	x	x	✓
Offer options for prioritisation	x	x	x	x	x	x	✓	✓	✓
Provide template	✓	✓	✓	✓	✓	✓	x	x	x
Assign responsibilities	✓	✓	✓	✓	✓	✓	x	x	x
Indicate resources	x	✓	✓	x	x	✓	x	✓	✓
Indicate time frame	✓	x	✓	✓	x	✓	x	x	✓
Measure impact	x	x	x	x	x	x	✓	✓	✓
Data visualisation	x	x	x	x	x	x	x	✓	✓
Generate document	x	x	x	x	x	✓	x	x	✓

Table 24: [✓ = supported, x = not supported]

6.2 Towards a New Tool for Ethics, Social and Environmental Improvement Planning - openESEIP

As mentioned before, the aim of this study is to lay the groundwork for a versatile tool that supports the IP4ESET phase. Therefore, during the semi-structured interviews, we tried to determine if the use of a (software) tool during the IP4ESET phase would be useful and valuable for the investigated responsible enterprises. For instance, Verstegen points out that it would be beneficial to have a risk matrix including relevant data and numbers. To indicate what the impact in terms of risks is, when implementing a certain improvement actions. Moreover, the interviewed Director at Verstegen has tabled a question to the IDH on setting up a kind of database that yields best practices regarding sustainable trade. Due to the fact that, the IDH (Sustainable Trade Initiative)¹ are very internationally active promotes sustainability in chains.

Furthermore, the University of Utrecht emphasises that a tool, capable of assisting the prioritising of improvement actions is generally needed and valuable for the University of Utrecht. Also, the interviewed manager at Voramar indicates that it would be beneficial to organise the assessment data in one place and have a prioritisation that automatically indicates improvement areas and actions. To have all the relevant data stored in a up-to-date live dashboard. In addition, two features that are mentioned are filtering and better visualisation as well (dashboards in general lack nice visualisation options).

As observed in the literature and practice, there is no evidence found for a single tool for IP4ESET that offers all the features as mentioned in Table 24. Moreover, a versatile tool for IP4ESET that for instance supports different ESEA results. Most of the analysed tools focus on one of the mentioned features, such as suggestions for improvement, prioritisation of improvement actions or providing a template to be filled out.

6.2.1 Concept Version Tool

In this section, we propose a proof of concept for a versatile and model-driven tool called openESEIP, which can be used as an early prototype based upon the results of two ESEA methods; the XES Social Balance and the Common Good Balance Sheet. For this concept version, we use Google Sheets that applies the following features as mentioned in the previous section; access assessment data, set goals/objectives, prioritise actions, assign responsibilities, resources, indicate a time frame and a data visualisation of the main results using a dashboard. As mentioned before, this tool is based upon the variability model (see Figure 52) to indicate the activities that can be performed within the tool. It must be noted that this version of the tool documents the results of each activity that is performed within this model. We provide an example based upon sample input of Common Good Balance Sheet results. These results are considered as input and are entered manually (see Figure 54 and 55).

The output is generated by documenting improvement areas, goals/objectives, resources, assign responsibilities and indicating a time frame for each action based upon these results. This is entered manually as well as by the responsible enterprise (see Figure 56). Subsequently, the effort score for each action and the impact score as determined by an organisation is also entered manually. However, the

¹<https://www.idhsustainabletrade.com/>

impact score for the organisation is automatically calculated through the weighting score given to an indicator. Finally, a data visualisation is provided of the main results using a dashboard (see Figure 57). Here, we provide a prioritisation chart based upon the input data as mentioned above. It should be noted that this dashboard is created manually based upon the data presented in the table in Figure 56. In the next chapter, we will partly validate this tool by means of a TAR by providing input data based upon results of the XES Social Balance.

			Organisation		ECG
				Type of social balance	Compact
				Balance Sheet total score	484
Indicator	Field	Indicator name	Supplier	Value	Score
B2	B	Social position in relation to financial resources	Owners	Solidarity and social justice	3
B1	B	Ethical position in relation to financial resources	Owners	Human Dignity	6
C3	C	Environmentally friendly behavior of staff	Employees	Environmental sustainability	10
C2	C	Self-determined working arrangements	Employees	Solidarity and social justice	15
C4	C	Co-determination and transparency within the organisation	Employees	Transparency and co-determination	16
D1	D	Ethical customer relations	Customers	Human Dignity	16
A2	A	Solidarity and social justice in supply chain	Suppliers	Solidarity and social justice	17
C1	C	Human dignity in the workplace and the working environment	Employees	Human Dignity	20
E1	E	Purpose of products and services and their effects on society	Environment	Human Dignity	21
A1	A	Human dignity in supply chain	Suppliers	Human Dignity	23
E3	E	Reduction of environmental impact	Environment	Environmental sustainability	23
E4	E	Social co-determination and transparency	Environment	Transparency and co-determination	23
D2	D	Cooperation and solidarity with other companies	Customers	Solidarity and social justice	25
B4	B	Ownership and co-determination	Owners	Transparency and co-determination	33
D4	D	Customer participation and product transparency	Customers	Transparency and co-determination	34
A3	A	Environmental sustainability in supply chain	Suppliers	Environmental sustainability	35
D3	D	Impact on the environment of the use and disposal of products and services	Customers	Environmental sustainability	35
A4	A	Transparency and co-determination in supply chain	Suppliers	Transparency and co-determination	40
E2	E	Contribution to the community	Environment	Solidarity and social justice	44
B3	B	Use of funds in relation to the environment	Owners	Environmental sustainability	45
TOTAL SUM:					484

Figure 54. Sample data; results of Common Good Balance Sheet

Field	Indicator	Indicator name	Weight
B	B2	Social position in relation to financial resources	0.8
B	B1	Ethical position in relation to financial resources.	0.6
C	C3	Environmentally friendly behavior of staff.	0.7
C	C2	Self-determined working arrangements.	0.6
C	C4	Co-determination and transparency within the organization.	0.3
D	D1	Ethical customer relations.	0.6
A	A2	Solidarity and social justice in supply chain	0.8
C	C1	Human dignity in the workplace and the working environment.	0.1
E	E1	Purpose of products and services and their effects on society.	0.7
A	A1	Human dignity in supply chain	0.4
E	E3	Reduction of environmental impact.	0.7
E	E4	Social co-determination and transparency.	0.6
D	D2	Cooperation and solidarity with other companies.	0.6
B	B4	Ownership and co-determination.	0.8
D	D4	Customer participation and product transparency.	0.8
A	A3	Environmental sustainability in supply chain	0.8
D	D3	Impact on the environment of the use and disposal of products and services.	0.6
A	A4	Transparency and co-determination in supply chain	0.8
E	E2	Contribution to the community.	0.8
B	B3	Use of funds in relation to the environment.	0.8

Figure 55. The weighting of the indicators

Nr.	Category	Goal	Objective	Action	Description	Time	Responsibility	Resources	Impact score organisation	Impact score network	Effort score
1	B2	Goal 1	Objective 1	Action 1	Description 1	long	Employee A	Resource A,B	4	10	7
2	B1	Goal 2	Objective 2	Action 2	Description 2	short	Employee A	Resource A,B	7	7	5
3	C3	Goal 3	Objective 3	Action 3	Description 3	medium	Employee B	Resource A	9	7	8
4	C2	Goal 4	Objective 4	Action 4	Description 4	short	Employee B	Resource A	5	6	3
5	C4	Goal 5	Objective 5	Action 5	Description 5	medium	Employee C	Resource B	6	3	3
6	D1	Goal 6	Objective 6	Action 6	Description 6	short	Employee C	Resource B	3	5	2

Figure 56. The results of improvement planning activities

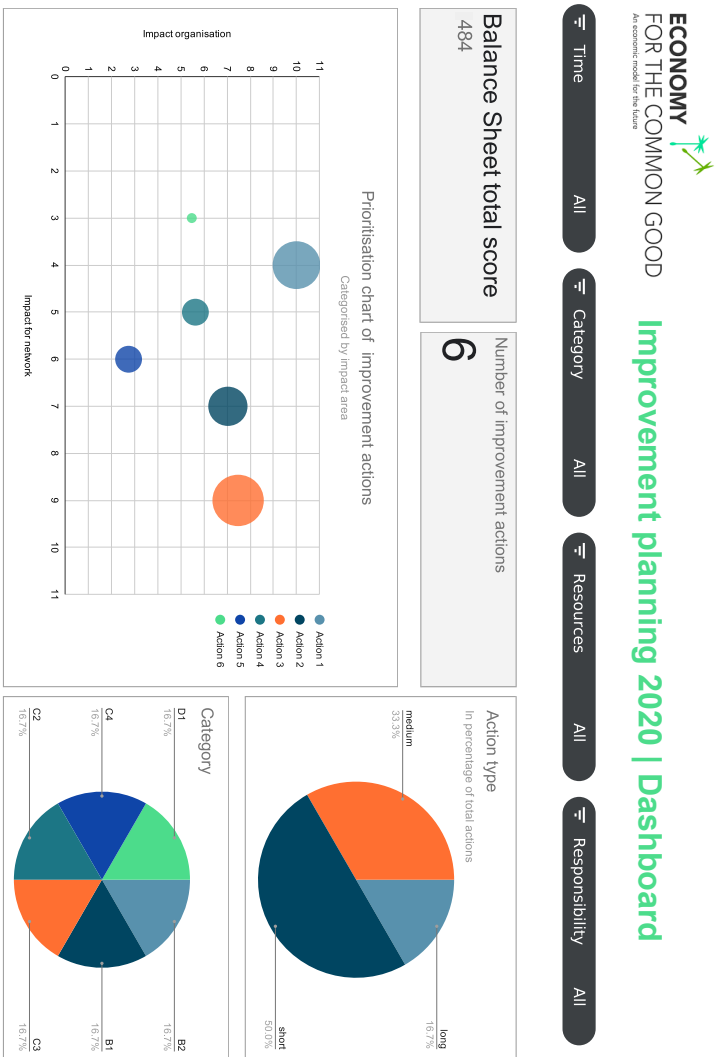


Figure 57. The organisation's dashboard: visualisation of the results of improvement planning using the Common Good Balance Sheet

7 | Validation

This chapter aims to validate the concept version of openESEIP based upon the variability model of the IP4ESET through a TAR. Thus, openESEIP is the artefact as presented in the previous chapter. The action research is performed at a research institute, in which members of this institute will apply this artefact to a real case. Regarding the validation of the artefact, we aim to measure the perceived ease of use, perceived usefulness and intention to use. Also, we try to identify improvement suggestions for the artefact that could provide potential valuable input for future work.

7.1 Research Method

According to Wieringa [64], TAR is the use of an artefact in terms of a prototype in a real-world problem to help a client and to learn from this. TAR consists of three cycles as depicted in Figure 58. Hence, as can be observed in this Figure, the distinguishing feature of TAR is that it validates an artefact by using it to help a client, in a client’s engineering cycle (EC2). After a client cycle is completed, the researcher tries to answer the validation knowledge questions as stated prior to starting the action research. These answers may provide reasons to improve and validate the artefact in another iteration.

In this TAR, we apply a research cycle (RC1) and engineering’s cycle (EC2) as presented in Figure 58 to a case at CaseResearch (see section 7.2.4): “improving on social and environmental performance and business ethics”. The research context consists of the engineering’s cycle (EC1), which is the cycle that is completed in the previous chapters; we have conducted a problem investigation and designed an artefact. In order to validate the artefact, research cycle (RC1) needs to be executed. So, within this cycle, we create a validation design consisting of a research goal, research questions, variables and a validation scope. Subsequently, we structure an evaluation session and execute the research. The third cycle (EC2) is activated when the research is executed, in which the artefact is applied to the above-mentioned case. First of all, the case will be explained and reviewed by the subjects, who will apply the artefact to the case afterwards.

As a final step, we perform a focus group with the subjects who applied the artefact. Finally, the results are analysed as a final step of the research cycle (RC1), which are used as validation for the initial engineering cycle (EC1).

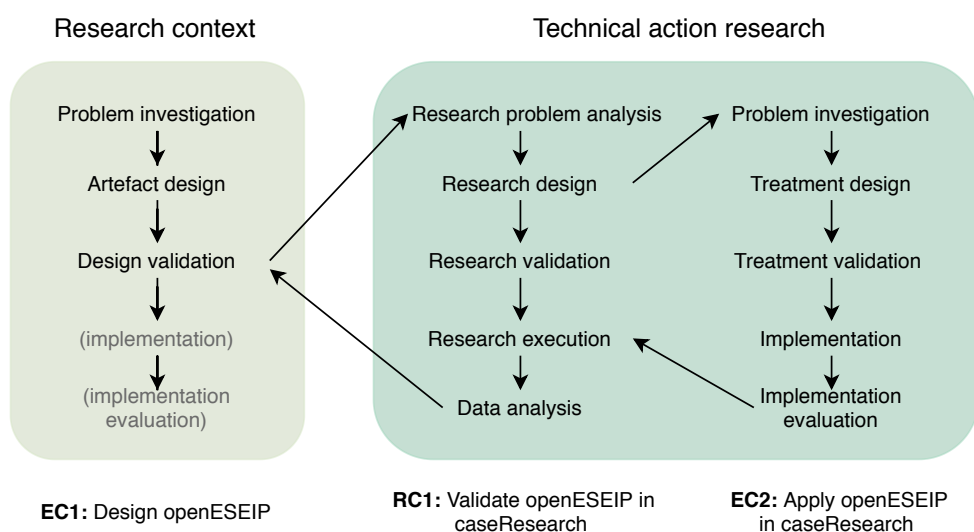


Figure 58. Technical action research methodology

7.2 Research Design

In this section, we elaborate on the research design of this TAR. First of all, a goal is set for the TAR, followed by validation research questions (VRQs) and variables. Accordingly, the scope of the validation is determined describing which elements of the artefact are validated. Subsequently, the case is described, the unit of analysis and the subjects that participate. Finally, the instruments that are used and the data collection procedure is described stating how this TAR is executed.

7.2.1 Research Goal

The main research goal of this TAR is to evaluate the concept version of the openESEIP tool. In addition, we specify this goal in more detail using the goal template of Wohlin et al. [65]: *Analyse* the use of the openESEIP tool for *the purpose of* evaluation *with respect to* subjects perceptions and intentions from *the point of view of* organisation that wants to become more responsible *in the context of* improving their social and environmental performance and business ethics. This goal is decomposed in validation research questions and variables, which are described in the following section.

7.2.2 Validation Research Questions and Variables

In order to evaluate the openESEIP, we define the following research questions using the evaluation model as stated by Moody [43]:

- VRQ1** What is the perceived usefulness of the openESEIP tool?
- VRQ2** What is the perceived ease of use of the openESEIP tool?
- VRQ3** What is the perceived intention to use the openESEIP tool?

The first VRQ is concerned with measuring the degree to which subjects consider the artefact to be effective in achieving the intended objectives [43]. By means of this question, we intend to discover how useful the artefact would be in practice. The second VRQ focuses on measuring the degree to which the use of the artefact would be understandable and free of effort [43]. Thus, we are interested to see if it is relatively easy for the subjects to apply the artefact. Accordingly, the third VRQ, measures the degree to which subjects are intended to use the artefact (Moody, 2003). Through this variable, we want to discover whether subjects would actually use the artefact in practice or identify other possibilities in which the artefact could be used. We intend to answer these VRQs as follows; by observing the subjects as they apply the artefact, by analysing the subject's opinions during the interactive sessions and finally by analysing comments as a result of a focus group.

7.2.3 Validation scope

The openESEIP tool is based upon the validity model (see Figure 52), which is an extended version of the generic super method for IP4ESET illustrated in 51 through the use of process variants. However, to make this validation feasible for the time and resources available, we define a validation scope. Therefore, the openESEIP is used to follow one of the possible paths that can be taken by means of the variants in the validity model depicted in Figure 51. This possible path is described in the following section in more detail. In addition, the openESEIP tool documents the results of each performed activity within this model.

7.2.4 Validation Case and Unit of Analysis

The action research is performed with a research institute as part of an university. Due to privacy regulations, we will refer to this research institute as CaseResearch. The university is currently developing an University Social Responsibility Plan, as a reflection of their commitment to society. CaseResearch is already following different actions as prescribed by the university. However, as a research institution, they want to explore the possibilities to improve on these challenges by taking actions themselves. Therefore, by applying an ESEA method, they want to evaluate their compliance with the different principles promoted by this network. Hence, this year they start with applying the XES Social Balance and as a result the selected variants of the variability model for this action research are as follows:

- VP1 → XES Social Balance
- VP2 → Low score results

- VP3 → Set goal per improvement area
- VP4 → Set objective(s) per goal
- VP5 → Generate ideas in a brainstorm session, Transform ideas in concrete actions
- VP6 → Determine importance score for network for implementing an action, Determine importance score for organisation for implementing an action, Determine effort score of an action, Generate an impact/effort bubble chart
- VP7 → Determine the team who is responsible for the improvement action

Figure 59 depicts the above activities and hence one of the possible path that can be taken. This process marks the unit of analysis.

7.2.5 Subjects

For the subjects of this action research, we need representatives of the organisation that have the knowledge and insights about the performance of the organisation. In order to make sure that the activities as part of the unit of analysis can be executed. The subjects are part of different layers and management positions in the organisation as the research institute is a small organisation (30 employees), The subjects in this action research are the Director and the R&D Manager of CaseResearch.

7.2.6 Instrumentation

We use the following instrumentation during the evaluation of the variability model and for conducting the first activity of the variability model (selecting and performing an ESEA method):

- Informed consent - a voluntary agreement for participating in this research stating that data will only be used for the purpose of this research (see Appendix E)
- XES Social Balance questionnaire - the ESEA method
- XES Social Balance questions explained (PDF file) - a document that explains each question as part of the XES Social Balance
- Example of case 1 (see section 4.2) - to show the subjects an example of how to conduct this ESEA method and how to define improvement actions
- Trello board¹ - an online tool (an replacement of post-its and a white board) for managing ideas generated from the brainstorm sessions
- Google Sheets (openESEIP) - for managing and documenting the results of each activity that is taken in the variability model and for creating a visualisation of the final results through a dashboard
- Word document - a document describing the IP4ESET process, which is referred to as the ethics, social and environmental improvement plan

7.2.7 Data Collection Procedure

To validate the artefact, we collect subject perceptions on the identified variables of subsection 7.2.2. For collecting this data, we organise three interactive evaluation sessions. These are described in the following sections. In addition, a focus group is held in which the evaluation session is discussed. The data collection procedure follows the activities as part of the unit of analysis (see Figure 59). First of all, an ESEA method is chosen that is to be performed with the CaseResearch. A choice was made to apply the ESEA method (XES Social Balance) of a regional network in Spain, as this CaseResearch is located in this area in Spain. However, this phase is not part of the main scope of this research, but part of the validation model and needed in order to execute an IP4ESET phase.

7.2.8 Interactive Session 1

Thus, first of all, the method is explained to the subjects by providing them an example of a case that has performed this method and hence created an ethics, social and environmental improvement plan. Accordingly, we provide a document that explains each question of the questionnaire as part of the method in detail. The answering of the questionnaire is to be done in collaboration with both the subjects (Director and the R&D Manager).

7.2.9 Interactive Session 2

Afterwards, the results of the questionnaire are analysed and discussed. First, the target area of improvement is identified. In this method, questions are answered through a series of indicators. Thus, the low scored indicators are analysed. Subsequently, for each target area of improvement a high-level goal is set in collaboration followed by translating this goal into a measurable objective. Accordingly, a brainstorm session is organised. The goal of the brainstorm session is to identify and document ideas per improvement goal. Here, a digital Trello board is used for showing the results of the brainstorm session. So, ideas can be placed on the board and reviewed by the other subjects. Figure 60 on page 112, illustrates the structure of the brainstorm session using a class diagram. In addition, an example of the

¹<https://trello.com>

improvement area *environment* is presented; starting with identifying improvement areas by analysing indicators that have a low score, determining goals and objectives for these areas, followed by appropriate improvement actions.

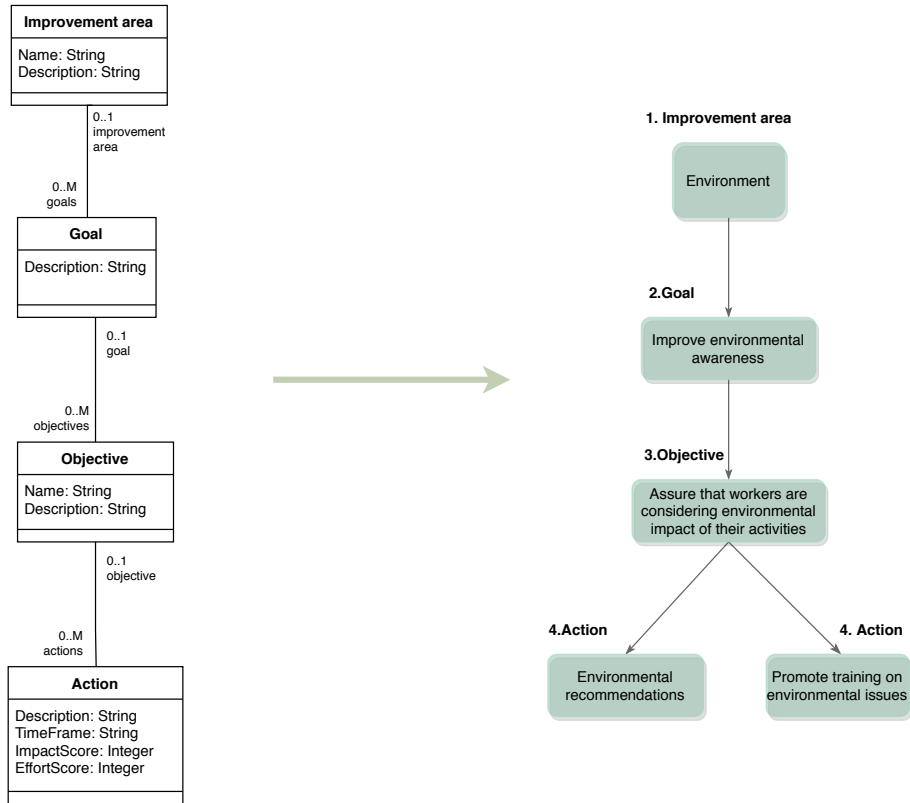


Figure 60. Structure of brainstorm session

7.2.10 Interactive Session 3

A second brainstorm session is needed in order to translate the ideas resulted from the first brainstorm session into concrete actions. Accordingly, each action is given an impact score determining the importance for the organisation that this particular improvement actions is implemented, and an effort score that indicates if an actions is relative easy to implement or more difficult. Also, an impact score is calculated for each action determining the importance for the network that this improvement action is implemented. Using this information a prioritisation chart can be created determining which actions have high priority based upon impact score of the organisation and the network. This is visualised in a bubble chart, depicted the impact score of the organisation and network on the vertical and horizontal axis. The size of the bubble represents the effort score, meaning the degree of difficulty for implementing the action. Afterwards, it is determined for each action who is responsible and what resources are needed. Subsequently, a dashboard can be created that illustrates the main results of the process outcomes of activities in the unit of analysis. Finally, the results are documented in an ethics, social and environmental improvement plan, which can be shared within the organisation and externally.

7.2.11 Focus Group

After finishing the collaborative sessions, a group discussion is held to reflect on the process. The goal of the discussion is to gather opinions among the subjects regarding the variables as set in section 7.2.2. It must be noted that we do not aim to follow a predefined questionnaire. Instead, we focus on measuring the opinions of subjects in a more natural setting. We finish this session by thanking the subjects for participating in this TAR and by answering any final questions related to the research. In Table 25, a time schedule of the activities in the evaluation session can be found. This schedule can serve as a guideline to ensure that all aspects are enclosed in both the evaluation session and the focus group.

Who	Activities	Est. time	Est. date
Researcher	Introduction (goal, artefact, case, informed consent)	~15 min	28-02-2020
Director + R&D Manager	Answer questions of XES Social Balance	~120 min	28-02-2020 06-03-2020
Researcher	Calculate scores of XES Social Balance and provide results in Google Sheets	~60 min	28-03-2020
Director + R&D Manager	Analyse scores, identify improvement areas, goals, objectives and associated improvement actions	~90 min	30-03-2020 09-04-2020
Director + R&D Manager	Determine, concrete actions, impact score, effort score, resources and responsibilities per action	~60 min	10-04-2020
Researcher	Document results and provide a dashboard illustrating the results of the improvement planning using Google Sheets	~60 min	12-04-2020
R&D Manager	Document social, environmental and business ethics improvement plan	~120 min	16-04-2020
Director + R&D Manager	Group discussion	~30 min	21-04-2020

Table 25: Schedule for the evaluation session

7.3 Validity and Ethics

A fundamental question concerning results from a research is how valid the results are. Therefore, in this section, we perform a validity analysis in which we address four categories of validity threats as proposed by Wohlin [65]. For each threat, we explain how we plan to mitigate this threat in the following subsections. Additionally, the results are assumed to have a sufficient level of validity if they are valid for the population to which we aim to generalise. In order to address ethical issues, we use an informed consent in which we guarantee for voluntary participation, respecting the subject’s privacy and the privacy of the research institute.

7.3.1 Conclusion Validity

Conclusion validity is the degree to which the conclusions we reach, regarding the relationship between treatment and the outcome, are reasonable. In order to guarantee for conclusion validity, we try for instance to avoid fishing for desired results by creating self-explanatory process steps to ensure that the subjects can conduct each activity without interfering of the researcher. The subjects are told that they will not be judged for their opinions. Instead of using a set of predefined questions, we focus on measuring the opinions of subjects through observation and opinions gathered from the evaluation session and the focus group.

7.3.2 Internal Validity

Internal validity is concerned with factors that may affect the dependent variables without the awareness of the researcher. To ensure we mitigate the threat of external factors, we arrange different meetings (interactive sessions) for different parts of the activities as part of the unit of analysis. For each interactive session, a time schedule is used with a maximum of two hours to ensure that the subjects stay active during the session. At all times, subjects are encouraged to provide feedback and give their own opinions. The selection of subjects can possibly affect the results of the study. The subjects that are chosen are new to the artefact and hence the improvement on social and environmental performance and business ethics. However, they have the knowledge and insights regarding their organisation to be able to complete this process. We do not think this is a major threat, as it can reveal weaknesses and strengths, due to the fact that the subjects are completely new to the case and artefact and are not biased towards it. After all, the case is used to test the artefact and the measurements are focused on the artefact instead of the case itself.

7.3.3 External Validity

External validity is related to the ability to generalise the obtained results. To make sure the setting is representative for the population in practice, we use a real case of CaseResearch, and subjects (Director and R&D Manager) that are actually involved in the ‘improvement of social and environmental performance and business ethics’ process. Additionally, both subjects know each other and work together, which makes the interactive session representative for real-world practice. Also, by applying a standard ESEA method and by following the same activities in the validity model, we can hypothesise that applying this method for example to other research institutes could lead to similar results in terms of process outcomes.

7.3.4 Construct Validity

Construct validity is related to the degree to which a study measures what it is expected to measure. In order to guarantee for construct validity, we use multiple measurement techniques: gathering subject opinions through observations (taking notes) and by recording the discussion between the subjects during the focus group. During the execution of the process and the application of the artefact, the subjects are not aware of the three different variables. This enhances the possibilities to focus on whether subjects actually perceive the artefact as an useful tool for achieving their goals and objectives. During the process, we aim not to intervene only to provide some guidance when necessary. The group discussion will only be intervened if the discussion is moving away from the subject and to steer the discussion in the right direction.

7.4 Results

In this section the results of the TAR are described. We followed the data collection procedure as described in section 7.2.7 and data is gathered through: observations during the interactive sections and an audio fragment of the focus group. First of all, we will discuss the key notes of the observation in section 7.4.1. Subsequently, in section 7.4.2 the results of the focus group are elaborated on. Finally, we provide an answer to the VRQs as stated in section 7.2.2. The results of the documentation and visualisation of each activity taken can be found in Appendix E through the use of openESEIP in Google Sheets. It should be noticed that not all results can be presented here due to privacy regulations.

7.4.1 Observations

During the execution of the TAR, notes were taken during each interactive session. Here, we observed the interaction between the subjects and the artefact. We focused on whether the artefact was understandable and clear, and the comments that were made. The key notes of these session can be found in Appendix E. Unfortunately, not all observations were written down in the observational notes, since the researcher had to assist the subjects and document the results of each interactive session (during the session as well as afterwards). Thus, further observations are based upon what is observed during the interactive sessions.

First of all, the XES Social Balance was performed, unfortunately we were not able to use the online questionnaire as part of the tool. In stead, we had to use an Excel Sheet in which all the questions were documented. As a result, this was not always easy to grasp for the subjects. In addition, the questions were not always clear despite the use of an explanation document. Since it was the first time that CaseResearch performed an ESEA method, prior explanations of the method was needed. To deal with this problem, we created an extra column in the excel sheet, in which a number was given to each question; 1) question is clear, 2) we make an interpretation of the question, 3) we do not understand the question and 4) the question is out of context. However, the activities as part of the execution of the ESEA method are less important, since they main focus is on the activities that follow after the ESEA method.

Moreover, reaching an agreement in different parts of the process can be difficult due to different perspectives of the subjects. For instance, during the scoring of the impact and effort for each action, it was not always easy to reach an agreement on this number. Also, during the analysis of the results of the XES Social Balance, due to some of the scores as part of an indicator that is related to a question, several disagreements arose as well. On the contrary, it also highlighted important aspects on which CaseResearch can improve. CaseResearch repeatedly indicated that it is very important to them to continue with an improvement planning process and the use of an ESEA method. However, they had no experience with creating an ethics, social and environmental improvement plan or performing such an assessment. Therefore, the researcher had to assist them in completing the improvement plan as the final activity in the process. In addition, in the future they are motivated to become a member of the network and want to introduce this method to the university of which they are part of.

7.4.2 Focus Group Audio Fragments

For the final part of the evaluation session, we reflected on the artefact by means of a focus group. Here, we let the subjects freely discuss and reflect on the conducted process and activities. Here, the main focus was to provide an answer to the variables as stated in the research questions in section 7.2.2. Therefore, the comments given in this session were recorded using a node structure in Nvivo. This node structure can be found in Appendix E together with the coded audio fragments. However, as mentioned before, we focus on measuring the opinions of subjects gathered from the discussion in a natural setting, instead of using a set of predefined question.

The subjects responded very positive towards using the artefact in the future. It made them aware of social, environmental and business ethics issues they normally do not take into account, due to their focus on scientific products. After the XES Social Balance and the identified improvement areas and actions, they are motivated to formalise good practices and policies. The subjects indicate that the artefact could be improved by comparing it to what the university is currently doing regarding IP4ESET; to see how the artefact can be applied as a template that can be used by any research institute.

7.5 Conclusion

To validate the artefact, several VRQs were formulated in section 7.2.2. Accordingly, we gathered qualitative data on the following variables: Perceived ease of use (VRQ1), Perceived usefulness (VRQ2) and Intention to use (VRQ3). By analysing the results of the observations and the evaluation session, we are able to provide an answer to the research questions:

VRQ1: The use of the artefact appeared to be rather clear and understandable. However, a more mature tool that automatically generates and visualises data would be preferable, as this would make the process faster and easier. By applying the artefact, the research institute started to become aware of many things. Hence, ideas for improvement were developed during the execution of the process.

VRQ2: Overall, the perceived usefulness of the artefact has shown to be very positive in the context of the research institute. It made them aware of important issues that they normally did not take into account, since their focus lies on scientific products. The created awareness is mainly what makes this artefact useful for CaseResearch.

VRQ3: The subjects responded very positive to continue using this artefact in the future. The dashboard proved to be an useful visual to illustrate the results of the improvement areas and actions. In addition, it would be interesting to see the reaction of the university staff and to show them the results of applying the XES Social Balance and the artefact. This is going to be a very strong indication of how the work can be moved to the real settings of the university of which CaseResearch is part of. They are depending upon the university, which makes applying this artefact to the case of the university highly valuable.

7.6 Lessons Learned

The execution of this TAR, has provided us with several lessons learned. First of all, planning a TAR requires a lot of effort and preparation in order to make sure that the goal and artefact are clear, the right subjects are gathered and valid results are generated. Subsequently, in some cases the activities required more time than anticipated on. Nonetheless, by using a time schedule and the fact that the interactive sessions were spread across different time and dates, resulted in sufficient time to ensure that everything in the end went well.

Moreover, the researcher has a lot of responsibilities during the execution of the action research itself. For instance, explaining the artefact, providing guidance the subjects when applying the artefact and to ensure that each interactive session is updated with the results of the previous session to visualise and share them with the subjects. This enhances the collaboration and input for each session. However, validating the artefact in a context that have no experience with IP4ESET, has its pros and its cons. We experienced that additional explanations were needed and sometimes additional discussions arose. Nonetheless, it has proven that the artefact can be useful in such a context as well.

Finally, the focus group has provided us with many insights regarding the variables that were set at the beginning as part of the VRQs. Lastly, we learned that applying the artefact and letting subjects experience this, resulted in interesting insights, feedback and future improvements.

8 | Discussion

8.1 Contribution

In this research, we have investigated the domain of IP4ESET from a research perspective, by means of a literature review and a MLR. In addition, interviews were conducted with subjects from responsible enterprises and networks that are reported on in the case study (see Chapter 4). The IP4ESET phase requires the performance of an ESEA method in order to assist responsible enterprises in continuously improving their social and environmental impact and business ethics. By exploring the possibilities for a versatile and model-driven ICT-tool to support the IP4ESET phase, it can be said that this research lies at the intersection of ICT and social, environmental and business ethics topics.

Moreover, this research contributes to the following domains; information science and social sciences. By applying several information science techniques, such as method engineering and business process modelling, we were able to analyse and compare different CI cycles, and methods for IP4ESET. Applying these techniques to another domain, notified us that for instance the product part of a PDD is not always easy to grasp for practitioners who are involved in IP4ESET. However, for the method comparison and the validity model, the main focus lay on the activities in order to provide a step-by-step guide for performing IP4ESET. On the other hand, the validity model results in a more complex model, which could again be more difficult to understand for these practitioners.

8.2 Method Comparison

In this research, two comparison approaches are used in order to analyse the methods for IP4ESET. The main comparison technique that is used, as presented in [63], has several advantages. First of all, this technique provides a clear step-by-step approach ensuring high visibility and accuracy. Moreover, the use of comparison symbols, activity and concept tables improves the understanding and execution of this comparison method.

However, the actual comparison of activities and concepts turned out to be quite complex. For instance, when comparing different activities, it was hard to identify whether two activities are totally similar or if one activity encompassed more or less than the other. Also, for concepts it was not always easy to determine whether or not two concepts with different names actually represent the same, due to the different terminologies that are used. To deal with this difficulty, we modelled concepts and activities in *italic* to indicate that we did not explicitly found evidence for their existence. Nevertheless, we believe that these concepts are needed in order to understand the method. In the end, the resulting comparison tables offer a systematic overview of the differences between the activities and concepts.

Also, we adopted elements of another method comparison analysis approach as presented in [59], which is used for deriving reference process models that represent best practices from a set of individual process models. This comparison approach can be applied to different types of process models, however lacks a precise description for each type of model on how to properly apply the comparison technique. For instance, in [59], the technique is applied to ArchiMate Models. Here, we see that additional adjustments are needed, in order to derive a reference model. As a results, we only included two elements of this approach that are compatible with the elements of the comparison technique in [63].

8.3 Continuous Improvement Cycles

During the method comparison of the CI cycles in literature, we noticed that the determination of relevant topics for an organisation to measure, prior to the actual assessment phase, is more explicitly evident in the domain of social, environmental and business ethics topics than it is in the domain of process and/or product improvement. Here, we refer to materiality assessment (MA). In the case of a predefined

ESEA method, the determination of relevant topics is done by the network and hence in the method itself. This means that the MA phase is not explicitly visible, as it is already predefined by the used method. During the case study, we found examples of responsible enterprises performing a MA phase prior to performing an ESEA method. The most explicit one is the case of Utrecht university, who performed a MA through stakeholder group surveys for the identification of relevant topics to report on. In literature, we did discover that MA is not explicitly mentioned in the documentation of the activities of the cycles, still we know that each cycle is related to a certain scope or context. Especially when it comes to CI in the domain of process and/or product improvement. As a result, the CI is to be used in a certain business context which scopes the important aspects that should be considered measuring. We can presume that this is actually, to some extent, similar to MA.

In addition, we have constructed a CI cycle as a result of a literature and case study. In this cycle, we move away from using the term sustainability at an organisational level and thus refer to this cycle as the social, environmental and business ethics improvement cycle (SEBEIC) (see Figure 50). Therefore, the cycle as mentioned in the introduction, should be replaced by this cycle, which is constructed based upon evidence from both literature and practice, and therefore scientifically valid.

8.4 Limitations

Naturally, this research also has its limitations. During the case study, it became apparent that in some cases it can be really difficult to document the IP4ESET process, when these processes are ad hoc and not explicitly documented. Therefore, the validation of these processes that are modelled using PDDs, should be validated by experts. However, in this research, we were only able to fully validate the process part of the PDD of case 5 and 6. In order to discover whether the created PDDs represent the methods for IP4ESET as applied in practice, all PDDs that result from the other cases should be fully validated. This is meaningful, as the IP4ESET process might be different in reality than as we interpreted in the created PDDs. Furthermore, the concept part of the PDD is more difficult to validate with an expert, seeing that they are not always familiar with these modelling technique and concepts can be abstract as well.

Another limitation is the fact that seven responsible enterprises are analysed, of which we were only able to interview six of them. In an ideal world, we would have gathered data from a larger pool of different types of responsible enterprises from the same and other networks in order to generalise at a larger scale. Moreover, some collected data from the case study was based upon data from an earlier IP4ESET phase. It could be the case that this data has changed over time. Still, based upon the gathered results from more recent data, these results did not differ much from the more historic data that we found.

Furthermore, another threat to validity can be argued to be present due to the selection of subjects for the case study. Although we tried to gather data from a sample that accurately represents the population, we were unable to do so due to the given period of time for this research. The selection was not random, but we had to rely on our network for obtaining data for the case study and the action research. Finally, in this research we were only able to develop a concept version of openESEIP and validate it by means of a TAR. However, additional validation by experts in the field is required. Nevertheless, the goal of this research was to provide a framework that can be used as a reference guide for the development of a versatile and model-driven tool for IP4ESET in the future.

8.5 Future Work

Future research should react to the aforementioned limitations in several ways. First of all, as mentioned before, in order to discover whether the PDDs represent the methods for IP4ESET as applied in practice, all PDDs should be validated by an expert in the field. In addition, this research can be extended by a thorough analysis on how to report on improvement planning, investigating how to create a document and the associated content. This might also be a good idea for future work.

Furthermore, another interesting future research possibility could be to analyse the IP4ESET methods at a larger scale. For instance, by investigating organisations of other networks that were not included in this research. As a result, it might be an interesting opportunity for future work to extend the variants as part of the validity model by approaching other networks and type of responsible enterprises that were not investigated in this research. Then, the method could be tailored to a wider range of different type of organisations and additional ESEA methods through the validity model.

Lastly, we believe that the most promising future work lies in the development of a mature version of the openESEIP tool. On the other hand, the development of such a tool requires a more extensive and in-depth analysis of the variability model and the concept part of the created super method for IP4ESET

in order for it to be used in a tool. In addition, more expert opinions need to be gathered and a validation by experts in the field is recommended.

Also, another interesting opportunity would be to extend the tool through an interaction with the openESEA tool. In the future, these tools can also be extended by the establishment of a link with a best practice repository. The repository can support the identification and definition of improvement actions, by capturing and sharing appropriate actions to take.

9 | Conclusion

While the concept of sustainability is nowadays accepted by various organisations as a guiding principle, we cannot speak of sustainability at a corporate or organisational level. Therefore, we refer to the state of organisational activity with reference to humanity and other species on the planet. In this research, the domain of IP4ESET is investigated based upon three aspects; focus, activities and context (see Figure 3). As a result, we can summarise that the state of the art and practice analysis results in a generic method of IP4ESET that is extended by process variants in a variability model. This model can be used as a complete guideline of how the IP4ESET phase could be organised.

To conclude, the RQs are answered and discussed as follows. First of all, RQ1 poses the following question: What is the state of the art of improvement planning in the field of continuous improvement methodologies? In this research, continuous improvement is defined as “*a continuous process cycle focused on improving social and environmental performance and business ethics in responsible enterprises*”. Through a literature study, a CI cycle is created as a result of a method comparison from existing cycles in the field of continuous improvement. Additionally, by means of a MLR study, we address the activities that are part of the second phase within this cycle related to improvement planning. Here, we focused on activities of generic improvement planning methods and methods for IP4ESET in particular, which resulted in a generic super method of IP4ESET based upon the findings in literature.

The second RQ aims to answer the following: What is the state-of-practice in improvement planning, in the context of responsible enterprises aiming at improving their social and environmental performance and business ethics? This question is answered by conducting a case study to answer the three sub-questions. Here, through a case study, a CI cycle is created as a result of a method comparison from the overall followed CI process by responsible enterprises. In addition, a super method is created for the IP4ESET process in particular. We found that the definition of an improvement plan in literature and practice differs. As observed in the case study, in most cases organisation use so-called annual reports describing a yearly overview of what an organisation has done related to their mission, vision and goals. However, as it became apparent in literature, an improvement plan can be describes as a document that focuses specifically on the description of improvement actions and related information such as resources, responsibilities and a rough timeline. As a result, this report can be used for implementation. Meaning that it provides more details related to improvement actions than occurs in an annual report. Subsequently, for each analysed case, the use of (software) tools for the IP4ESET phase are investigated. We found that these tools generally focus one aspect, such as prioritisation or generating suggestions for improvement. A versatile tool that can support all features has not been found. For the state of practice, a similar technique is used that results in a generic super method for IP4ESET based upon the findings of the case study. The limitations of the current practices are discussed in terms of shortcomings in section 8.4.

Thirdly, RQ3 is stated as follows: How can common and best practices in improvement planning for ethics, social and environmental topics be supported with advanced ICT-support software tools? is answered by setting up a framework by creating a combined super method (PDD) of the CI cycles, resulting in the SEBEIC, and IP4ESET activities that integrates the different perspectives from both literature and practice. Subsequently, this super method is extended with process variants through the creation of a variability model using BPMN. Based upon this model, we have created a concept version of a versatile and model-driven tool called openESEIP that can be used based upon the results of at least two ESEA method. In addition, shortcomings of current improvement planning tools analysed in order to set-up a feature list.

Initially, we have hypothesised that due to the different ESEA methods that exist, practices for IP4ESET activities can vary. We can conclude that, to some extent, we found evidence for this assumption. However, the choice of ESEA method is not always the main reason for how an IP4ESET process is conducted. Evidence can be found that the origin of an organisation can be seen as an intrinsic motivation for organisations to take on a certain approach for indicating improvement areas and determining appropriate actions. Nevertheless, common elements remain, which allowed us to generalise the results.

Furthermore, validation for the concept version of the ICT-support tool for IP4ESET is still limited,

however its vision has proven to be very promising already. In this way, we aim for a mature versatile and model-driven tool to support the strategic management phase of different networks and organisations as well. With this prospect in mind, we hopefully encourage others to continue working on supporting the continuously improvement of social, environmental performance and business ethics in responsible enterprises.

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A | Approaches

This Appendix contains a detailed description of two CI approaches that are mentioned in 3.1.2, which are *Lean Manufacturing* and the *Balanced Scorecard*.

A.1 Lean Manufacturing

The concept of lean was introduced by Toyota¹ in the 1950s, however the term 'lean manufacturing' was not adopted until the famous book entitled *The Machine That Changed the World* about the automobile appeared in 1990 [67]. Gupta, Sharma and Sunder[21] define the term lean as: “*an integrated multi dimensional approach encompassing wide variety of management practices based on philosophy of eliminating waste through continuous improvement.*” The strength of lean production can be found in the interdependent working behaviour of these practices. This generates the creation of an up-to-date, high quality system that produces finished products accommodating customer demands with little or no waste [54]. ‘*Lean Thinking*’ as opposed by Womack and Jones [66] helped us to understand the principles of lean, which are:

- The identification of value;
- The elimination of waste;
- The generation of flow (of value to the customer)

This concept encompasses two elements as; the customer and the definition of value. A manufacturing process can be seen as delivering value, i.e. a product, to a customer. Melton [40] stresses the importance of linking all the elements of the manufacturing process within a robust supply chain, since the flow of value needs to be ensured. This also generates benefits; decreased lead times for customers, reduced inventories for manufacturers, and improved knowledge management [40]. Hence, lean is about controlling the resources in accordance with the customers’ needs and to reduce unnecessary waste (including the waste of time) involving the entire organisation in efforts towards continuous improvement. According to Pepper and Spedding [47], the foundation of the lean vision is a focus on the individual product and its value stream (identifying value-added and non-value added activities), and to eliminate all waste in all areas and functions within the system – the main target of *lean thinking* as stated in [66]. Ahmad, Markkula and Oivo [1] state that lean is used in most global industries and virtually in all organisational sectors including the software industry; now it is among the fastest growing approaches used by the software development professionals. Lean should be regarded as a coherent methodology and therefore a step beyond previous ad hoc continuous improvement strategies [47].

A.2 Balanced Scorecard

The Balanced Scorecard (BSC) is an approach for strategy development and deployment [33]. It can be described as a multidimensional approach to performance measurement and management control specifically linked to organisational strategy. According to Dabhilkar and Bengtsson [12], the core component of the BSC is the emphasis on the link between performance measures and action plans at all levels of an organisation with business unit strategy. Therefore, the balanced scorecard (BSC) has become a popular concept for performance measurement [3]. The BSC is concerned with four perspectives as depicted in Figure 61; *financial, internal business process, learning and growth and the customer* [33].

The purpose of the BSC is to translate an organisation’s mission and vision statements into a broad set of objectives and performance measures that can be quantified, evaluated, and measures whether management is achieving desired results [9]. Hence, it is generally used to clarify and update the business

¹<https://www.toyota.com>

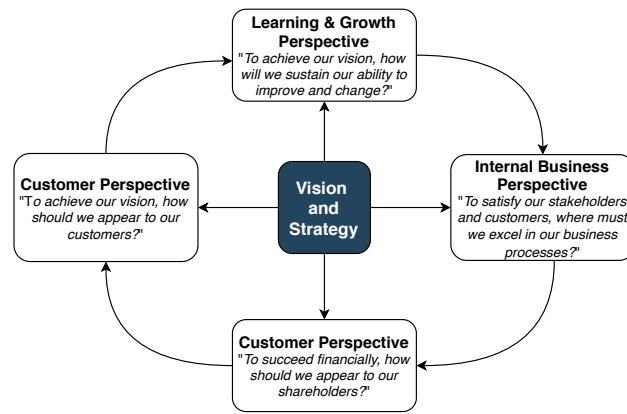


Figure 61. General framework of the balanced scorecard

strategy, link the objectives of the organisation to the annual budgets, allow organizational change, and increase the understanding of the company vision and mission statements across the organisation. However, according to Kaplan and Norton [32], the BSC is not a tool for the formulation of strategies, however it is used for describing an existing strategy consistently in order to improve its successful execution.

As a result of taking into account non-monetary strategic success factors, the BSC can be seen as a promising starting-point to also incorporate environmental and social aspects into the main management system of a firm [3]. Figge et al. [17] investigated the suitability of the BSC for sustainable management. In their paper, they state that sustainability management with the Balanced Scorecard helps to overcome the shortcomings of traditional approaches to environmental and social management systems by integrating the three pillars of sustainability into a single and encompassing strategic management tool. These pillars are known as environmental, social, and economic [25]. The integration of this pillars with general business management ensures that corporate sustainability take all the three dimensions of sustainability into account. Accordingly, the BSC can support the process of identifying and managing the improvement of environmental, social and financial business goals [17].

A.3 Six Sigma and Lean Six Sigma

Motorola² was the first company to launch a Six Sigma programme in the mid-1980s [50]. Six Sigma has been defined by Linderman et al. [38] as *“an organised and systematic method for strategic process improvement and new product and service development that relies on statistical methods and the scientific method to make dramatic reductions in the customer defined defect rates”*. Six Sigma provides quality measurement that can be used throughout an organisation, not only in manufacturing however also in design, administrative, and service areas [9]. Henderson and Evans [26] state that the important components for a successful Six Sigma implementation lay in management involvement, organisation, infrastructure, training and statistical tools. The concept of lean can be combined with six sigma, which according to Bhuiyan and Baghel [9] generates greater value to the customers. The strength of combining these concepts lies in the variation of both methodologies. The purpose of lean is to eliminate all kinds of unnecessary waste from development, while six sigma focuses on reducing variation. Hence, when these concepts are combined waste can be eliminated, which facilitates the process of uncovering variation. The fusing enables to uncover important concerns that each methodology individually could fail to do. As emphasized by Pepper and Spedding [47], Lean Six Sigma should be seen as the platform for the initiation of cultural and operational change, leading to total supply chain transformation. Lean and Six Sigma have become the most popular business strategies for deploying continuous improvement in manufacturing, service and public service organisations [4].

²<https://www.motorola.com/us/home>

B | Method Comparison 1

This Appendix contains an overview of the PDDs that are created based on the input provided of the CI methods, which are described in section 3.2. It must be noted that the concept and attributes that are denoted in *Italic* are not explicitly mentioned in the analysed methods and method documentation. For instance, the PDCA method does not mention MANAGEMENT CONTEXT explicitly, however they refer to process and/or product improvement as the aim and scope of this improvement cycle. The PDCA method is used to identify a problem that occurs in either a process and/or product. Therefore, we decide to add these concepts to the PDDs in order to have an in-depth understanding of these methods. In addition, there are both closed and open concepts used in the created PDD. We use a CLOSED CONCEPT (visualised with a black border) if we are not interested in the sub concepts of a particular concept, since it is not relevant for the scope, context and understanding of the method. For instance, in the PDCA method the concept IMPLEMENTATION PLAN is considered as a closed concept, since its sub concepts are unknown and the precise implementation is out of scope in this research.

Name	Abbreviation
Plan Do Check Act	PDCA
Define Measure Analyse Improvement Control	DMAIC
Monitoring Evaluation Learning	MEL
Sustainability Management Cycle	SMC
Sustainability Planning Model	SPM
Continuous Ethical Improvement Model	CEIM
The Ethical Cycle	TEC
The Sustainability Business Transformation Road-map Cycle	SBTC

Table 26: Overview continuous improvement methods

B.1 Meta-models of the Continuous Improvement Methods

B.1.1 Meta-models - generic

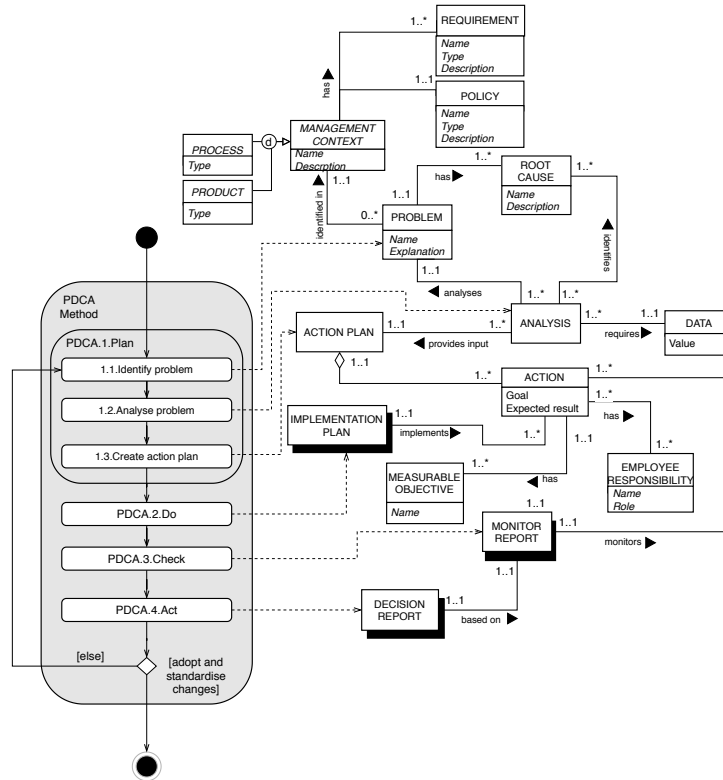


Figure 62. PDD of PDCA method

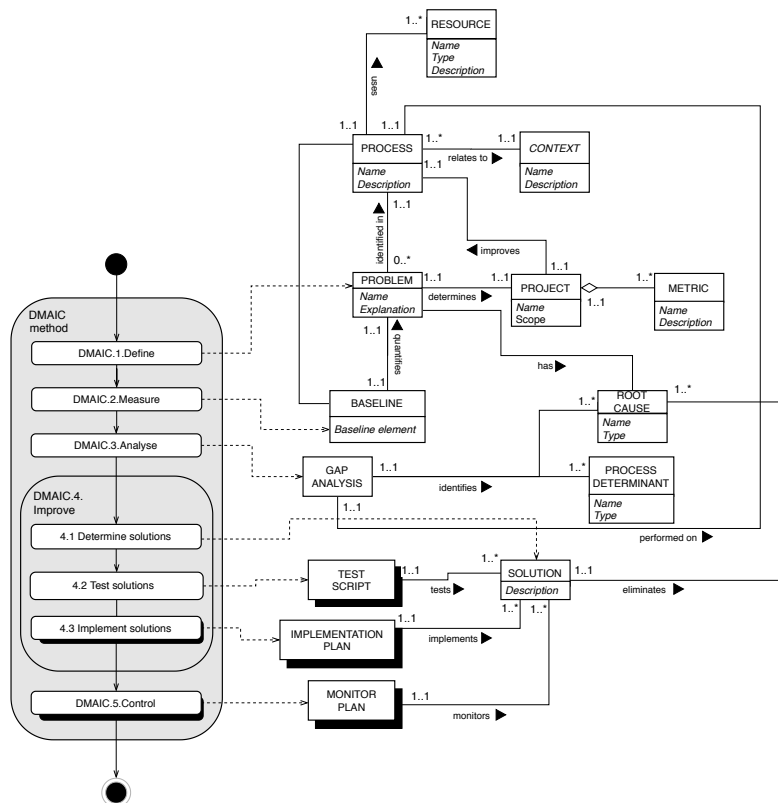


Figure 63. PDD of DMAIC method

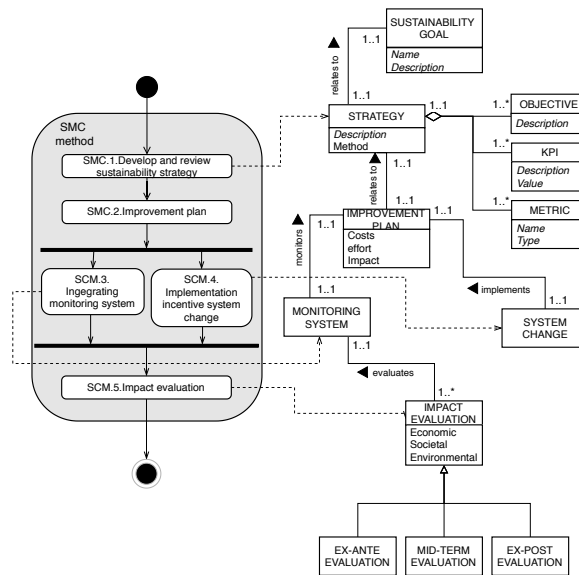


Figure 65. PDD of SMC method

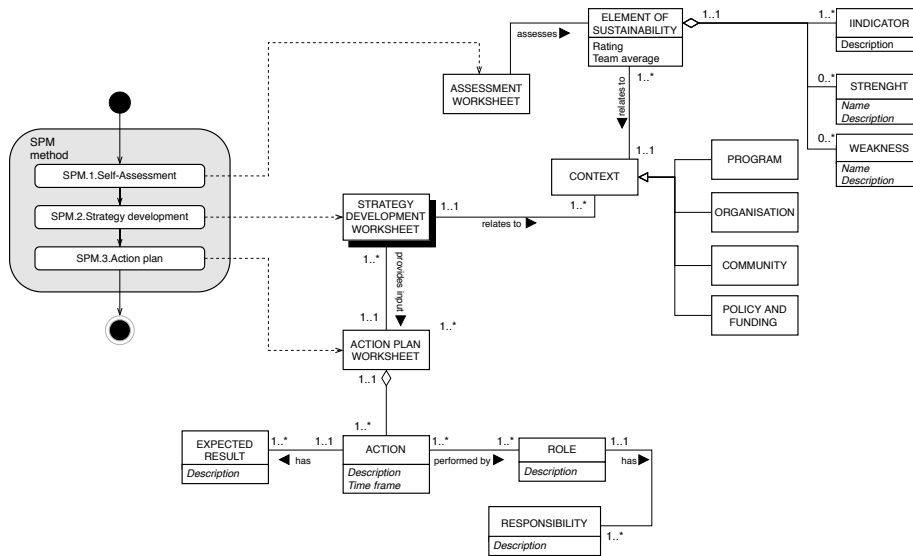


Figure 66. PDD of SPM method

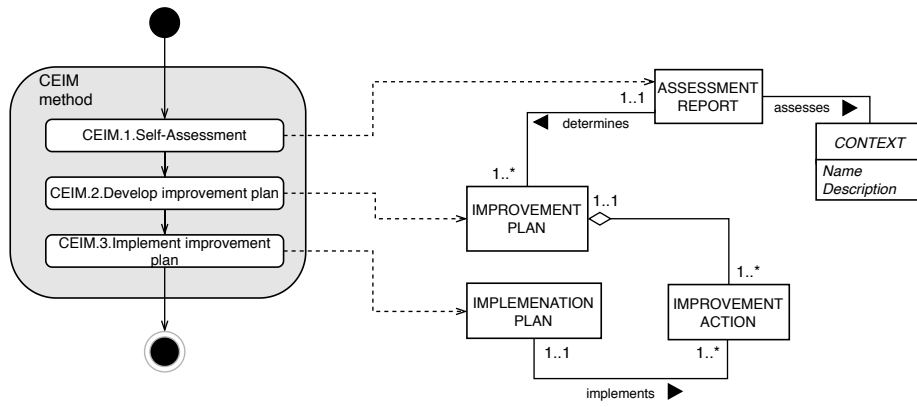


Figure 67. PDD of CEIM method

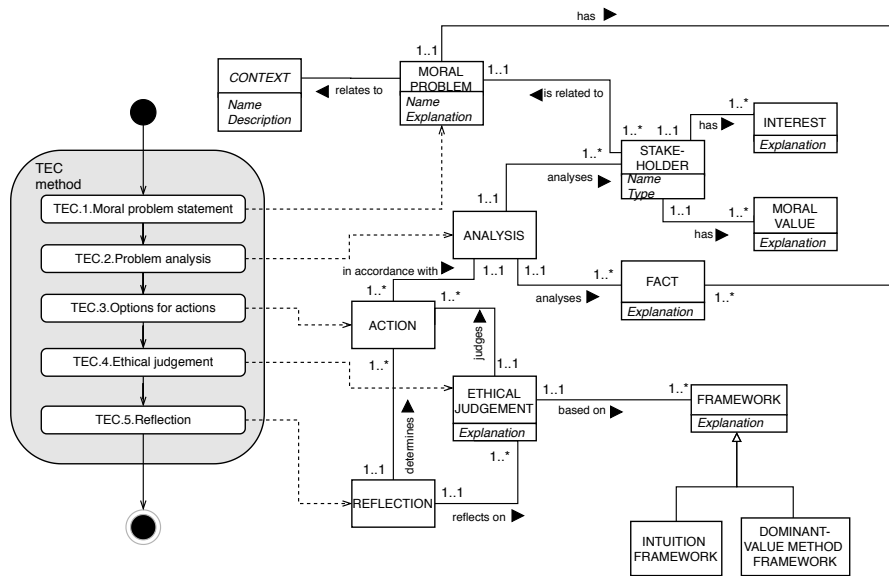


Figure 68. PDD of TEC method

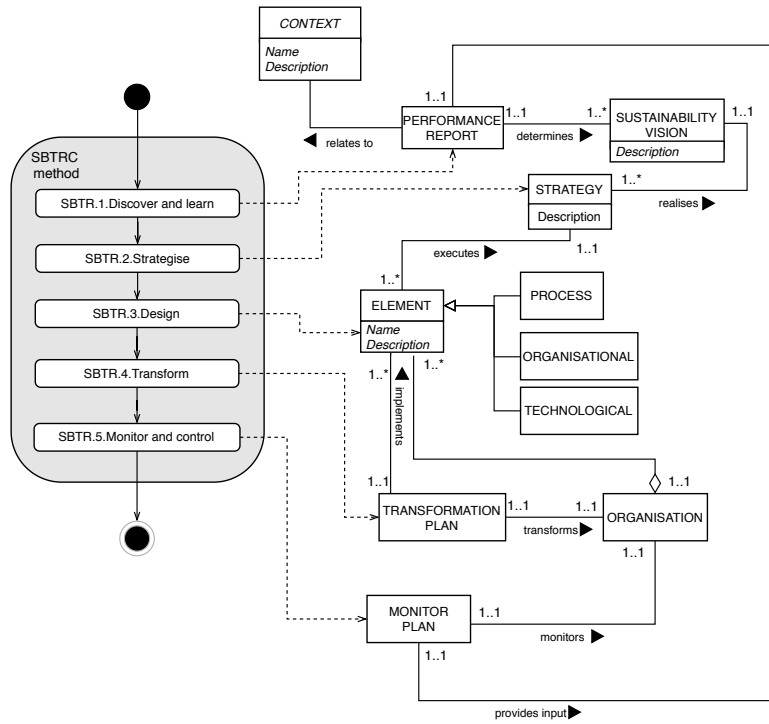


Figure 69. PDD of SBTR method

B.2 Description of Activities the Methods

Table 27 on page 131 provides an overview of descriptions per activity of the generic improvement methods that are described in section 3.2. Table 28 on page 132 provides an overview of descriptions per activity of the improvement planning methods for ethics, social and environmental topics that are described in section 3.3.

Generic Improvement Cycles		
Cycle Name	Activity	Explanation of Activity
PDCA	PDCA.1.Plan	Analysis of what needs to be improved (improvement areas); identifying a problem (1.1), analyse the problem (1.2), creation of action plan(1.3)
	PDCA2.Do	Implementation and realisation of the action plan
	PDCA.3.Check	Monitoring and reflecting on the changes that are made; measurement and assessment
	PDCA.4.Act	Decision is made; adoption of the changes, reflection on what can be changes or running the PDCA-cycle through again
DMAIC	DMAIC.1.Define	Identifying the business problem, which outlines the focus of the project (including its scope and objectives)
	DMAIC.2.Measure	Quantifying the problem; establishing a baseline for improvement and current process performance
	DMAIC.3.Analyse	Determining key root causes and process determinants for gaps in the current process
	DMAIC.4.Improve	Determining key tasks to implement solutions for the determined root causes of the problem; test and implement these solutions
	DMAIC.5.Control	Sustaining improvement and maintaining the desired results by creating a monitoring plan to continue measuring the process

Table 27: Overview of descriptions of the activities of the generic improvement cycles

Sustainability and Business Ethics Improvement Methods		
Method	Indicator activity	Description
MEL	MEL.1.Initial need assessment	Identifying a specific problem or need in a certain area; gaining a in-depth understanding of the identified problem by performing an analysis and generating possible solutions
	MEL.2.Project design	Designing a suitable project that addresses the identified problem
	MEL.3.MEL planning	Determining which methods and tools can be adopted for integrating monitoring, evaluation and learning on activities, outputs of the activities and outcomes of the project life cycle. This activity results in a realistic action
	MEL.4.Baseline study	Establishment of how the target area looks like prior to the start and implementation of the project
	MEL.5.Midterm evaluation and/or review	Project implementation + monitoring; conducting a midterm evaluation to keep track of the project, ensuring that the project is achieving desired outcomes regarding the identified need or problem
	MEL.6.Final evaluation	Project implementation + monitoring; evaluation of the final results of the project
	MEL.7.Learning and reviewing	Identifying any possible learning aspects regarding the project
	MEL.8.Input from past learning	Using the identified learning and knowledge as input for future project ideas
SMC	SMC.1.Develop and review sustainability strategy	Defining the goal, objectives, KPIs, metrics and method that define the sustainability strategy; Reviewing the current sustainability strategy if applicable
	SMC.2.Improvement plan	Determining costs, efforts and impact related to the sustainability strategy
	SMC.3.Integrating monitoring system	Implementation of improvement plan
	SMC.4.Implementation incentive and system changes	Implementation of improvement plan
	SMC.5.Impact evaluation	Analysing the economic, societal and environmental impacts of a range of development policies, strategies, projects, products and services; gaining insights into the efficiency and effectiveness of implemented monitoring measures
SPM	SPM.1.Self-Assessment	Rating of the strength of the current program the organisation and community, and the policy and funding context
	SPM.2.Strategy Development	Collection and organising of information related to the program, the organisation and community, and policy and funding
	SPM.3.Action Plan	Establishment of an action plan for each focus area; determining action steps for each identified strategy, including a description of the roles and responsibilities, a time frame and expected results per action
CEIM	CEIM.1.Self-Assessment	Assessing current standing and level of existing process including its weaknesses and strengths
	CEIM.2. Develop improvement plan	Solving the challenge of how to implement procedures and structures that will encourage ethical improvement and decision making in their organisation; development of an improvement plan
	CEIM.3.Implement improvement plan	Implementation of improvement plan
TEC	TEC.1.Moral problem statement	Defining a precise and clear moral problem statement
	TEC.2.Problem analysis	Analysis of; the stakeholders and their interests, the moral values that are relevant in the situation and the relevant facts
	TEC.3.Options for actions	Generating suitable options for actions in accordance with the formulated problem analysis
	TEC.4.Ethical judgement	Judgement of the moral acceptability of the options (based on a framework see section 3.3.5)
	TEC.5.Reflection	Reaching a well-argued decision about what actions to follow taking into account all outcomes of the previous steps
SBTRC	SBTRC.1.Discover and learn	Discover and learn about the current performance and context of the business. Once the decision maker understands and learns from this, they can then envision how sustainability can be achieved.
	SBTRC.2.Strategise	This vision needs to be realised through one or more strategies, exploring various sustainability scenarios and deciding on the strategy that best suits the organisation.
	SBTRC.3.Design	Design of process, the organisational and technological elements that would enable the business to execute the strategy.
	SBTRC.4.Transform	Transform, which referred to the transformation of the organisation in terms of processes, organisational structures and information systems. This transformation is not a one-off activity but is envisaged as a continuous process of improvement that allows the organisation to become more and more sustainable
	SBTRC.5.Monitor and control	Monitor and Control the organisation as a whole. This monitoring and controlling enable continued discovery and learning about the organisation and its surroundings which could in turn lead the decision makers to reformulate sustain-ability strategies, redesign, and continue to transform the organisation into a sustainable one

Table 28: Overview of descriptions of the activities of the improvement planning methods for ethics, social and environmental topics

B.3 Description of the Concepts of the Methods

Table 29 provides an overview of descriptions per concept of the generic improvement methods that are described in section 3.2. Table 30 on page 134 provides an overview of descriptions per concept of the improvement planning methods for ethics, social and environmental topics that are described in section 3.3.

Method	Concept	Definition
PDCA	MANAGEMENT CONTEXT	The MANAGEMENT CONTEXT has one or more REQUIREMENTS and a POLICY. Name and description are modelled as properties
	PROCESS	PROCESS is a type of MANAGEMENT CONTEXT
	PRODUCT	PRODUCT is a type of MANAGEMENT CONTEXT
	REQUIREMENT	A REQUIREMENT has name, type and description modelled as properties and are part of a MANAGEMENT CONTEXT
	POLICY	A POLICY has name, type and description modelled as properties and are part of a MANAGEMENT CONTEXT
	PROBLEM	A PROBLEM has one or more ROOT CAUSES and is identified in a MANAGEMENT CONTEXT. Name and explanation are modelled as properties
	ROOT CAUSE	A ROOT CAUSE identifies the history of a PROBLEM, where and why it started
	DATA	DATA is used as input for an ANALYSIS and has value modelled as property
	ANALYSIS	An ANALYSIS is performed in order to identify one or more ROOT CAUSES and therefore analyses the PROBLEM. In addition, it provides input for an ACTION PLAN and requires DATA
	ACTION PLAN	An ACTION PLAN consists of one or more ACTIONS
	ACTION	An ACTION has one or more MEASURABLE OBJECTIVES and one or more EMPLOYEE RESPONSIBILITIES. Goal and expected result are modelled as properties
	EMPLOYEE RESPONSIBILITY	EMPLOYEE RESPONSIBILITY is given to one or more ACTIONS and has name and role modelled as properties
	IMPLEMENTATION PLAN	An IMPLEMENTATION PLAN implements one or more ACTIONS
	MONITOR REPORT	A MONITOR REPORT monitors one or mor ACTIONS
	DMAIC	MEASURABLE OBJECTIVE
DECISION REPORT		A DECISION REPORT contains a decision based on the outcome of the previous activity, so on the outcome of the MONITOR REPORT. Standardise of the changes, reflection on what can be changed or running the PDCA-cycle through again.
PROCESS		A PROCESS uses one or more RESOURCES and is related to a CONTEXT. Name and description are modelled as properties
CONTEXT		A CONTEXT has name and description modelled as properties and marks the scope of a PROCESS
RESOURCE		A RESOURCES is used by a PROCESS and name, type and description are modelled as properties
PROJECT		A PROJECT is set up to improve a PROCESS and consists of one or more METRICs to measure performance of that PROJECT. Name and scope are modelled as properties
PROBLEM		A PROBLEM describes the business problem, its scope and objectives. It is identified in a PROCESS and has one or more ROOT CAUSES. A PROBLEM determines a PROJECT and its scope
METRIC		A METRIC is determines the performance of a PROJECT and has name and description modelled as properties
BASELINE		A BASELINE quantifies the problem; establishing a baseline for improvement and current process performance. Baseline element is modelled as a property
GAP ANALYSIS		A GAP ANALYSIS holds the identification of the key ROOT CAUSES and PROCESS DETERMINANTS of the current process. It is performed on a PROCESS
ROOT CAUSE		A ROOT CAUSE provides a description of the cause of a PROBLEM that occurs in a current process
PROCESS DETERMINANT		A PROCESS DETERMINANT provides a description of process factors as part of a current process
TEST SCRIPT		A TEST SCRIPT tests one or more SOLUTIONS
IMPROVEMENT PLAN		An IMPROVEMENT PLAN contains the key tasks to implement solutions for the determined ROOT CAUSES of the PROBLEM
SOLUTION		A SOLUTION eliminates the ROOT CAUSES of a PROBLEM. Description is modelled as a property
MONITOR PLAN	A MONITOR PLAN is a document that describes how to sustain and measure improvement and maintaining the desired results. It measures one or more SOLUTIONS	

Table 29: Overview of descriptions of the concepts of the generic improvement methods

Method	Concept	Definition
MEL	CONTEXT	A CONTEXT refers to the improvement area an organisation can target. Name and description are modelled as properties
	ANALYSIS	An ANALYSIS analysis a PROBLEM
	PROBLEM	A PROBLEM is identified in a CONTEXT and has one or more SOLUTIONS. Name and explanation are modelled as properties
	SOLUTION	A SOLUTION provides input for a PROJECT
	PROJECT	A PROJECT has goal and result modelled as properties and consist of one or more ACTIVITIES. In addition, it triggers one or more LEARNING ASPECTS
	MEL PLAN	A MEL PLAN guides a PROJECT
	BASELINE	A BASELINE uses one or more INDICATORs and sets a target for a PROJECTs. Baseline element is modelled as property
	INDICATOR	An INDICATOR provides a measurable element that is used for setting up a BASELINE. Name and description are modelled as properties
	ACTIVITY	An ACTIVITY has an INDICATOR in order to be measured and is part of a PROJECT
	MONITOR PLAN	A MONITOR PLAN monitors a PROJECT
	EVALUATION PLAN	An EVALUATION PLAN monitors a PROJECT
	LEARNING ASPECT	A LEARNING ASPECT is triggered by a PROJECT by providing new knowledge and insights (KNOWLEDGE INPUT)
	KNOWLEDGE INPUT	KNOWLEDGE INPUT is provided by a LEARNING ASPECT as a result of executing a PROJECT. In addition, it provides input for (new) PROJECTs
SMC	SUSTAINABILITY GOAL	The SMC method is used for reaching SUSTAINABILITY GOALs related to a STRATEGY. Name and description are modelled as properties
	STRATEGY	A STRATEGY describes a sustainability strategy for managing sustainability management and consist of one or more OBJECTIVE, KPIs and METRICs that defines the STRATEGY. In addition, a STRATEGY is defined is related to a SUSTAINABILITY GAOL and has description and method modelled as properties
	OBJECTIVE	An OBJECTIVE defines the achievements of a STRATEGY; an aim or purpose. Description is modelled as a property
	KPI	An KPI is a measurable value that indicates if the OBJECTIVEs of the STRATEGY are achieved. Description and value are modelled as properties
	METRIC	An METRIC is a standard of measurement to measure the OBJECTIVEs of the STRATEGY. Name and type are modelled as properties
	IMPROVEMENT PLAN	An IMPROVEMENT PLAN has three properties impact, cost and effort, which are determined in the IMPROVEMENT PLAN
	MONITORING SYSTEM	MONITORING SYSTEM is concerned with the monitoring of the IMPROVEMENT PLAN
	SYSTEM CHANGE	SYSTEM CHANGE is concerned with the implementation of the IMPROVEMENT PLAN
	IMPACT EVALUATION	There are three types of IMPACT EVALUATION; EX-ANTE, MID-TERM and EX-POST. These evaluations analyse economic, societal and environmental impacts, which are modeled as properties, of the MONITORING SYSTEM.
	EX-ANTE EVALUATION	EX-ANTE EVALUATION is a type of IMPACT EVALUATION and is performed in order to analyse whether the goals that are set can be achieved or whether they can be measured by means of the proposed actions and indicators
	MID-TERM EVALUATION	MID-TERM EVALUATION is a type of IMPACT EVALUATION. The goal is to measure and assess intermediate results of the effects and the impact of the actions and indicators
EX-POST EVALUATION	EX-POST EVALUATION is a type of IMPACT EVALUATION The goal is to measure and assess final results of the effects and the impact of the actions and indicators	
SPM	ELEMENT OF SUSTAINABILITY	An ELEMENT OF SUSTAINABILITY consists of one or more INDICATORs, zero or more STRENGTHs and WEAKNESSEs. It is related to a CONEXT and rating and team average are modelled as properties
	INDICATOR	An INDICATOR is part of an ELEMENT OF SUSTAINABILITY. Description is modelled as a property
	STRENGHT	STRENGHT is part of an ELEMENT OF SUSTAINABILITY. Name and description are modelled as properties
	WEAKNESS	WEAKNESS is part of an ELEMENT OF SUSTAINABILITY. Name and description are modelled as properties
	ASSESSMENT WORKSHEET	ASSESSMENT is concerned with rating the strength of the current program, the organisation and community, and the policy and funding CONTEXT to identify strengths and weaknesses
	CONTEXT	A CONTEXT determined what is assessed in the ASSESSMENT WORKSHEET and has 4 types: PROGRAM, ORGANISATION, COMMUNITY and FUNDING and POLICY
	PROGRAM	PROGRAM is a type of CONTEXT
	ORGANISATION	ORGANISATION is a type of CONTEXT
	COMMUNITY	COMMUNITY is a type of CONTEXT
	POLICY AND FUNDING	POLICY AND FUNDING is a type of CONTEXT
	STRATEGY DEVELOPMENT WORKSHEET	From each CONTEXT information is collected to determine a STRATEGY
	ACTION PLAN	An ACTION PLAN consist of on or more STRATEGIES and ACTIONs
	ACTION	An ACTION has two properties, which are description and time frame. An ACTION is performed by one or more ROLES and has one or more EXPECTED RESULTS.
EXPECTED RESULT	An EXPECTED RESULT describes the desired and expected outcome of an ACTION. Description is modelled as a property	
ROLE	A ROLE has one ore more RESPONSIBILITIES and description is modelled as a property	
RESPONSIBILITY	A RESPONSIBILITY describes the duties of a ROLE with description modelled as a property	

Table 30: Overview of descriptions of the concepts of the improvement planning methods for ethics, social and environmental topics (part 1)

Method	Concept	Definition
CEIM	CONTEXT	A CONTEXT is assessed in a ASSESSMENT REPORT. Name and description are modelled as properties
	ASSESSMENT REPORT	An ASSESSMENT assesses a current standing and level of existing process including its weaknesses and strengths. The outcome of an assessment is a rapport, which is modeled as property
	IMPROVEMENT PLAN	An IMPROVEMENT PLAN consists of one or more IMPROVEMENT ACTIONS
	IMPROVEMENT ACTION	An IMPROVEMENT ACTION describes how to implement procedures and structures that will encourage ethical improvement and decision making in their organisation
	IMPLEMENTATION	IMPLEMENTATION is concerned with the implementation of the IMPROVEMENT ACTIONS
TEC	CONTEXT	A CONTEXT marks the area which a PROBLEM is related to. Name and description are modelled as properties
	MORAL PROBLEM	A MORAL PROBLEM defines a precise and clear moral problem statement and has one or more FACTS. In addition, it relates to a CONTEXT. Name and explanation are modelled as properties
	STAKEHOLDER	A STAKEHOLDER has one or more INTERESTS and MORAL VALUEs in the CONTEXT of the MORAL PROBLEM. Name and type are modelled as properties
	INTEREST	An INTEREST is a character of a STAKEHOLDER, which is crucial for defining ACTIONS. Explanation is modelled as a property
	MORAL VALUE	A MORAL VALUE is a character of a STAKEHOLDER, which is crucial for defining ACTIONS. Explanation is modelled as a property
	ANALYSIS	An ANALYSIS analyses the INTERESTS and MORAL VALUEs of STAKEHOLDERs that are relevant in the situation and the relevant FACTS
	FACT	A FACT is a relevant element describing the MORAL PROBLEM, which is crucial for defining ACTIONS. Explanation is modelled as property
	ACTION	An ACTION is een option for solving the MORAL PROBLEM and results from an ANALYSIS about the FACTS of a MORAL PROBLEM. Hence, an ACTION is in accordance with and based on the results from this ANALYSIS
	ETHICAL JUDGEMENT	An ETHICAL JUDGEMENT judges the moral acceptability of one or more ACTIONS and is based on one or more FRAMEWORKS. Explanation is modelled as a property
	FRAMEWORK	There are two types of FRAMEWORKS: INTIUTION and DOMINANT VALUE METHOD. Explanation is modelled as a property
SBTR	INTUTIONAL FRAMEWORK	The INTUITION FRAMEWORK indicates based on your view, which action is intuitively most acceptable
	DOMINANT-VALUE METHOD	The DOMINANT-VALUE METHOD establishes either an individually or collectively favored value
	REFLECTION	A REFLECTION reflects on one or more ETHICAL JUDGEMENTs and determines the final set of ACTIONs
	BUSINESS CONTEXT	A BUSINESS CONTEXT determines the context in which performance is measured. Name and description are modelled as properties
	PERFORMANCE REPORT	A PERFORMANCE REPORT reports on current performance related to a BUSINESS CONTEXT and determines one or more SUSTAINABILITY VISIONs.
	SUSTAINABILITY VISION	A SUSTAINABILITY VISION is based on what is observed in the PERFORMANCE REPORT. Description is modelled as a property
	STRATEGY	A STRATEGY realises one or more SUSTAINABILITY VISIONs and has description modelled as a property
	ELEMENT	An ELEMENT is designed that enables a business to execute the STRATEGIES. Name and description are modelled as properties
	PROCESS	PROCESS is a type of ELEMENT
	ORGANISATIONAL	ORGANISATIONAL is a type of ELEMENT
TECHNOLOGICAL	TECHNOLOGICAL is a type of ELEMENT	
SBTR	TRANSFORMATION PLAN	A TRANSFORMATION PLAN transforms an ORGANISATION
	ORGANISATION	An ORGANISATION consists of one or more ELEMENETs
	MONITOR PLAN	A MONITOR PLAN monitors the performance of an ORGANISATION and hence the designed ELEMENTS for executing the STRATEGIES. In addition, it provide input for the PERFORMANCE REPORT, which uses data as a result of the MONITOR PLAN to measure PERFORMANCE

Table 31: Overview of descriptions of the concepts of the improvement planning methods for ethics, social and environmental topics (part 2)

B.4 Activity and Concept Table of Super Method

Continuous Improvement Super Method Activities		
<i>Indicator activity</i>	<i>Indicator sub-activity</i>	<i>Description</i>
G1.Self-Assessment	G1.1 Monitoring	Monitoring of current level of standing (processes, prior improvement planning activities etc.)
	G1.2.Evaluation	Evaluation of current level of standing (processes, prior improvement planning activities etc.)
G2.Improvement planning	G2.1.Investigate problem	Identification of a problem (target area) based on prior assessment in G1
	G2.2.Create improvement plan	Creation of an improvement plan including its improvement actions
G3.Organisational re-engineering	G3.1.Implement improvement plan	The implementation of improvement actions as part of the the improvement plan in the organisation

Table 32: Overview of descriptions of the activities of the continuous improvement super method and their indicators

Concept	Definition
MONITOR PLAN	A MONITOR PLAN consists of one or more DIRECT INDICATORS
DIRECT INDICATOR	A DIRECT INDICATOR is a type of MEASURABLE ELEMENT. An INDICATOR calculates the value of zero or more METRICS and can be described as a type of information that is used and meaningful for understanding performance of an organisation. Name, description and value are modelled as properties
CONTEXT	A CONTEXT has zero or more DIRECT INDICATORS determining what is reported on in the ASSESSMENT REPORT. Name and description are modelled as properties
METRIC	A METRIC is a type of MEASURABLE ELEMENT that can be calculated by an INDICATOR. Name and type are modelled as properties
DATA	DATA is described as a piece of information that holds the value of a METRIC, which is modelled as property
ASSESSMENT REPORT	An ASSESSMENT REPORT is concerned with rating the strength of the current level of standing in a CONTEXT . Hence, it reports on the CONTEXT
PROBLEM INVESTIGATION	A PROBLEM INVESTIGATION analyses a PROBLEM and provides input for an IMPROVEMENT PLAN
PROBLEM	A PROBLEM is identified in a CONTEXT and highlighted in an ASSESSMENT REPORT. Name and explanation are modelled as properties
ANALYSIS	An ANALYSIS analyses one or more PROBLEMS and provides input for one or more IMPROVEMENT ACTIONS
IMPROVEMENT PLAN	An IMPROVEMENT PLAN consists of one or more IMPROVEMENT ACTIONS.
IMPROVEMENT ACTION INDICATORS	An IMPROVEMENT ACTION is part of an IMPROVEMENT PLAN and is measured by one or more DIRECT INDICATORS
IMPLEMENTATION	An IMPLEMENTATION is concerned with the implementation of one or more IMPROVEMENT ACTIONS

Table 33: Overview of the definitions of the concepts of the continuous improvement super method

C | Method Comparison 2

This appendix contains an overview of the PDDs that are created based on the result of the MLR (see section 3.6). In Table 34, the names of these methods including its abbreviation that will be used in this research, are described. It must be noted that the attributes that are denoted in *Italic* are not explicitly present in the analysed method and method documentation. For instance, we add attributes such as *Name* and *Description* to clarify the concept IMPROVEMENT AREA as present in the APG method. In addition, there are CLOSED CONCEPTs used in the created PDD. We use a CLOSED CONCEPT (visualised with a black border) if we are not interested in the sub concepts of a particular concept, since it is not relevant for the scope, context and understanding of the method. For instance, in the QRIS method the concept CONTINGENCY PLAN is considered as a closed concept, since the precise implementation is out of scope of this research and its sub concepts are unknown.

Name	Abbreviation
Adaptive System of School Improvement Support Tools	ASSIST
Action Planning Guide	APG
Quality, Service Improvement and Redesign Tools	QRIS
Sustainability Action Plan	SAP
Program Sustainability Assessment Tool	PSAT
Community Environmental Action Plan	CEAP
Agency for Healthcare Research and Quality Improvement Plan	AHQR

Table 34: Overview continuous improvement methods

C.1 Meta-models of Generic Improvement Planning Activities

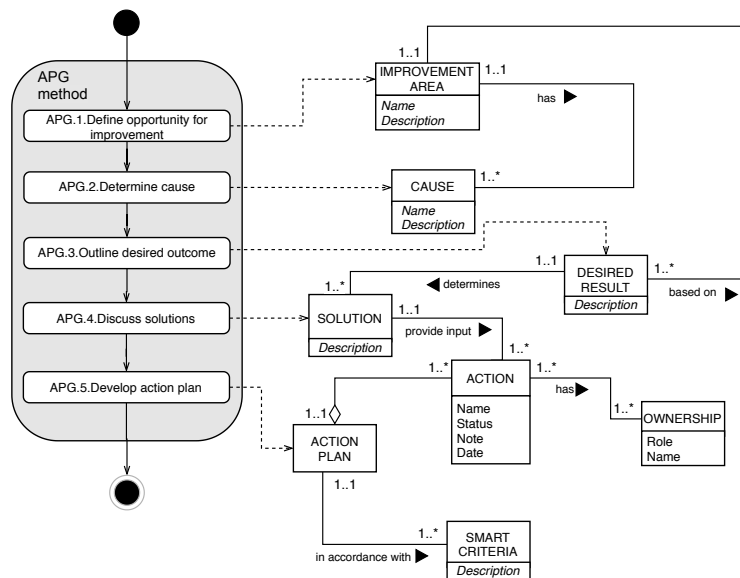


Figure 70. PDD of APG method

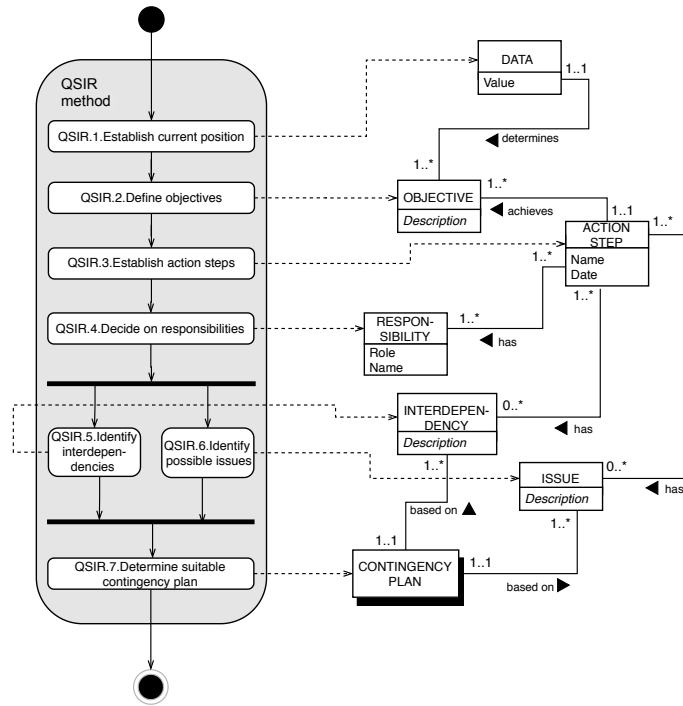


Figure 71. PDD of QRIS method

C.2 Meta-models of Social, Environmental and Business Ethics Planning Activities

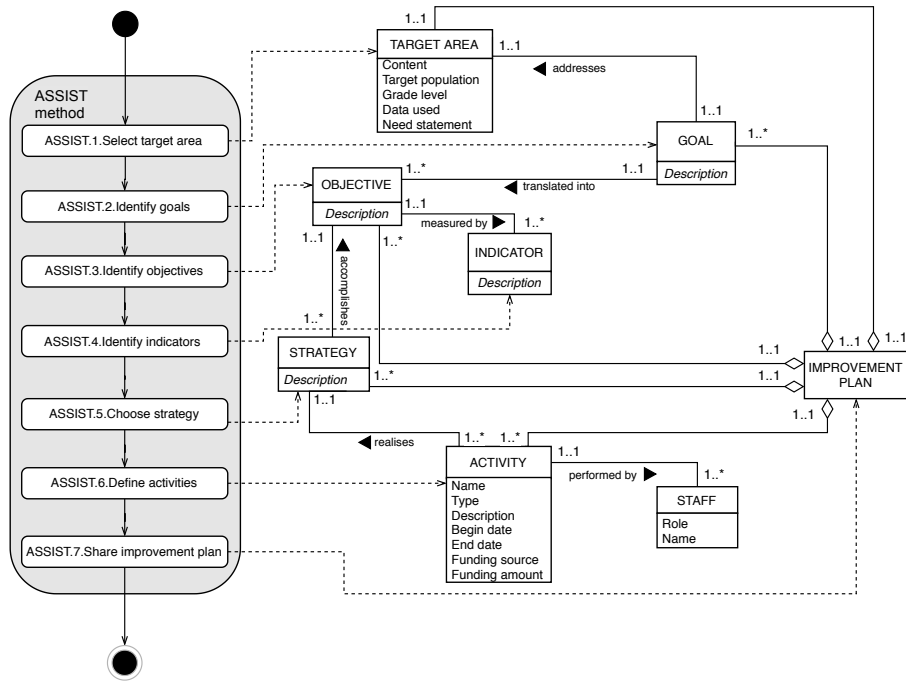


Figure 72. PDD of ASSIST method

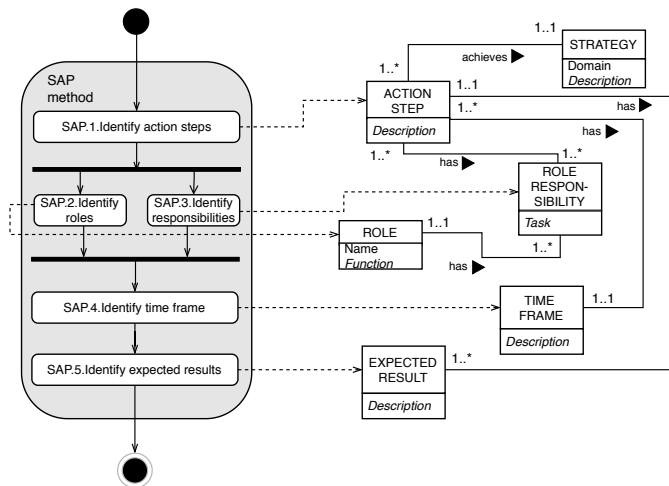


Figure 73. PDD of SAP method

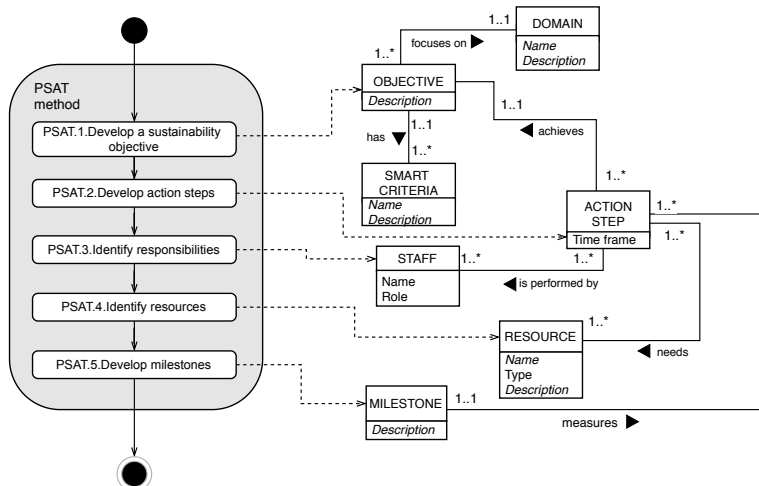


Figure 74. PDD of PSAT method

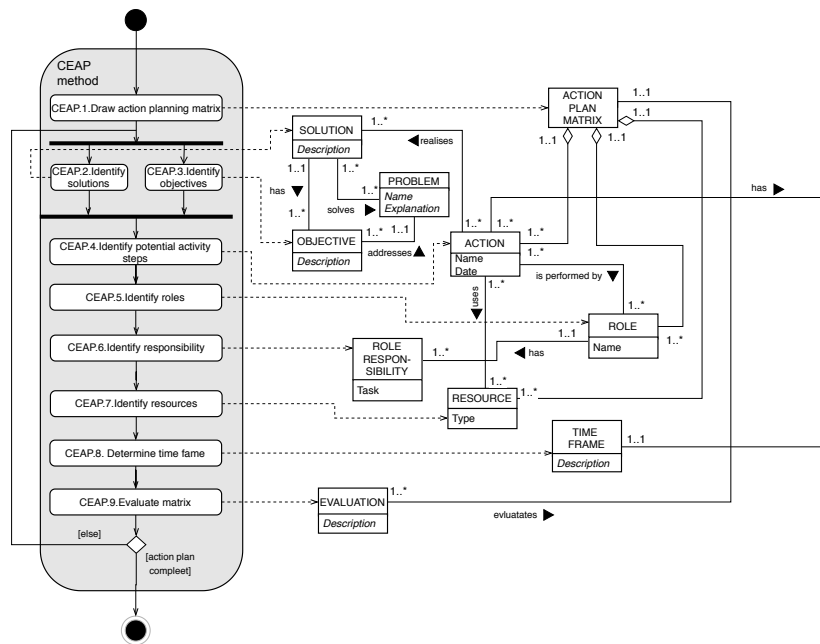


Figure 75. PDD of CEAP method

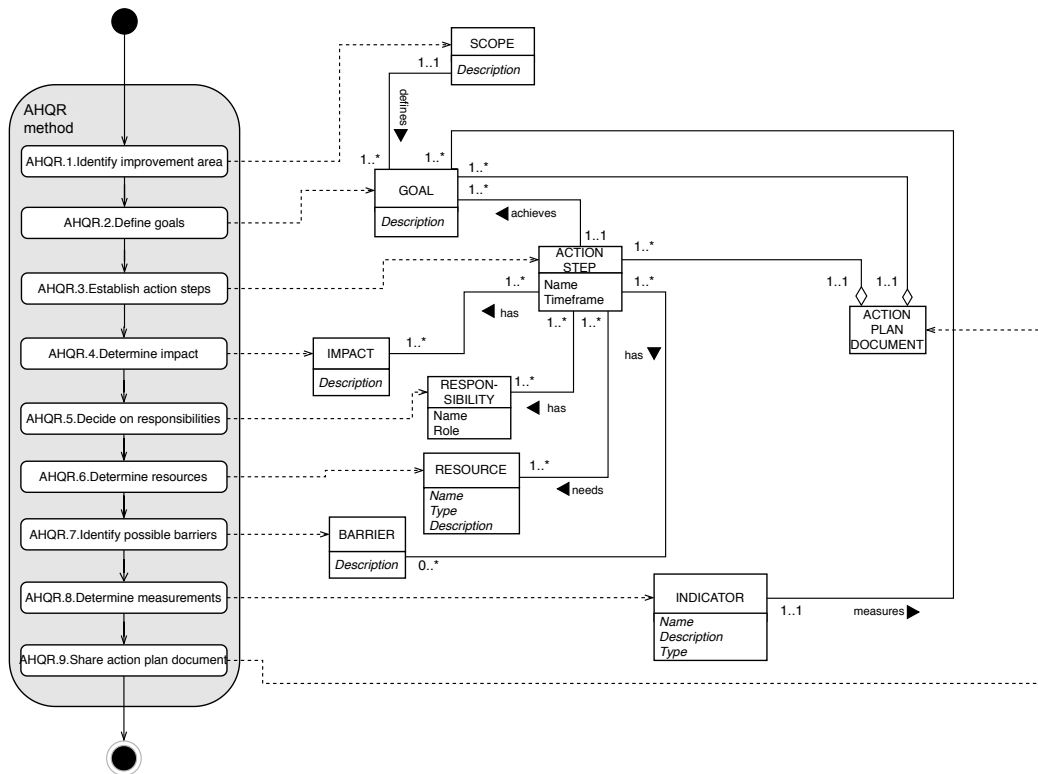


Figure 76. PDD of AHQR method

C.3 Description of Activities the Methods

Table 35 on page 141 provides an overview of descriptions per activity of the generic IP methods. Table 36 on page 141 provides an overview of descriptions per activity of the sustainability and business ethics IP methods.

Generic Improvement Planning Activities		
Method	Indicator activity	Description
APG	APG.1. Define opportunity for improvement	A clear determinations of an opportunity for improvement.
	APG.2. Determine cause	Determine any potential causes for the opportunities for improvement and focus on the most probable cause.
	APG.3. Outline desired outcome	Outline a desired outcome
	APG.4. Discuss solutions	Discussion of possible solution for the opportunities for improvement
	APG.5. Develop action plan	Develop an SMART (Specific, Measurable, Achievable, Relevant, Time-Based) action plan with action steps, ownership, and timelines
QSIR	QSIR.1. Establish current position	Establishment of current position by asking where are we now?
	QSIR.2. Define objectives	Identification of objectives to address a problem; where do we want to go
	QSIR.3. Establish action steps	Establishing the steps to achieve each objective by asking what do we need to do to get to our desired position
	QSIR.4. Decide on responsibilities	Deciding who is required to achieve the action and asking what is the target date
	QSIR.5. Identify interdependencies	Identification of interdependencies between action steps
	QSIR.6. Identify possible issues	Identification of possible issues that might be caused by the action steps
	QSIR.7. Determine suitable contingency plan	Determination of a suitable contingency plan for unforeseen problems that might occur

Table 35: Overview of descriptions of the activities of the generic improvement planning activities and their indicators

Sustainability and Business Ethics Improvement Planning Activities		
Method	Indicator activity	Description
ASSIST	ASSIST.1. Select target area	Selection of a target area for improvement
	ASSIST.2. Identify goals	Identification of goals to address each area of improvement
	ASSIST.3. Identify objectives	Construction of objects for each goal
	ASSIST.4. Identify indicators	Construction of how each object is to be measured
	ASSIST.5. Choose strategy	Determination of a strategy to accomplish the objectives
	ASSIST.6. Define activities	Determination of activities to accomplish each strategy
	ASSIST.7. Share improvement plan	The improvement plan is submitted and shared with the organisation
SAP	SAP.1. Identify action steps	For each identified strategy it is determined what actions must be taken in order to make progress
	SAP.2. Identify roles	The roles are identified that are responsible for taking action or tracking progress
	SAP.3. Identify responsibilities	What are the responsibilities of each identified role
	SAP.4. Identify time frame	Determination of a time frame for the completion of the action steps
	SAP.5. Identify expected results	Determination of the expected outcomes or results of the action steps
PSAT	PSAT.1. Develop a sustainable goal	Development of a sustainability goal that describes the change you want to see happen in order to build capacity in a domain. This goal should be written as a SMART goal (Specific, Measurable, Attainable, Relevant, Time bound).
	PSAT.2. Develop action steps	Development of detailed actions steps, which are different strategies or activities that are used to accomplish the sustainability goal.
	PSAT.3. Identify responsibilities	Identification of who should be involved and how in an action step (leadership, partners, clients, community members, etc.)
	PSAT.4. Identify resources	Determination of resources that are needed to realise each action step
	PSAT.5. Develop milestones	Development of ways how to measure success in completing your action steps. Milestones can be written as numbers or as percentages
CEAP	CEAP.1. Draw action planning matrix	A drawing of an action planning matrix in which all outcomes of the following activities are documented
	CEAP.2. Identify solutions	Identification of solutions to address a problem
	CEAP.3. Identify objectives	Identification of objectives to address a problem
	CEAP.4. Identify potential activity steps	Identification of potential activities which will realise the identified solutions come about, and put these in the left hand column of the matrix
	CEAP.5. Identify roles	Identification of who should carry out the activity. The names of each person or organisation are written in the appropriate in the column of the matrix
	CEAP.6. Identify responsibilities	Identification of who will take the lead responsibility for each activity to make sure it is done. The names of these people are written next to each activity in the matrix
	CEAP.7. Identify resources	Determination of resources that are needed to implement each action step
	CEAP.8. Determine time frame	Determination of when each activity should be done (straight away – now – soon (within weeks/a few months), a few months later). A specific date is written in the appropriate column in the matrix.
	CEAP.9. Evaluate matrix	Evaluation of the matrix: does it make sense, are there any missing elements, is it realistic?
AHQR	AHQR.1. Identify improvement area	Identification of the area which needs improvement
	AHQR.2. Define goals	Determination of the goals that want to be achieved
	AHQR.3. Establish action steps	Establishment of initiative(s), i.e. specific actions that need to be implemented in order to reach the determined goals
	AHQR.4. Determine impact	The impact of each action step is determined
	AHQR.5. Decide on responsibilities	Decision about who can lead the initiative: identification of a leader and/or champion to manage the project
	AHQR.6. Determine resources	Determination of resources that are needed to realise each action step
	AHQR.7. Identify possible barriers	Identification of possible barriers of action steps and how can they be overcome
	AHQR.8. Determine measurements	Determination and specification of how the progress and success of the actions steps will be measured and monitored in achieving the desired changes
	AHQR.9. Share action plan document	Decision on how the action plan document is shared

Table 36: Overview of descriptions of the activities of the improvement planning activities for ethics, social and environmental topics and their indicators

C.4 Description of the Concepts of the Methods

Table 37 on page 141 provides an overview of descriptions per activity of the generic IP methods. Table 38 on page 141 provides an overview of descriptions per activity of the IP methods for ethics, social and environmental topics

Method	Concept	Definition
APG	IMPROVEMENT AREA	An IMPROVEMENT AREA has one or more CAUSES and is the target the creation of an IMPROVEMENT PLAN. Name and description are modelled as properties
	CAUSE	A CAUSE describes the determinant of an IMPROVEMENT AREA
	DESIRED RESULT	A DESIRED RESULT is based on an IMPROVEMENT AREA and determines one or more SOLUTIONS
	SOLUTION	A SOLUTION provides input for one or more ACTIONS
	ACTION	An ACTION has one or more OWNERSHIPS and is part of an ACTION PLAN. Name, status, note and date are modelled as properties
	OWNERSHIP	OWNERSHIP of an ACTION has a role and name modelled as property
	ACTION PLAN	An ACTION PLAN consists of one or more ACTIONS and is written in accordance with one or more SMART CRITERIA
	SMART CRITERIA	SMART CRITERIAs are described for an ACTION PLAN
QSIR	DATA	DATA determines one or more OBJECTIVES and has value modelled as property
	OBJECTIVE	An OBJECTIVE is achieved by one or more ACTION STEPS and has description modelled as a property
	ACTION STEP	An ACTION STEP has one or more RESPONSIBILITIES and zero or more INTERDEPENDENCIES and ISSUES. Name and date are modelled as property
	RESPONSIBILITY	A RESPONSIBILITY has name and role modelled as property and related to an ACTION STEP
	INTER-DEPENDENCY	An INTER-DEPENDENCY can arise from an ACTION STEP and provides input for an CONTINGENCY PLAN. Description is modelled as a property
	ISSUE	An ISSUE can arise from a ACTION STEP and provides input for an CONTINGENCY PLAN. Description is modelled as a property
	CONTINGENCY PLAN	An CONTINGENCY PLAN is based on one or more INTERDEPENDENCIES and ISSUES

Table 37: Overview of definitions of the concepts of the generic improvement planning methods

Method	Concept	Definition
ASSIST	TARGET AREA	A TARGET AREA is addressed by one or more GOALS and has the following properties; content, target population, grade level, data used, need statement
	GOAL	A GOAL addresses a TARGET AREA and is translated into one or more OBJECTIVES
	OBJECTIVE	An OBJECTIVE can be measured by one or more INDICATORS
	INDICATOR	An INDICATOR measures an OBJECTIVE
	STRATEGY	A STRATEGY accomplished an OBJECTIVE and is realised by one or more ACTIVITIES
	IMPROVEMENT PLAN	An IMPROVEMENT PLAN consist of a TARGET AREA, one or more GOALS, OBJECTIVES , STRATEGIES and ACTIVITIES
	ACTIVITY	An ACTIVITY realises a STRATEGY and is performed by one or more STAFF members. The following elements are modelled as property: name, type, description, begin date, end date, funding source, funding amount
	STAFF	A STAFF member performs one or more activities and has role and name modelled as property
SAP	STRATEGY	A STRATEGY has a property domain and is achieved by one or more ACTION STEP
	ACTION STEP	An ACTION STEP has one or more RESPONSIBILITIES and EXPECTED RESULTS. In addition an ACTION STEP has a TIME FRAME
	RESPONSIBILITY	A RESPONSIBILITY marks te task to be done by a ROLE, which is modelled as a property
	ROLE	A ROLE has a name as property and one or more RESPONSIBILITIES
	TIME FRAME	A TIME FRAME indicated the execution period of an ACTION STEP
	EXPECTED RESULT	An EXPECTED RESULT is a description of an desired outcome of an ACTION STEP
PSAT	DOMAIN	A DOMAIN describes the improvement area for ACTION STEPS to be executed in
	GOAL	An OBJECTIVE is focused on a DOMAIN and has one or more SMART CRITERIAs
	SMART CRITERIA	SMART CRITERIA are part of the description of an OBJECTIVE
	ACTION STEP	An ACTION STEP is achieved by one or more OBJECTIVES and performed by one or more STAFF members. Moreover, an ACTION STEP needs RESOURCES in order to be executed. Time frame is modelled as property
	STAFF	A STAFF member is responsible for performing an ACTION STEP and has name and role modelled as property
	RESOURCE	A RESOURCE describes the elements that are needed in order to realise an ACTION STEP
	MILESTONE	A MILESTONE measures an ACTION STEP and can be written as numbers or as percentages
CEAP	ACTION PLAN MATRIX	An ACTION PLAN MATRIX is a matrix, which consists of one or more ACTIONS, ROLES and RESOURCES
	SOLUTION	A SOLUTION has one or more OBJECTIVES, solves a PROBLEM and is realised by one or more ACTIONS
	PROBLEM	A PROBLEM is addressed by one or more SOLUTIONS and OBJECTIVES
	OBJECTIVE	An OBJECTIVE addresses a PROBLEM
	ACTION	An ACTION realises a SOLUTION, uses one or more RESOURCES, has a TIME FRAME and is performed by one or more ROLES. Name and date are modelled as property
	ROLE	A ROLE performs one or more ACTIONS and has one or more RESPONSIBILITIES. Name is modeles as a property
	RESPONSIBILITY	A RESPONSIBILITY marks te task to be done by a ROLE, which is modelled as a property
	RESOURCE	A RESOURCE has a type, modelled as property, and is needed in order to execute an ACTION
	TIME FRAME	A TIME FRAME is set for an ACTION
	EVALUATION	An EVALUATION evaluates an ACTION PLAN MATRIX on completeness and if it is realistic
AHQR	SCOPE	A SCOPE marks the improvement area and defines one or more GOALS
	GOAL	A GOAL specifies one or more PERFORMANCE METRICS and is achieved by one or more ACTIONS STEPS
	ACTION STEP	An ACTION STEP has one or more IMPACTs, RESPONSIBILITIES and zero or more BARRIERS. In addition, an ACTION STEP needs one or more RESOURCES
	IMPACT	An IMPACT is determined of each ACTION STEP
	ACTION PLAN	An ACTION PLAN consist of one or more ACTIONS and GOALS
	RESPONSIBILITY	A RESPONSIBILITY is a task of a role, which together with name are modelled as property
	RESOURCE	A RESOURCE is needed for the execute of an ACTION STEP
	BARRIER	An BARRIER can be an obstacle of an ACTION STEP
	INDICATOR	An INDICATOR measures one or more GOALS

Table 38: Overview of definitions of the concepts of the improvement planning methods for ethics, social and environmental topics

C.5 Activity and Concept Table of Super Method

Improvement Planning Activities Super Method - literature		
<i>Indicator activity</i>	<i>Description</i>	
G2.1. Investigate problem	G2.1.1. Identify target area of improvement	Selection of the target area that requires improvement
	G2.1.2. Identify goals	Identification of goals to address each area of improvement
	G2.1.3. Identify objectives	Identification of objectives that addresses each goal
G2.2. Create improvement plan	G2.2.1. Identify actions steps	Establishing improvement steps to achieve each objective by asking what is needed to get to a desired position
	G2.2.2. Identify staff responsibilities	Identification of who will take the lead responsibility for each activity and the overall improvement planning process
	G2.2.3. Identify resources	Identification of the resources that are needed in order to realise each action step
	G2.2.4. Document improvement plan	The outcomes of the previous steps are documented in an improvement plan, which is shared with the organisation and external partners

Table 39: Overview of descriptions of the activities of the improvement planning activities super method (literature) and their indicators

Concept	Definition
IMPROVEMENT AREA	An IMPROVEMENT AREA is identified by performing an assessment and defines one or more GOALS. Name and description are modelled as properties
GOAL	GOAL addresses an IMPROVEMENT AREA and has one or more OBJECTIVES and has description modelled as a property
OBJECTIVE	An OBJECTIVE describes the aim and/or purpose of an identified GOAL and has description modelled as a property
DIRECT INDICATOR	One or more DIRECT INDICATORS measure an IMPROVEMENT ACTION
IMPROVEMENT ACTION	An IMPROVEMENT ACTION achieves one or more OBJECTIVES, needs one or more RESOURCES and has one or more RESPONSIBILITIES. Name and time frame are modelled as properties
RESOURCE	A RESOURCE describes the elements that are needed in order to realise an ACTION STEP. Type is modelled as a property, since a RESOURCE can be for example be people, time, money, data, materials, software tools etc. Name and description are also modelled as properties
STAFF RESPONSIBILITY	STAFF RESPONSIBILITY marks the task to be done by a role, which is modelled together with name as a property
IMPROVEMENT PLAN DOCUMENT	An IMPROVEMENT PLAN consist of one ore more ACTIONS STEPs, OBJECTIVES and GOALS. In addition, an IMPROVEMENT ACTION is measured by one or more DIRECT INDICATORS. Name and date are modelled as properties

Table 40: Overview of the definitions of the concepts of the improvement planning activities super method (literature)

D | Case Study Data

D.1 Informed Consent

Introduction

You are asked to participate in a case study as part of an ongoing research at the Utrecht University on ICT for ethics, social and environmental topics. We seek to understand how organisations are working on improvement planning for ethics, social and environmental topics: setting goals and making improvement plans based on sustainability performance information. To do this, an interview of approximately 1 hour will be conducted where we ask you questions about ethics, social, environmental improvement planning activities in your organisation. Your personal name will not be processed or shared as part of this research. When indicated below, the name of your organisation may be used in the reporting on the research results. By sharing your experience and opinion, you are contributing to this body of knowledge. If you want, we will share the results with you. You are able to drop out of this research at any time. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

Responsible for this research are Mariëlle Adèr and Sergio España. You can contact us at:

- Main researcher: Mariëlle Adèr (m.j.ader@students.uu.nl)
- Supervisor: Sergio España (s.espana@uu.nl)

Please indicate your choice for the following questions:

- The name of my organisation may be used in reporting on the research results.**
- I give permission for the researchers to undertake audio recording during the interview. The audio files are only accessible to the main researchers and will be destroyed after transcribing.**

Please tick the following boxes for agreement:

- I know that participating is completely voluntary. I know that at any moment I can decide not to participate anyway. I do not have to give a reason for that.**
- I understand that the research data, without any personal information that could identify me, may be shared with others.**
- I give permission to keep the collected data for at least 10 years after the end of this investigation.**

PARTICIPANT SIGNATURE

Name _____

Signature _____

Date _____

RESEARCHER SIGNATURE

Name _____

Signature _____

Date _____

D.2 Interview Questions**Improvement Planning - General**

- 1.1** What is your focus related to sustainability performance?
- 1.2** How do you measure sustainability performance in your organisation? Do you use any standard assessment?
 - 1.2.1** *If yes*, which one?
 - 1.2.2** *If no*, how do you determine where/what to improve?
- 1.3** What are typical measuring/reporting/planning activities that are performed and how are they related?
- 1.4** Who is responsible for the improvement planning process and its activities?
 - 1.4.1** What about the assignment of responsibilities to specific steps/activities?
- 1.5** How do you determine which subjects are important to your organisation? *Assessment, vision, etc.*
 - 1.5.1** How do you analyse the results of an assessment?
- 1.6** In how much detail is the improvement plan (i.e. actions) documented? *Vision, goals, points of action?*

Improvement Planning - Tools

- 2.1** Do you use any (software) tools during this process?
 - 2.1.1** *If yes*, which one and why?
 - 2.1.2** *If yes*, what does the tool do?
 - 2.1.3** *If no*, why? Would you like to use one?
- 2.2** For which part of this phase would you like to (possibly) use a tool? (*e.g. goal setting, prioritising actions, process determination*)
- 2.3** Which problems do you face concerning improvement planning? (*e.g. strategy alignment, vagueness*)
 - 2.3.1** In general
 - 2.3.2** Related to tools or methods

Improvement Planning - Repository of Best Practices

- 3.1** Do you use best practices in your organisation?
- 3.1.1** *If yes, do you find it useful?*
- 3.1.2** *If yes, where do you get these best practices from?*
- 3.1.3** *If yes, do you have place to collect these best practices?*
- 3.1.4** *If not, why not?*
- 3.2** Do you think a repository that stores a large collection of sustainability best practices (by various organisations) would be useful for your organisation?
- 3.2.1** *If no, is there something that would make such a tool useful?*
- 3.3** What functionalities would you expect from a best practice repository? (*e.g. crowdsourcing, voting*)

D.3 Nvivo Node Structure

Name	Files	References
▼ Improvement Planning To...	5	47
▼ Use of tools	5	39
● Shortcomings	4	7
● Motivation	3	8
● Application	3	22
● Tool desires	3	7
▼ Improvement Planning Ge...	6	91
▼ Sustainability focus	6	27
● Targets	3	6
● Focus determination	5	16
● SIP activities	4	10
▼ Responsibilities	3	9
● Responsibility assig...	2	2
● Networks	4	8
● Improvement plan doc...	4	7
● Difficulties	5	18
● Assessment	6	12
▼ Best Practice Repositories	6	30
● Sentiment	5	7
● Desires	3	7
▼ Best practices	4	15
● Use	4	12
● Storage	1	2

Figure 77. Coded node structure interviews

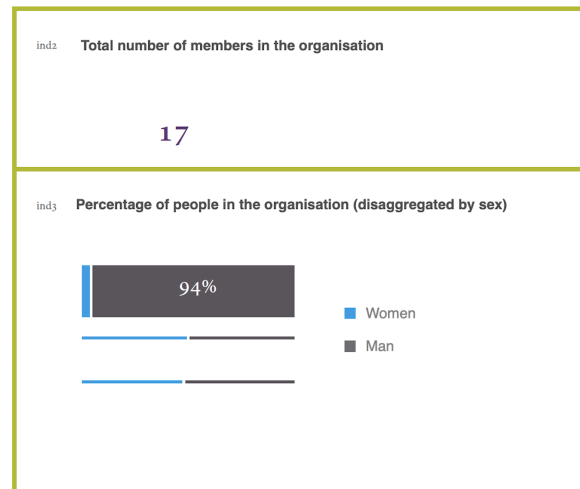
D.4 Case 1

In this section contains an overview of all the additional data that is used for describing and modelling the IP4ESET at case 1; a case study data base and the matching activity and concept table of the created PDD related to the IP4ESET process of case 1.

D.4.1 Database

q0105	Number of worker members	1 Women 11 Man 12 TOTAL
q0106	Number of non-worker members	0 Women 4 Man 4 TOTAL
q0107	Number of volunteers	0 Women 0 Man 0 TOTAL
q0108	Number of people in training and / or internships	0 Women 1 Man 1 TOTAL

(a) Examples of questions



(b) Examples of indicators

Figure 78. An example of the results of the questions and indicators of ‘Members of the organisations’ as proposed by the XES Social Balance

Indicator	Text Indicator	Score
<i>ind7</i>	Percentage of dependence on subsidies	6
<i>ind90</i>	In the exercise that your activity has yielded benefits, how are these shared	10
<i>ind3</i>	Percentage of people in the organisation (dis-aggregated by sex)	0
<i>ind12</i>	Percentage of people who have participated in the approval of the management plan and annual budget (dis-aggregated by sex)	10
<i>ind13</i>	Percentage of people who have participated in the approval of the management plan and annual budget	10
<i>ind58</i>	Are wages and other remunerations publicly disclosed to workers?	10
<i>ind93</i>	Ratio of non-EU workers (foreigners) over the total number of members of the organisation	10
<i>ind96</i>	Ratio of racialised workers on the total number of members of the organisation	10
<i>ind20</i>	Ratio of management positions over the total members of the organisation (dis-aggregated by sex)	0
<i>ind21</i>	Ratio of management positions over the total staff	10
<i>ind23</i>	Ratio of executive or political positions over the total members of the organisation (dis-aggregated by sex)	0
<i>ind24</i>	Percentage of executive or political positions over the total members of the organisation	10
<i>ind27</i>	Salary range index	10
<i>ind97</i>	Salary gap between men and women	10
<i>ind98</i>	Does the organisation use a non-sexist and inclusive language?	6
<i>ind59</i>	Does the organisation offer or facilitate alternatives or assistance related to transportation? (e.g. video-conferences, teleworking, car sharing easy, parking for bicycles ...)	0
<i>ind102</i>	Does the organisation offer or facilitate alternatives or assistance related to transportation? (e.g. video-conferences, teleworking, car sharing easy, parking for bicycles)	10
<i>ind60</i>	Do you have practices and procedures for energy efficiency and conservation?	0
<i>ind61</i>	Do you procure energy from providers that generate energy from 100% renewable sources?	0
<i>ind62</i>	Do you procure energy from providers that generate energy from 100% renewable sources with certified guarantee of origin?	10
<i>ind63</i>	Do you regularly and mainly use recycled and/or certified sustainable forestry paper?	10
<i>ind65</i>	Do you have formal practices for waste prevention?	0
<i>ind67</i>	When organising events, do you consider environmental criteria in your organisation?	10
<i>ind69</i>	When purchasing a product, do you consider responsible consumption criteria?	10
<i>ind71</i>	Is the organisation partner or client of ethical and solidarity financial entities	10
<i>ind40</i>	Ratio of economic resources in ethical finances over the total savings in financial entities	6
<i>ind42</i>	Percentage of purchases of goods and services to organisations that belong to REAS or the Social Market	0
<i>ind103</i>	The organisation cooperate with other organisations that offer the same products or services	6
<i>ind74</i>	As a result of your activity, do you generate any kind of goods, services or materials (recipes, techniques, instruments, seeds, etc ...) that you make freely available, or do you generate creative goods or knowledge under free licenses such as Creative Commons?	0
<i>ind75</i>	Indicate what your commitment to Free Software	6
<i>ind77</i>	Does your organisation implement measures to promote workplace health?	0
<i>ind78</i>	The policies of the organisation improve the conditions of the collective labour agreement	10
<i>ind104</i>	What measures are implemented to encourage the training of workers?	10
<i>ind80</i>	Does your organisation implement measures to improve work-life balance beyond legal obligations?	0
<i>ind105</i>	Does your organisation generate spaces of emotional and physical care for workers in relation to their working environment?	0

Table 41: List of scores of the indicators and total weighted score of case 1

Number	Improvement action	Related principle	Related indicator(s)/ question(s)
01	Free software change	Principle of cooperation	75
02	Extension of the term of the share capital contribution	Working principle	q8501
03	Knowledge generated "Creative Commons"	Principle of cooperation	74
04	Internal involvement with the movement of the Social Solidarity Economy	Principle of commitment to the environment	23, 24, 25, 89
05	Provide scholarships for training women	Principle of fairness	1, 3, 10, 12, 15, 20, 93, 96
06	Non-sexist language	Principle of fairness	98
07	Review web sexist language and bilingual	Principle of fairness	73, 98
08	Free Valencian courses for employees and members	Principle of fairness	73
09	Encouraging sustainable use vehicles	Principle of sustainability environmental	31, 102, 106
10	Report on best practices to customers and suppliers and collect questionnaires professional quality	Principle of cooperation	41, 42, 43, 44
11	Improvement plan for prevention and waste management	Principle of environmental sustainability	59, 60, 61, 65, 66, 82
12	Performing official internal communications bilingual	Principle of fairness	73
13	Comparative analysis General Regime - Regime autonomous	Working Principle	78
14	Improving the external prevention service	Working Principle	76, 77, 82
15	low economic compensation for disease	Working Principle	78
16	Increased efficiency of project management	Working Principle	78
17	Increase in work-wear that is provided to working people	Working Principle	77
18	Improvement of environmental conditions on site	Working Principle	77, q801, q802, q8013
19	Improving environmental and ergonomic conditions office	Working Principle	77, q801, q802, q8013

Table 42: List of improvement actions of case 1

D.4.2 Activity and Concept Table of Meta-Model Case 1

Improvement Planning Activities Case 1	
Indicator activity	Description
Case1.1. Conduct a training on performing a XES Social Balance	The members of the cooperative are trained on performing the XES method
Case1.2. Perform XES Social Balance	The XEs method is performed in order to assess current performances
Case1.3. Analyse Social Balance report	The results of the Social Balance are analysed
Case1.4. Analyse low score indicators	The scores of the low indicators are analysed in order to determine its causes
Case1.5. Generate ideas for improvement actions	Based on the results of the indicators represented in the Social Balance, ideas for improvement are generated
Case1.6. Define concrete improvement actions	In this activity the ideas for improvement are translated into concrete actions for improvement by assessing the cause of the problem, the goal for improvement, what has been realised by the organisation so far and what they want to achieve on medium and long term including the necessary resources
Case1.7. Determine importance of improvement action	The concrete actions for improvement are evaluated based on the importance to REASPV to implement an improvement action
Case1.8. Determine importance of improvement action	The concrete actions for improvement are evaluated based on the importance to the cooperative to implement an improvement action
Case1.9. Determine difficulty of improvement action	The concrete actions for improvement are evaluated on the degree of difficulty of implementing each improvement action according to the cooperative
Case1.10. Document improvement plan	In this activity the process of the determinations of the recommendations based on the prioritisation are documented in an improvement plan document
Case1.11. Share improvement plan	In this activity the improvement plan document is shared within the co-operative and external partners

Table 43: Overview of descriptions of the activities of the improvement planning activities of case 1 and their indicators

Concept	Definition
TRAINING	A TRAINING provides knowledge and insights on how to perform the XES SOCIAL BALANCE METHOD. This training is provided by an expert in the field
PERFORMANCE	A PERFORMANCE can be a SOCIAL PERFORMANCEs, ENVIRONMENTAL PERFORMANCEs and GOVERNANCE PERFORMANCEs
SOCIAL PERFORMANCE	A SOCIAL PERFORMANCE is a type of PERFORMANCE
ENVIRONMENTAL PERFORMANCE	ENVIRONMENTAL PERFORMANCE is a type of PERFORMANCE
GOVERNANCE PERFORMANCE	GOVERNANCE PERFORMANCE is a type of PERFORMANCE
SOCIAL BALANCE REPORT	A SOCIAL BALANCE REPORT results from a XES SOCIAL BALANCE METHOD and has name and date modelled as property. The results of the SOCIAL BALANCE REPORT
XES SOCIAL BALANCE METHOD	A XES SOCIAL BALANCE METHOD values one or more PERFORMANCEs and results in a SOCIAL BALANCE REPORT. In addition, a XES SOCIAL BALANCE METHOD consists of one or more SURVEYs
INDICATOR	An INDICATOR has the following properties; id, text and score
CATEGORY	A CATEGORY consists of one or more QUESTIONs and has name and type modelled as property
SURVEY	A SURVEY consists of one or more CATEGORIEs
ORGANISATION	ORGNISATION is a type of SURVEY
WORKER	WORKER is a type of SURVEY
VOLUNTEER	VOLUNTEER is a type of SURVEY
MEMBER	MEMBER is a type of SURVEY
QUESTION	A QUESTION is answered by one or more INDICATORs and is part of a CATEGORY. Id, name and result are modelled as properties
IMPROVEMENT IDEA	An IMPROVEMENT IDEA is transformed into one or more IMPROVEMENT ACTIONs and is based one or more INDICATORs. Goal is modelled as a property
IMPROVEMENT ACTION	An IMPROVEMENT ACTION uses one or more RESOURCEs and describes one or more ACHIEVEMENTs. In addition, an IMPROVEMENT ACTION is prioritised by a PRIORITISATION TOOL and is related to zero or more SURVEYs. The following properties are present; id, goal and name
RESOURCE	A RESOURCE is used by one or more IMPROVEMENT ACTIONs. Type is modelled as property
RULE	A RULE is performed on one or more INDICATORs and used by a PRIORITISATION TOOL. Type, range and weight are modelled as properties
PRIORITISATION TOOL	A PRIORITISATION TOOL prioritises one or more IMPROVEMENT ACTIONs, is based on one or more VARIABLEs and uses one or more RULEs. Moreover, it generates one or more RECOMMENDATIONs
ACHIEVEMENT	An ACHIEVEMENT has time frame modelled as property and is described for each IMPROVEMENT ACTION
VARIABLE	A VARIABLE is used for prioritising IMPROVEMENT ACTIONs and has score modelled as property
IMPACT REAS PV	IMPORTANCE REAS PV is a type of VARIABLE
IMPACT COOPERATIVE	IMPORTANCE CO-OPERATIVE is a type of VARIABLE
EFFORT	DIFFICULTY VARIABLE is a type of VARIABLE
RECOMMENDATION	A RECOMMENDATION is generated from the PRIORITISATION TOOL
IMPROVEMENT PLAN	An IMPROVEMENT PLAN consist of one or more RECOMMENDATIONs and describes the results of the SOCIAL BALANCE REPORT

Table 44: Overview of descriptions of the concepts of the improvement planning activities of case 1

D.5 Case 2

In this section contains an overview of additional data that is used for describing and modelling the IP4ESET process of case 2; a case study data base and the matching activity and concept table of the created PDD related to the IP4ESET process of case 2.

D.5.1 Database

(1) Example B Analytics Tool

In the improvement section of the B Analytics tool, you can see questions that are marked for improvement by companies in your network (see Figure 80). Each question can be examined closer. For example, you can look at the improvement resources that are associated with that question as shown in Figure 81. In addition, the implementation guidelines and the impact case that are associated with that question can be viewed, and examples of how other companies have implemented actions regarding this question. An improvement report can be downloaded from the tool (see Figure 81). In the BIA Review, many filters can be adopted for the improvement report. You can filter on specific data and only visualise the data you are interested in. For example, an improvement plan can be created for your network or company in particular. In addition, you can filter on difficulty of improvement and you can exclude questions. Moreover, visualise data based on a time frame, like current year and prior year or prior to years. You can also decide on how many questions you want to highlight per impact area. An example of the overview of downloaded report is depicted in Figure 83.

By using the B Analytics tool, an impact cloud can be generated. With this feature, for example the top five improvement areas can be shown (see Figure 84). This depends one what has been chosen to visualise in the improvement report data form. In this case, we chose to highlight five questions per impact area as indicted in Figure 82. As can be seen in Figure 85, per improvement area (impact cloud) the points they could have earned and the points they have currently earned are visualised. The size of each bubble represents the total number of points earned by all the companies in your network. The size is a reflection of the relative weight of that question and the relative performance of your company compared to all the other question in the assessment. There is an opportunity to filter on impact area or improvement potential (where most points were left on the table across my network).

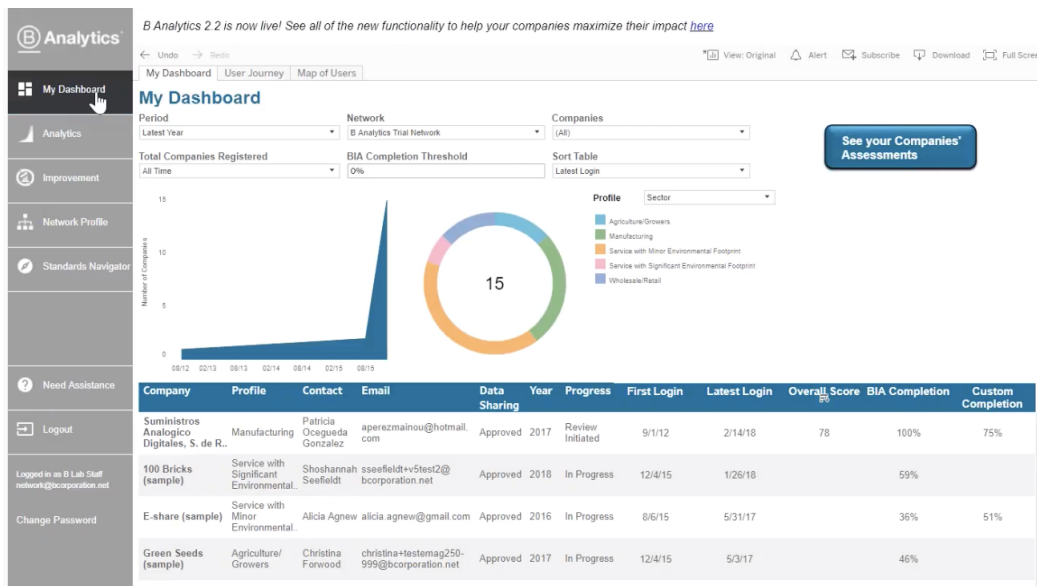


Figure 79. B Analytics dashboard

Questions Marked for Improvement

The following questions have been marked for improvement by your companies using the star feature in the BIA. By clicking on a question, you can access associated resources for improvement. To see a user guide for this dashboard click [here](#).

Language: English | Company Name: (All) | Target Set: All Time | Impact Area: (All) | Impact Topic: (All) | Summary: (All)

Company Name	Summary	Target Set Date	Year	Response
	Social & Environmental Internal Engagement	1/26/18	2015	Company has a social or environmental mission and goals. Only informal inclusion of the company's social and/or performance evaluation. All workers receive orientation, training, or instruction that explicitly covers the company's social and/or environmental mission and goals. Managers' performance evaluation includes how the manager executed on the company's social and/or environmental mission and goals. Non-managers' performance evaluation includes execution of company's social or environmental mission and goals. (0.5 points earned (100% of available points))
			2018	Company has a social or environmental mission and goals. Only informal inclusion of the company's social and/or performance evaluation. All workers receive orientation, training, or instruction that explicitly covers the company's social and/or environmental mission and goals. Managers' performance evaluation includes how the manager executed on the company's social and/or environmental mission and goals. Non-managers' performance evaluation includes execution of company's social or environmental mission and goals. (0.3 points earned (100% of available points))

Figure 80. B Analytics: Questions marked for improvement

Impact Resources

Back to Questions Marked for Improvement

Topic	Instructions	Impact Case
Life Skill Training Participation	Select the percentage bucket that most accurately describes the percentage of employees that are receiving formal training on life skills for personal development (i.e. literacy, personal financial planning, etc.). If this type of training is not provided, select N/A.	
Implementation Guides	If you are working with low-income or traditionally disadvantaged groups, consider identifying potential life skills trainings that would be of relevance. Also consider identifying a non-profit organization to partner with in implementing the training. You may also consult with your employees to see if they have particular interest in certain life skills trainings.	
Impact Case		Providing life skills training creates opportunities for your employees to improve their personal well-being and is especially beneficial to workers who have barriers to employment or other personal challenges.

Figure 81. B Analytics: Impact Resources

The screenshot shows the 'Improvement Report' section of the B Analytics dashboard. The main title is 'B Impact Assessment Review - Improvement Potential E-share (sample), 2016'. Below the title, there is a brief instruction: 'You can use this dashboard to produce a complete report of a company's impact or improvement potential. To do so please set the filters below to select the companies, time frame and content areas you care about. For a full user guide click [here](#).' A link for downloading the report to PDF is also provided.

The filters are organized into three sections: 'What', 'Who', and 'Content'. Each section contains several dropdown menus for selection.

What	
Impact Attained/Improvement Potential	Language
Improvement Potential	English

By selecting Improvement Potential, the report will focus on the areas where your companies have the greatest opportunity to increase their impact. The more points remain to be earned on a particular topic, the larger the bubbles will be. The table will show the topics where your companies could increase their impact the most.

Who	
Network Name	Market
B Analytics Trial Network	All
Company	Sector
E-share (sample)	All
Benchmark	Size
Ordinary Businesses	All
Country	
United States	

Content	
Impact Business Models/Operations	Years to Show
(All)	Prior Two Years
Difficulty	Number of Questions to Highlight per Impact Area
(All)	5
Questions to Exclude	
(All)	

Note: This company has not completed the Full B Impact Assessment. For this reason the Overview page is not available for them. Other pages are available and reflect the questions a company has already answered.

Figure 82. Improvement report

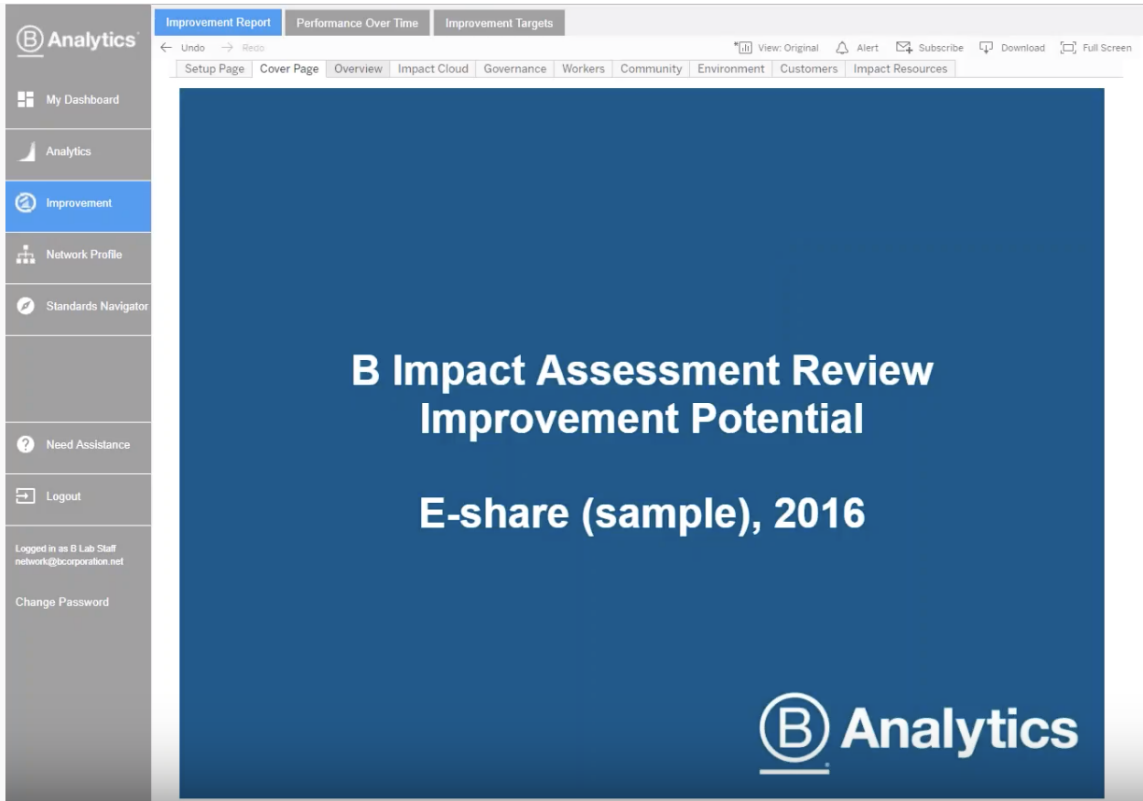


Figure 83. Improvement report example

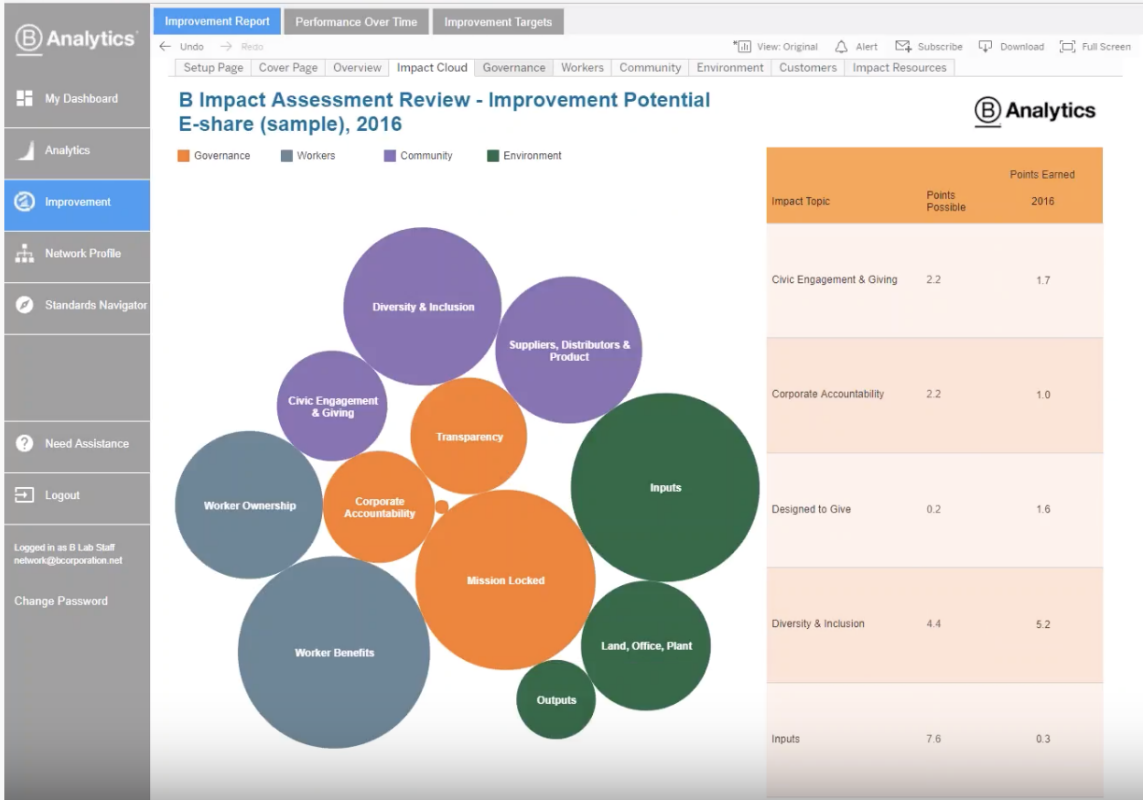


Figure 84. B Analytics Impact Cloud

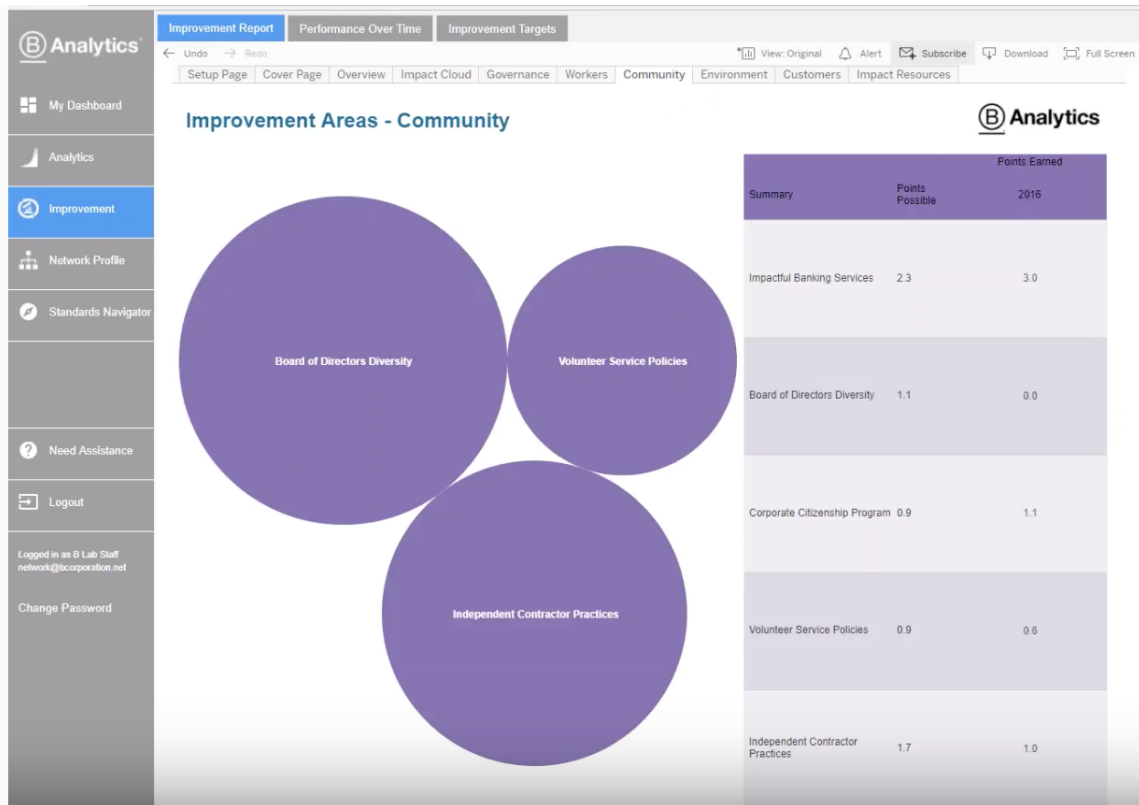


Figure 85. B Analytics Impact Cloud - improvement areas

(2) Example Best Practice Guide

GIIRS RATINGS & ANALYTICS **GIIRS Emerging Market** for Impact Investing Powered by **B Lab**

Assessment Resource Guide:
Calculating Greenhouse Gas Emissions

What's in this Guide?

- I. Definition: What Are Greenhouse Gas (GHG) Emissions?
- II. Why Calculate GHGs?
- III. How to Calculate Company-wide GHGs
- IV. Outsourcing a GHG Assessment
- V. What Are The Next Steps after Completing a GHG Assessment?
- VI. Helpful Websites

Figure 86. Example of a best practice guide for calculating greenhouse gas emissions (Impact area - Environment)

D.5.2 Activity and Concept Table of Meta-model Case 2

Improvement Planning Activities case 2	
Indicator activity	Description
Case2.12.Analyse B Impact Report	The scores per impact area of the BIA are analysed
Case2.13.Use improvement tools to identify improvement areas	The BIA offers a set of tools which can be used to determine what practices (improvement actions) should be implemented in order to improve the B impact score. By using improvement plan tool, you are able to navigate through the assessment: section, impact area, difficulty of change and score value. The report will also contain all operational questions where there is an opportunity for improvement because your company has not earned full credit for the questions selected. You can identify questions you want to target for future improvement by clicking on the star icon on the question. Hence, a customised improvement report, which will help you decide where you want to focus your efforts (based on impact area, question difficulty and question weighting)
Case2.14.Determine improvement practices	Data in the improvement plan can be organised by sorting the questions of the BIA by difficulty
Case2.15.Delegate responsibilities	Delegate responsibilities for implementing practices by means of gathering the needed data and resources

Table 45: Overview of descriptions of the activities of the improvement planning activities of case 2 and their indicators

Concept	Definition
B IMPACT ASSESSMENT	A B IMPACT ASSESSMENT collects one or more DATA and measures one or more IMPACT AREAS. Moreover, a B IMPACT ASSESSMENT consists of one or more REPORTs. Version, score and Threshold are modelled as properties
IMPACT AREA	An IMPACT AREA consist of one or more QUESTIONs and had Name and score modelled as properties
QUESTION	A QUESTION provides refers to one or more BEST PRACTICE GUIDEs. Explanation, feedback, type, bookmark, star and score are modelled as properties
REPORT	A REPORT is a feature of the B IMPACT ASSESSMENT
B IMPACT REPORT	B IMPACT REPORT is a type of REPORT
VERIFICATION REPORT	VERIFICATION REPORT is a type of REPORT
BOOKMARK REPORT	BOOKMARK REPORT is a type of REPORT
CUSTOMISED IMPROVEMENT REPORT	CUSTOMISED IMPROVEMENT REPORT is a type of REPORT and suggests one or more IMPLEMENTATION PRATICES. A CUSTOMISED IMPROVEMENT REPORT sorts one or more QUESTIONs
RESOURCE	One or more RESOURCEs are associated with a QUESTION and type is modelled as a property
IMPROVEMENT TOOL	An IMPROVEMENT TOOL consist of one or more IMPROVEMENT CASE STUDIEs and BEST PRACTICE GUIDEs. The IMPROVEMENT TOOL consist of one CUSTOMISED IMPROVEMENT REPORT. In addition, an IMPROVEMENT TOOL provides one or more RESOURCEs
IMPROVEMENT CASE STUDY	An IMPROVEMENT CASE STUDY is part of an IMPROVEMENT TOOL
BEST PRACTICE GUIDE	A BEST PRACTICE GUIDE is part of an IMPROVEMENT TOOL
RESPONSIBILITY	RESPONSIBILITY is part of an IMPLEMENTATION PRACTICE and it has staff name and function modelled as properties
IMPLEMENTATION PRACTICE	An IMPLEMENTATION PRACTICE is based on one or more QUESTIONs. Moreover, it has one or more RESPONSIBILITIES and is based on one or more FEATUREs
B ANALYTICS	A B ANALYTICS aggregates DATA and is visualised in a PLATFORM
DATA	DATA is collected of one or more COMPANIEs and aggregated by B ANALYTICS and collected by the B IMPACT ASSESSMENT. Type is modelled as a property
COMPANY	A COMPANY has DATA and user name, market type, sector and size modelled as properties
PLATFORM	A PLATFORM consist of one or more FEATUREs and has dashboard modelled as a property
FEATURE	A FEATURE is part of a PLATFORM and has improvement report and impact cloud modelled as property
REVIEW	A REVIEW reviews one or more QUESTIONs and leads to one CERTIFICATION
CERTIFICATION	A CERTIFICATION is received by a COMPANY if a certain threshold is met and the REVIEW is concluded

Table 46: Overview of descriptions of the concepts of the improvement planning activities of case 2

D.6 Case 3

In this section contains an overview of additional data that is used for describing and modelling the IP4ESET process of case 3; a case study data base and the matching activity and concept table of the created PDD related to the IP4ESET process of case 3.

D.6.1 Database

Indicator	Project	ECG field
A	New BSL mission and vision statement	+ C1 + D1
B	Highly visual communication plan to share the progress	+ C3
C	Strategy for sustainability, responsibility courses to region	+ E2
D	Measuring the footprint of BSL	+ C3 + E3
E	Saving energy at BSL	+ C3 + E3
F	Improve recycling at BSL	+ C3 + E3
G	Subsidise public transportation	+ C3
H	Home office	+ C1
I	Healthy and organic nutrition	+ C3

Table 47: List of improvement actions BSL

D.6.2 Activity and Concept Table of Meta-model Case 3

Improvement planning activities case 3	
<i>Indicator activity</i>	<i>Description</i>
Case3.18.Evaluate Common Good Matrix	The results of the scores per field of the Common Good matrix are evaluated and analysed
Case3.19.Identify ideas for improvement actions	The focus of ideas for improvement actions are generated based on the level of evaluation and its generated score per field
Case3.20.Prioritise ideas for improvement	Each improvement action is placed in a matrix evaluating the effort and impact in order to prioritise the improvement actions
Case3.21.Determine main responsibility	For each action it is determined who has the lead
Case3.22.Determine team	For each action a responsible team is determined led by a lead
Case3.23.Determine implementation challenge	For each improvement actions, implementation challenges are determined. These challenges are categorised in motivation, presence and communication, and time
Case3.24.Document ECG Report	The results of the assessment and improvement planning are documented in the ECG Report
Case3.25.Share ECG Report	The ECG Report is shared within BSL and with its stakeholders
Case3.26.Implement improvement plan	In this activity the improvement plan document is implemented

Table 48: Overview of descriptions of activities of the improvement planning activities of case 3 and its indicators

Concept	Definition
COMMON GOOD MATRIX	A COMMON GOOD MATRIX consists of one or more THEMES and is part of the COMMON GOOD BALANCE SHEET. Version is modelled as property
THEME	A THEME has the following properties points, value, stakeholder, global, question, weight and rule-weight
THEME SCORE	A THEME SCORE is derived from a THEME and has evaluation level modelled as a property
COMMON GOOD BALANCE SHEET	The COMMON GOOD BALANCE SHEET consists of a COMMON GOOD MATRIX and describes one or more THEMES
MATRIX	A MATRIX consists of one or ore QUADRANTS
QUADRANT	A QUADRANT is part of a MATRIX and has name, description, impact and effort modelled as properties
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is mapped zero or more THEMES and one LEVEL OF CHANGE. In addition, an IMPROVEMENT ACTION has one or more LEADS ,one or more CHALLENGES and is plot in a QUADRANT. For each IMPROVEMENT ACTION, description is modelled as a property
LEVEL OF CHANGE	A LEVEL OF CHANGE is determined for each IMPROVEMENT ACTION
EDUCATION	EDUCATION is a type of LEVEL OF CHANGE
VISION/LEADERSHIP	VISION/LEADERSHIP is a type of LEVEL OF CHANGE
SUPPORTING ACTIVITY	SUPPORTING ACTIVITY is a type of LEVEL OF CHANGE
POST-SURVEY	A POST-SURVEY prioritises one or more IMPROVEMENT ACTIONs and has a question modelled as property
LEAD	A LEAD has a TEAM and name and function are modelled as properties
TEAM	A TEAM consists of one or more EMPLOYEES
EMPLOYEE	An EMPLOYEE is part of a TEAM
CHALLENGE	One or more CHALLENGES are determined for each IMPROVEMENT ACTION
COMMUNICATION	COMMUNICATION is a type of CHALLENGE
TIME	TIME is a type of CHALLENGE
MOTIVATION	MOTIVATION is a type of CHALLENGE
IMPROVEMENT REPORT	An IMPROVEMENT PLAN describes one or more IMPROVEMENT ACTIONs

Table 49: Overview of descriptions of the concepts of the improvement planning activities of case 3

D.7 Case 4

In this section contains an overview of additional data that is used for describing and modelling the IP4ESET process of case 4; a case study data base and the matching activity and concept table of the created PDD related to the IP4ESET process of case 4.

D.7.1 Database

Stakeholder	Method of contact 18/19	Main issue
Team Tony	Tony's biannual Fun At Work Survey, annual online stakeholder survey	Injustices in the cocoa industry, last year's targets and results, ambitions for the coming years
Cocoa farmer	Work visits, consultations and evaluations with the cooperatives, mini Fair and atelier de Tony's event	Long-term relationships, payment of a premium for beans, changes in the industry, trace-ability, productivity, protection of children and community building
Choco fans (consumers)	Annual online stakeholder survey, social media (throughout the year), monthly choco fan survey	Tony's vision and road-map, our impact on the environment, ambitions and targets for the coming years
Business choco friends	Annual online stakeholder survey	Tony's vision and road-map, ambitions and targets for the coming years, our impact on the environment
Customers (Retailers)	Annual online stakeholder survey, customer visits, round table discussions	Tony's vision and road-map, how we change the industry, last year's targets and results, our impact on the environment
Suppliers	Online stakeholder survey, annual Limiteds Dinner, day-to-day conversations	Last year's targets and results, Tony's vision and roadmap, ambitions for the coming years

Table 50: Results survey as founded in the Annual Fair Report 2019

D.7.2 Activity and Concept Table of Meta-Model Case 4

Improvement Planning Activities case 4	
<i>Indicator activity</i>	<i>Description</i>
Case4.1.Determine vision	Tony's Chocolonely emerged as a social impact company towards changing the cocoa and chocolate industry and their vision has become 100% slave-free chocolate in all the produced chocolate worldwide
Case 4.2.Determine strategy	The strategy of Tony's Chocolonely consist of three pillars: Tony's creates awareness, Tony's leads by example and Tony's inspires to act.
Case 4.3.Determine goals	For each pillar, a number of goals and sub-strategies are defined that are in line with their mission. In order to systematically restructure the supply chain and create a fair system, it needs to be approached from several angles simultaneously.
Case4.4.Define and apply monitoring systems	The effects of the activities in the supply chain order to see what impact they are having are measured, analysed and observed
Case4.5.Define KPIs	A monitor system is translated into a KPI in order to measure activities
Case4.6.Perform BIA	The BIA measures impact areas that are highly valued by case 4. Hence, the BIA is another guideline used for measuring their impact, however it is not their main method used for performing an assessment. Due to the fact that Tony's Chocolonely is a mission-driven impact company, it is clear for them how to measure their impact and how to decrease the gap between the current industry and the new industry standard
Case4.7.Conduct stakeholder survey	Tony's Chocolonely receives input of the stakeholders (key players) in the supply chain through surveys on what they think are the main issues Tony's Chocolonely needs to work on.
Case4.8.Observe performance KPIs	KPIs are continuously measured through measuring systems to identify the impact that the actives in the supply chain have. The values of the KPIs are observed in order to a) identify what is going well, b) to identify gaps and c) determine improvement areas
Case4.9.Observe results surveys	Tony's Chocolonely analyses the input of the stakeholders (key players) in the supply chain through the surveys on what they think are the main issues Tony's Chocolonely needs to work on.
Case4.10.Draw list main issues	The results of these surveys are then observed in order to identify main issues in the supply chain and businesses of Tony's Chocolonely
Case4.11.Plot issues in matrix	These issues are plot in a matrix to determine what needs to be prioritised in Tony's Chocolonely's day-to-day work. Moreover, what they devote most attention to in their annual FAIR report. The interests of their stakeholders are weighted against the issues that Tony's Chocolonely considers to be important for the future of their company
Case4.12.Document Annual Fair report	The Annual Fair report is documented achievements of that year in accordance with the mission of Tony's Chocolonely are described; what is being done to take action on the aforementioned problems in the chocolate and cocoa industry, and it is made clear what is expected from governments, retailers and consumers, the key players in the supply chain. This annual FAIR report is written for the stakeholders in the supply chain.
Case4.13.Share Annual Fair report	The Annual Fair report is shared within Tony's Chocolonely and their stakeholders

Table 51: Overview of descriptions of the activities of the improvement planning activities of case 4 and their indicators

Concept	Definition
PWC EMPLOYEE	A PWC EMPLOYEE audits an ASSURANCE REPORT and has name and function modelled as properties
ASSURANCE REPORT	An ASSURANCE REPORT consists of one or more KPIS and identifies zero or more ISSUES
GRI STANDARD	A GRI STANDARD defines REPORTING one or more REPORTING PRINCIPLES
REPORTING PRINCIPLE	REPORTING PRINCIPLES are used to create the ANNUAL FAIR REPORT
VISION	A VISION has a STRATEGY
GOAL	A GOAL is part of a PILLAR
PILLAR	A PILLAR has one or more GOALS and SUB-STRATEGIES
SUB-STRATEGY	A SUB-STRATEGY is part of a PILLAR
KPI	A KPI is mapped on one or more GRI STANDARDS, is linked to a PILLAR and has one or more KPI OWNERS. In addition, it has zero or more COMMENTS. Definition, scope, input data unit, value and KPI team are modelled as properties
COMMENT	A COMMENT provides an additional explanation about a KPI
KPI OWNER	A KPI OWNER is responsible for one or more KPIS. Role and department are modelled as properties
MONITOR SYSTEM	A MONITOR SYSTEM measures one or more KPIS and monitors one or more ACTIVITIES
STRATEGY	A STRATEGY consists of one or more PILLARS and is based on a SUPPLY CHAIN
SOURCING PRINCIPLE	A SOURCING PRINCIPLE defines rules for one or more STAKEHOLDERS. Name is modelled as a property
STAKEHOLDER SURVEY	A STAKEHOLDER SURVEY identifies one or more ISSUES
SUPPLY CHAIN	A SUPPLY CHAIN consists of one or more ACTIVITIES
ACTIVITY	An ACTIVITY is performed by one or more STAKEHOLDERS
STAKEHOLDER	A STAKEHOLDER fills out a STAKEHOLDER SURVEY. Name is modelled as a property
ISSUE	A ISSUE is identified by a STAKEHOLDER SURVEY and is prioritised in a MATRIX
MATRIX	A MATRIX prioritises one or more ISSUES and determines one or more IMPROVEMENT AREAS
IMPROVEMENT AREA	An IMPROVEMENT AREA falls within a certain category and a description is therefore modelled as a property. An IMPROVEMENT AREA determines the content of an ANNUAL FAIR REPORT
B IMPACT REPORT	A B IMPACT ASSESSMENT determines one or more IMPROVEMENT AREAS. Version and date are modelled as properties
ANNUAL FAIR REPORT	An ANNUAL FAIR REPORT is created for one or more STAKEHOLDERS and is written in accordance with one or more REPORTING PRINCIPLES. Name, date and outline are modelled as properties

Table 52: Overview of descriptions of the concepts of the improvement planning activities of case 4

D.8 Case 5

In this section contains an overview of the matching activity and concept table of the created PDD related to the IP4ESET process of case 5.

D.8.1 Activity and Concept Table of Meta-Model Case 5

Improvement Planning Activities case 5	
<i>Indicator activity</i>	<i>Description</i>
Case5.1.Determine vision	The overall vision of Verstegen is determined. They are proud of their unique and sustainable cooperation with local farmers in the countries of origin, where they find the best ingredients that form the basis for high quality herbs and spices. Hence, their mission is stated as follows: "Verstegen wants everyone to enjoy responsible, healthy and, above all, tasty food. Anywhere in the world."
Case5.2.Determine mission	The overall vision of Verstegen in accordance with their mission is: "Verstegen Spices and Sauces wants to be a sustainable, technologically developed and self-sufficient organisation with the highest quality standards, which contributes to the well-being of people, society and our earth." Verstegen takes its responsibility to make the herbs and spices market more sustainable
Case.5.3.Determine relevant themes	Relevant central themes for Verstegen are selected in accordance with the vision and mission statement. One of the themes is a CO ₂ neutral organisation. CO ₂ emissions are an important cause of climate change, which is one of the five focused SDGs of Verstegen.
Case5.4.Determine goals	Relevant SDG are selected in accordance with the vision and mission statement
Case5.5.Perform assessment Ecovadis	An ESEA method is performed in order to communicate performance to externals
Case5.6. Communicate with stakeholders in the supply chain	Verstegen communicates with their stakeholders in the supply chain about sustainability policies
Case5.7.Analyse results research supply chain	Research is conducted by internal stakeholders or NGO's commissioned by Verstegen about CSR topics related to the SDGs.
Case5.8.Identify CSR risks in supply chain	By using the DUE DILIGENCE TOOLKIT, risks in the supply chain can be indentified
Case5.9.Define improvement areas	Improvement areas are defined based on input from stakeholders and research
Case5.10.Define improvement actions	Per improvement area and related theme, Verstegen identifies suitable improvement actions
Case5.11.Define responsibilities	For each improvement area or specific action a responsible employee or stakeholder is assigned
Case5.12.Document CSR Report	The achievements of Verstegen regarding the five SDGs and central themes are described. Moreover, their expectations of 2019 are reported on.
Case5.13.Share CSR Report	The CSR Report is shared within Verstegen and its stakeholders

Table 53: Overview of descriptions of the activities of the improvement planning activities of case 5 and their indicators

Concept	Definition
VISION	A VISION is in accordance with a MISSION. Description is modelled as a property
MISSION	A MISSION has description modelled as a property and is related to the VISION
INTERNAL	INTERNAL is a TYPE of STAKEHOLDER
EXTERNAL	EXTERNAL is a TYPE of STAKEHOLDER
NGO	NGO is a TYPE of STAKEHOLDER
STAKEHOLDER	One or more STAKEHOLDERS conduct one or more RESEARCHE
FOOD PRODUCTS SECTOR AGREEMENT	A FOOD PRODUCTS SECTOR AGREEMENT determines agreements in one or more SUPPLY CHAINS and identifies risks in zero or more SUPPLY CHAINS. KNSV is modelled as a property. In addition, offers a DUE DILIGENCE TOOLKIT. Name and description are modelled as properties
DUE DILIGENCE TOOLKIT	A DUE DILIGENCE TOOLKIT is offered by FOOD PRODUCTS SECTOR AGREEMENT and identifies one or more IMPROVEMEN AREAS
GENERAL DUE DILIGENCE	GENERAL DUE DILIGENCE is a type of DUE DILIGENCE TOOLKIT
CHILD LABOUR DUE DILIGENCE	CHILD LABOUR DUE DILIGENCE is a type of DUE DILIGENCE TOOLKIT
SUPPLY CHAIN	A SUPPLY CHAIN involves on or more STAKEHOLDERS
RESEARCH DATA	One or more RESEARCHEs are conducted in one or more SUPPLY CHAINS and based on one or more SDGs. Value is modelled as a property
SDG	A SDG is in accordance with a MISSION. One or more SDGs relate to one or more CENTRAL THEMES. Name and description are modelled as properties
CSR REPORT	A CSR REPORT is organised around one or more SDGs and described one or more IMPROVEMENT ACTIONS. Name, date and outline are modelled as properties
CENTRAL THEME	A CENTRAL THEME is related to one or more SDGs. Name and description are modelled as properties
C02 NEUTRAL	C02 NEUTRAL is a type of THEME. Description is modelled as a property
FARMER CENTRAL	FARMER CENTRAL is a type of THEME. Description is modelled as a property
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is described in a CSR REPORT and is part of an IMPROVEMENT AREA
IMPROVEMENT AREA	An IMPROVEMENT AREA is linked to one or more SDGs and has one or more RESPONSILITIEs
RESPONSIBILITY	A RESPONSIBILITY is assigned to an IMPROVEMENT AREA
ECOVADIS	ECOVADIS is an ESEA method that identifies one or more IMPROVEMENT AREAs and measures zero or more INDICATORS. In addition, it results in a SCORECARD. Version is modelled as a property
SCORECARD	A SCORECARD consist of a TOTAL SCORE and a SCORE per THEME
TOTAL SCORE	A TOTAL SCORE is part of a SCORECARD. Value is modelled as a property
SCORE	A SCORE is part of a SCORECARD. Value is modelled as a property
INDICATOR	An INDICATOR is about a theme and is measured by ECOVADIS
THEME	A THEME groups zero or more INDICATORS and consist of zero or more SUSTAINABILITY CRITERIA. Name and description are modelled as properties
SUSTAINABILITY CRITERIA	A SUSTAINABILITY CRITERIA is part of a THEME. Name and description are modelled as properties

Table 54: Overview of descriptions of the concepts of the improvement planning activities of case 5

D.9 Case 6

In this section contains an overview of the matching activity and concept table of the created PDD related to the IP4ESET process of case 3. Due to privacy regulation, we are not able to provide an overview off the additional data that is used for describing and modelling the IP4ESET process of this case.

D.9.1 Activity and Concept Table of Meta-Model Case 6

Improvement planning activities case 6	
Indicator activity	Description
Case6.1.Determine relevant stakeholder groups	Prior to the materiality assessment, relevant internal and external stakeholder groups are determined to select sustainability themes
Case6.2.Conduct interviews with stakeholder groups	Interviews are conducted with stakeholder from research, education and management
Case6.3.Conduct a survey with stakeholder groups	Surveys are conducted with external and internal stakeholder groups
Case6.4.Select relevant themes	Based on the results of the interviews and survey, high scoring themes are selected
Case6.5.Determine KPIs per selected theme	For each identified theme, relevant KPIs are selected that measure each theme
Case6.6.Determine vision per KPI	For each identified KPI a vision is set by the KPI owner
Case6.7.Determine goal per KPI	For each identified KPI a goal is set by the KPI owner
Case6.8.Report on each KPI	A KPI owner is responsible for collecting and consolidating data and information from various organisational units in the reporting format. In addition, responsible for monitoring the KPIs and for reporting progress annually to the Program-manager Sustainability. The KPI owner is also responsible for the annual submission of the data (including the historical data) for the sustainability report.
Case6.9.Control data of each KPI	All KPI data is controlled by a KPI owner focusing on outliers, trends and variations
Case6.10.Document results	All the results related to a KPI are documented and shared with the Program-manager Sustainability
Case6.11.Determine improvement actions	The determination of improvement actions are based on the results of the KPIs.
Case6.12.Document sustainability report	The sustainability report is a form of non-financial reporting provides an integral picture of the sustainability activities of the university; a) important milestones achieved in 2018 and b) plans for 2019. Each chapter starts with an introduction to the theme and what Utrecht University aims to achieve with that theme. For each theme, KPIs are defined.
Case6.13.Share sustainability report	The sustainability report is shared within the Utrecht University and external stakeholders

Table 55: Overview of descriptions of the activities of the improvement planning activities of case 6 and their indicators

Concept	Definition
INTERVIEW	An INTERVIEW defines input for the MATERIALITY MATRIX
SURVEY	A SURVEY defines input for the MATERIALITY MATRIX
MATERIALITY MATRIX	A MATERIALITY MATRIX specifies zero or more THEMES
VISION	A VISION is described for a KPI, which is a description of what should be achieved for this KPI in the mid-term or long-term future
GOAL	A GOAL is described for a KPI, which describes an idea of the future or desired result to achieve for this KPI
REPORT	A REPORT is written of a KPI, which describes the reporting and monitoring process of this KPI
CONTROL REPORT	A CONTROL REPORT is part of a KPI, which describes the data controls that are performed for this KPI
DOCUMENTATION	DOCUMENTATION is PART of a KPI, which contains all data related to this KPI
KPI OWNER	A KPI OWNER is assigned to a KPI. Name, function, task and department are modelled as properties
KPI	A KPI consist of a VISION, GOAL, CONTROL REPORT and zero or more REPORTs and DOCUMENTATIONS. In addition, a KPI has zero or more GRI REFERENCES and is described in a GRI report. Name, definition, value, unit, scope, frequency and status are modelled as properties
GRI REPORT	A GRI REPORT provides an overview of one or more KPIs. Version and date are modelled as properties
THEME	A THEME is based on GRI STANDARDS and consists of one or more KPIs
GRI REFERENCE	A GRI REFERENCE is related to a GRI STANDARDS
GRI STANDARDS	GRI STANDARDS consist of one or more GRI REFERENCES
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is related to one or more THEMES
SUSTAINABILITY REPORT	A SUSTAINABILITY REPORT consists of one or more IMPROVEMENT ACTIONs and is written in accordance with one or more GRI STANDARDS
DIGITAL SUSTAINABILITY REPORT	A DIGITAL SUSTAINABILITY REPORT is part of the SUSTAINABILITY REPORT. Name, version and date are modelled as properties
C02 FOOTPRINT REPORT	A C02 FOOTPRINT REPORT is part of the SUSTAINABILITY REPORT and is based on a GHG PROTOCOL. Name, version and date are modelled as properties
GHG PROTOCOL	A GHG PROTOCOL consists of SCOPE 1, SCOPE 2 and SCOPE 3
SCOPE 1	SCOPE 1 is part of the GHG PROTOCOL. Description and value are modelled as properties
SCOPE 2	SCOPE 2 is part of the GHG PROTOCOL. Description and value are modelled as properties
SCOPE 3	SCOPE 3 is part of the GHG PROTOCOL. Description and value are modelled as properties

Table 56: Overview of descriptions of the concepts of the improvement planning activities of case 6

D.10 Case 7

In this section contains an overview of all the additional data that is used for describing and modelling the IP4ESET at case 7; a case study data base and the matching activity and concept table of the created PDD related to the IP4ESET process of case 7.

D.10.1 Database

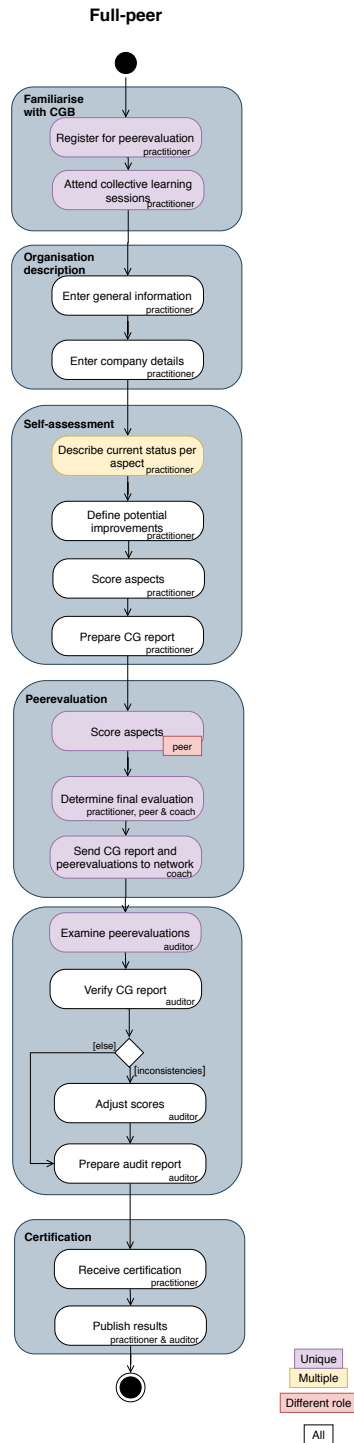


Figure 87. ECG Peer-audit Activity Diagram by: Vijanti Ramautar

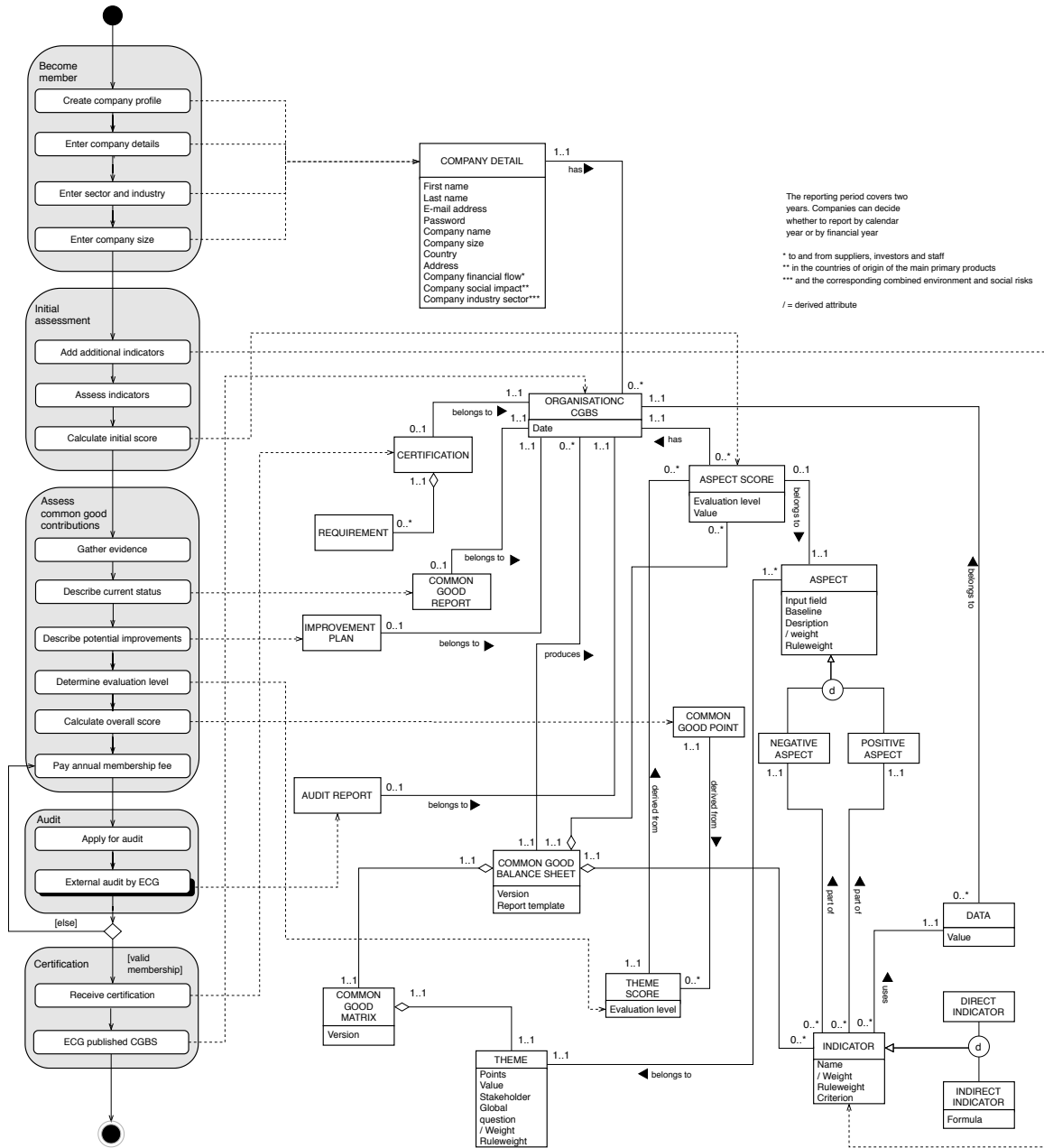


Figure 88. Common Good Balance Sheet (full) PDD as found in [49]

D.10.2 Activity and Concept Table of Meta-Model Case 7

Concept	Definition
VISION	The VISION determines the road-map for the organisation. Description is modelled as a property
MISSION	The MISSION is based on the VISION. Description is modelled as a property
STAKEHOLDER SURVEY	A STAKEHOLDER SURVEY determines the prioritisation of zero or more IMPROVEMENT ACTIONS, is conducted with one or more STAKEHOLDERS and identifies one or more IMPROVEMENT AREAs
STAKEHOLDER	A STAKEHOLDER participates in a SUPPLY CHAIN and for each STAKEHOLDER one or more KPIs is determined. Name is modelled as property
KPI	A KPI is part of an KPI REPORT. Name, definition and value are modelled as properties
KPI REPORT	A KPI REPORT consists of one or more KPIs. Name and date are modelled as properties
SUPPLY CHAIN	A SUPPLY CHAIN has one or more STAKEHOLDERS that participate in this chain
SUSTAINABILITY PLAN	A SUSTAINABILITY PLAN is based on the VISION and MISSION statement. A SUSTAINABILITY PLAN consists of one or more SUSTAINABILITY PRINCIPLES. In addition is related to a COMMON GOOD REPORT
SUSTAINABILITY PRINCIPLES	A SUSTAINABILITY PRINCIPLE is part of a SUSTAINABILITY PLAN and description is modelled as a property
COMMON GOOD REPORT	A COMMON GOOD REPORT identifies one or more IMPROVEMENT AREAs
IMPROVEMENT AREA	An IMPROVEMENT AREA is identified in a SUPPLY CHAIN and relates to one or more IMPROVEMENT ACTIONS. Name and description are modelled as properties
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is part of an IMPROVEMENT PLAN. Description is modelled as a property
IMPROVEMENT PLAN	An IMPROVEMENT PLAN consists of one or more IMPROVEMENT ACTIONS. An IMPROVEMENT PLAN is focused on a STAKEHOLDER
RESPONSIBILITY	A RESPONSIBILITY is given to an IMPROVEMENT PLAN. Name and function are modelled as properties

Table 57: Overview of descriptions of the concepts of the improvement planning activities of case 7

Improvement Planning Activities case 7	
Indicator activity	Description
Case7.1.Determine vision	Voramam has provided their accommodation and catering services motivated by the mission and vision of the organisation aimed at the well-being of their clients
Case 7.2.Determine mission	Voramam has provided their accommodation and catering services motivated by the mission and vision of the organisation aimed at the well-being of their clients
Case 7.3.Develop sustainability plan	An improvement plan is created to related to the environment and focused on practices in order to reduce the carbon footprint
Case7.4.Deterine KPIs	For each stakeholder KPIs are determined in order to measure performances in the supply chain
Case7.5.Prepare Common Good Report	A Common Good Report is created in order to measure social, environmental and business ethics performances according to the ECG
Case7.6.Conduct survey	A survey with the suppliers is conducted to get feedback about the relationships. For Voramam it is important to listen to them because it is the first thing you should do in order to implement a stakeholder management you should always choose priority (somethings you have to go for the needs of the supplier of the needs of the clients) however this depends on available resources
Case7.7.Observe performance KPIs	KPIs are continuously measured through measuring systems to identify the impact that the actives in the supply chain have. The values of the KPIs are observed in order to a) identify what is going well, b) to identify gaps and c) determine improvement areas
Case7.8.Analyse results surveys	Voramam receives input of the stakeholders in the supply chain through surveys on what they think are important to improve on. The results of these surveys are then observed in order to identify main issues in the supply chain and businesses of Voramam
Case7.9.Analyse results presented in Common Good Report	The results of Common Good Report and the results of the scores per field of the Common Good matrix are evaluated and analysed
Case7.10.Define improvement areas	The focus of ideas for improvement areas are generated based on the level of evaluation and its generated score per field. This improvement area focuses on a stakeholder group
Case7.11.Determine improvement actions	For each improvement area suitable improvement areas are defined
Case7.12.Determine improvement plan per stakeholder group	For each stakeholder, an improvement plan is determined that consists of improvement actions per improvement area
Case7.13. Determine responsibility per improvement plan	For each plan a responsibility is given to a person in the organisation that should be responsible for the improvement plan (project)
Case7.14. Document improvement plan	This plan is documented in a word document shared within the organisation
Case 7.15.Share improvement plan	This plan is documented in a word document shared within the organisation

Table 58: Overview of descriptions of the activities of the improvement planning activities of case 7 and their indicators

D.11 Method comparison 3

D.11.1 Activity and Concept Table of Super Method - continuous improvement cycle

Continuous Improvement Super Method Activities		
Indicator activity	Indicator sub-activity	Description
2G1.Materiality assessment	2G1.1. Determine vision	A vision is determined by an organisation in order to mark the relevant topics these organisation care about and to provide the strategy roadmap
	2G1.2.Determine relevant topic(s)	Relevant topics are determined prior to an assessment to decide on what to report on and what an organisation believes is important to measure
	2G1.3. Determine goal(s)	Related to the vision and the relevant topics, an organisation can set a high-level goal for their organisation to reach in the future
2G2. Ethics, social and environmental accounting	2G2.1.Monitoring	Monitoring of current level of standing (processes, prior improvement planning activities etc.). By means of conducting an ESEA method.
	2G2.2.Evaluation	The ESEA method results in an ESEA report, which provides an evaluation of the current level of standing of the organisation
2G3.Improvement planning	2G3.1. Analyse assessment results	The assessment data that results from either an ESEA method, a KPI analysis or a stakeholder survey. This data is analysed in order to identify improvement areas.
	2G3.2.Create improvement plan	a stakeholder survey. This data is analysed in order to identify improvement areas.
2G4.Implementation	2G4.1.Implement improvement plan	The implementation of improvement actions as part of the the improvement plan in the organisation

Table 59: Overview of descriptions of the activities of the continuous improvement super method activities (practice) and their indicators

Concept	Definition
VISION	A VISION is translated into one or more GOALS. Description is modelled as a property
TOPIC	A TOPIC is related to one or more GOALS and has one or more INDICATORS in order to measure these TOPICs. Name and description are modelled as properties
GOAL	A GOAL is related to one or more TOPICs and to the overall VISION. Name and description are modelled as properties
INDICATOR	An INDICATOR belongs to one or more TOPICs. Name and description are modelled as properties
DIRECT INDICATOR	A DIRECT INDICATOR is a type of INDICATOR.
INDIRECT INDICATOR	An INDIRECT INDICATOR is a type of INDICATOR. Formula is modelled as a property, since this type of INDICATOR requires performing calculations in order to calculate the value of the INDICATOR
ESEA METHOD	An ESEA METHOD measures one or more INDICATORS and results in one or more ASSESSMENT REPORTs.
ASSESSMENT REPORT	An ASSESSMENT REPORT is a result of performing an ESEA method. Name, version and name are modelled as properties
ESEA REPORT	An ESEA REPORT is a type of ASSESSMENT REPORT
KPI REPORT	A KPI REPORT is a type of ASSESSMENT REPORT
STAKEHOLDER SURVEY	A STAKEHOLDER SURVEY is a type of ASSESSMENT REPORT
ASSESSMENT ANALYSIS	An ASSESSMENT ANALYSIS analyses one or more ASSESSMENT REPORTs and identifies zero or more IMPROVEMENT AREAs. In addition, it provides input for the ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN
IMPROVEMENT AREA	An IMPROVEMENT AREA has name and description modelled as properties. In addition, an IMPROVEMENT AREA derives IMPROVEMENT ACTIONs
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is derived from an IMPROVEMENT AREA and is part of an ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN
ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN	An ETHICS SOCIAL ENVIRONMENTAL IMPROVEMENT PLAN consists of one or more IMPROVEMENT ACTIONs

Table 60: Overview of the definitions of the concepts of the continuous improvement super method activities (practice)

D.11.2 Activity and Concept Table of Super Method - improvement planning method

Improvement Planning Super Method Activities		
Indicator activity	Indicator sub-activity	Description
2G3.1. Analyse assessment results	2G3.1.1. Identify improvement area	The assessment data that results from either an ESEA method, a KPI analysis or a stakeholder survey. This data is analysed in order to identify improvement areas. So, these improvement areas as identified during the analysis of the data are elaborated on my determining a goal for each area
	2G3.2.1. Identify improvement actions	For each improvement area, suitable improvement actions are identified
2G3.2. Create improvement plan	2G3.2.2. Prioritise improvement actions	The improvement actions are prioritised based on impact effort to determine which improvement actions need to be implemented first
	2G3.2.3. Determine responsibilities	For each improvement actions responsibilities are determined by assigning employees
	2G3.2.4. Document improvement plan	The improvement actions as a results of the assessment are documented in an ethics, social environmental improvement plan that provides a detailed description of the actions that need to be executed within the responsible enterprise

Table 61: Overview of descriptions of the activities of the improvement planning activities super method (practice) and their indicators

Concept	Definition
IMPROVEMENT AREA	An IMPROVEMENT AREA is discovered by analysing assessment data, meaning the ASSESSMENT REPORT presented in the overall CI cycle. Name and goal are modelled as properties
IMPROVEMENT ACTION	An IMPROVEMENT ACTION is derived from an IMPROVEMENT AREA and has one or more STAFF RESPONSIBILITIES. Description is modelled as a property
PRIORITISATION TOOL	A PRIORITISATION TOOL prioritises one or more IMPROVEMENT ACTIONS. The prioritisation is done based on impact and effort that is determined for each IMPROVEMENT ACTION. Description and type modelled as properties.
STAFF RESPONSIBILITY	An STAFF RESPONSIBILITY is given to an IMPROVEMENT ACTION. Name and role are modelled as properties
ETHICS SOCIAL AND ENVIRONMENTAL IMPROVEMENT PLAN	An ETHICS SOCIAL AND ENVIRONMENTAL IMPROVEMENT PLAN IMPROVEMENT PLAN describes one or more IMPROVEMENT AREAs and consists of one or more IMPROVEMENT ACTIONS. Name, date and version are modelled as properties

Table 62: Overview of the definitions of the concepts of the improvement planning activities super method (practice)

E | Validation Instruments

E.1 Informed Consent

Introduction

You are asked to participate in Technical Action Research. We seek to apply a method for improvement planning for ethics, social and environmental topics. To do this, an interactive sessions will be conducted where we ask you to perform an ESEA method (questions about social, environmental and business ethics performances in your organisation), followed by improvement planning (setting goals and determining improvement actions based on organisational performance), the creation of a document and finally an evaluation. Your personal name will not be processed or shared as part of this research. When indicated below, the name of your organisation may be used in the reporting on the research results. By sharing your experience and opinion, you are contributing to this body of knowledge. If you want, we will share the results with you. You are able to drop out of this research at any time. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation.

Responsible for this research are Mariëlle Adèr and Sergio España. You can contact us at:

- Main researcher: Mariëlle Adèr (m.j.ader@students.uu.nl)
- Supervisor: Sergio España (s.espana@uu.nl)

Please indicate your choice for the following questions:

- The name of my organisation may be used in reporting on the research results.**
- I give permission for the researchers to undertake audio recording during the interview. The audio files are only accessible to the main researchers and will be destroyed after transcribing.**

Please tick the following boxes for agreement:

- I know that participating is completely voluntary. I know that at any moment I can decide not to participate anyway. I do not have to give a reason for that.**
- I understand that the research data, without any personal information that could identify me, may be shared with others.**
- I give permission to keep the collected data for at least 10 years after the end of this investigation.**

PARTICIPANT SIGNATURE

Name _____

Signature _____

Date _____

RESEARCHER SIGNATURE	
Name	
Signature	
Date	

E.2 Key Notes Observation

- Many discussion between the participants related to the answering of the questions, the indicator scores that resulted from the assessment and the impact and effort score of an action
- Participants were confused by some of the questions of the XES Social Balance questionnaire
- Connecting these questions of the questionnaire to the context of the research institute brought up questions such as the relevance of the method
- Participants had no issue applying the artefact once the explanation per activity was clear
- Participants had no issue with identifying improvement actions
- Participants has some issues with determining a high-level goal and an associated measurable objective for an improvement area
- Participants were not familiar with creating a ethics, social and environmental improvement plan
- Participants became aware of many issues related to ethics, social and environmental topics

E.3 Nvivo Node Structure Evaluation

Name	Files	References
● Improvement	1	4
▼ ● Variables	0	0
▼ ● Intention to use	0	0
● Negative	1	2
● Positive	1	5
▼ ● Perceived ease of use	0	0
● Negative	1	1
● Positive	1	2
▼ ● Perceived usefulness	0	0
● Positive	1	2
● Negative	0	0

Figure 89. Coded node structure of evaluation session

ID	Nvivo code	Audio fragment (comment)
1	Improvement	“A very important point to me is how to adapt the method to particularities that an organisation might have. Definitely things that are not are a little bit no sense in the sense that they are not fitting with important characteristics a relevant property of the organisation. So this adaptation to different particularities is an issue that should be taken care of.”
2	Improvement	“That is what I proposed to make the comparison with what we have done.”
3	Improvement	“It is absolutely valid, but I think that there is some fine tuning that would make the assessment infrastructure much stronger for representing accurately what the university issues are.”
4	Improvement	“Maybe I would focus more on the objectives that we have taken after the assessment more than the actions.”
5	Intention to use Negative	“Just doing this method for us is useless, because now I think that we are a part of the university. We depend on the university and the university is just planning to do things from this perspective. So what we were recommended before is to see how to apply the method as a template that can be used by any research centre.”
6	Intention to use Negative	“I am sure that this is going to create a lot of controversy, because there are a lot of views. This is in some ways a very fruitful debate.”
7	Intention to use Positive	“Especially if you want to apply the method in our case to any research unit of the university that is what I find very valuable results and very fruitful experience.”
8	Intention to use Positive	“For me it was also interesting, well we did not discuss much about that but I think that now for the other institute it is interesting to see how we can continue with them.”
9	Intention to use Positive	“I think that what you are doing is not only valid for small research centres as a prototype but to be applied to the whole university to assess sustainability and research for all the research units.”
10	Intention to use Positive	“The objective is to have an assessment strategy and tool that can be applied to the university from the research perspective. ”
11	Intention to use Positive	“A very interesting exercise. To see what is the reaction of the university staff and to show what we are providing them.”
12	Perceived ease of use Negative	“I saw that it is controversial, there are different things that are controversial by nature. But it is part of the game, things are controversial that you do not have to face them.”
13	Perceived ease of use Positive	“It was really clear and I did not find it complex at all.”
14	Perceived ease of use Positive	“Well, between the different spreadsheets with all the questions and indicators till we started with the actions well this was a while and I just started to become aware of many things that’s why maybe some of the ideas came out quite quickly.”
15	Perceived usefulness Positive	“Definitely yes, it makes you think about in our case important issues we do not take normally in account because we focus on scientific products. I think it is useful just because of this. I would summarise saying that it would make you think and be conscious being aware of important problems that should be taken into account.”
16	Perceived usefulness Positive	“It was interesting for me that there are many things that I have never considered. We have never thought about and now after this assessment we see that they are important and we will start putting some good practices and policies on after this because, the first thing to change something is to be aware of it.”

Table 63: Nvivo coded audio fragments

E.4 Results openESEIP Using Google Sheets

		Organisation	Research Institute
		Type of social balance Basic	
		XES Social Balance sc 5.10	
Id	Indicator	Indicator name	Score
3	ind3	Percentage of people in the organisation (disaggregated by sex)	0
13	ind13	Percentage of people who have participated in the approval of the Management Plan and Annual Budget	0
21	ind21	Ratio of management positions over the total staff	0
24	ind24	Percentage of executive or political positions over the total members of the organisation	0
97	ind97	Salary gap between men and women	0
98	ind98	Does the organisation use a non-genderist and inclusive language?	0
63	ind63	Do you regularly and mainly use recycled and/or certified sustainable forestry paper?	0
67	ind67	When organising events, do you consider environmental criteria in your organisation?	0
69	ind69	When purchasing a product, do you consider responsible consumption criteria?	0
105	ind105	Does your organisation generate spaces of emotional and physical care for workers in relation to their working environment?	0
104	ind104	What measures are implemented to encourage the training of workers?	0
103	ind103	The organisation cooperate with other organisations that offer the same products or services...	0
42	ind42	Percentage of purchases of goods and services to organisations that belong to REAS or the Social Market	0
75	ind75	Indicate what your commitment to Free Software:	4
7	ind7	Percentage of dependence on subsidies	6
20	ind20	Ratio of management positions over the total members of the organisation (disaggregated by sex)	6
12	ind12	Percentage of people who have participated in the approval of the Management Plan and Annual Budget (disaggregated by sex)	6
23	ind23	Ratio of executive or political positions over the total members of the organisation (disaggregated by sex)	6
27	ind27	Salary range index	6
93	ind93	Ratio of non-EU workers (foreigners) over the total number of members of the organisation	10
96	ind96	Ratio of racialized workers on the total number of members of the organisation	10
59	ind59	Do you have an environmental policy or action plan, or an environmental management system?	10
60	ind60	Do you have practices and procedures for energy efficiency and conservation?	10
61	ind61	Do you have practices and procedures for water efficiency and conservation?	10
62	ind62	Do you procure energy from providers that generate energy from 100% renewable sources with certified guarantee of origin?	10
65	ind65	Do you have formal practices for waste prevention?	10
102	ind102	Does the organisation offer or facilitate alternatives or assistance related to transportation? (e.g. videoconferences, teleworking, c	10
74	ind74	As a result of your activity, do you generate any kind of goods, services or materials (recipes, techniques, instruments, seeds, etc	10
77	ind77	Does your organisation implement measures to promote workplace health?	10
78	ind78	The policies of the organisation improve the conditions of the collective labour agreement	10
80	ind80	Does your organisation implement measures to improve work-life balance beyond legal obligations?	10
58	ind58	Are wages and other remunerations publicly disclosed to workers?	10
TOTAL SUM:			164
Number of indicators that have a score:			32

Figure 90. Results XES Social Balance

Id	Indicator	Indicator name	Weight	
3	ind3	Percentage of people in the organisation (disaggregated by sex)	0.02	0
13	ind13	Percentage of people who have participated in the approval of the Management Plan and Annual Budget	0.02	0
21	ind21	Ratio of management positions over the total staff	0.03	0
24	ind24	Percentage of executive or political positions over the total members of the organisation	0.03	0
97	ind97	Salary gap between men and women	0.03	0
98	ind98	Does the organisation use a non-genderist and inclusive language?	0.02	0
63	ind63	Do you regularly and mainly use recycled and/or certified sustainable forestry paper?	0.02	0
67	ind67	When organising events, do you consider environmental criteria in your organisation?	0.02	0
69	ind69	When purchasing a product, do you consider responsible consumption criteria?	0.03	0
105	ind105	Does your organisation generate spaces of emotional and physical care for workers in relation to their	0.03	0
104	ind104	What measures are implemented to encourage the training of workers?	0.03	0
103	ind103	The organisation cooperate with other organisations that offer the same products or services...	0.04	0
42	ind42	Percentage of purchases of goods and services to organisations that belong to REAS or the Social Ma	0.04	0
75	ind75	Indicate what your commitment to Free Software:	0.04	0.16
7	ind7	Percentage of dependence on subsidies	0.03	0.18
12	ind12	Percentage of people who have participated in the approval of the Management Plan and Annual Budget	0.03	0.18
23	ind23	Ratio of executive or political positions over the total members of the organisation (disaggregated by sex)	0.03	0.18
27	ind27	Salary range index	0.04	0.24
93	ind93	Ratio of non-EU workers (foreigners) over the total number of members of the organisation	0.01	0.1
96	ind96	Ratio of racialized workers on the total number of members of the organisation	0.03	0.3
59	ind59	Do you have an environmental policy or action plan, or an environmental management system?	0.02	0.2
60	ind60	Do you have practices and procedures for energy efficiency and conservation?	0.03	0.3
61	ind61	Do you have practices and procedures for water efficiency and conservation?	0.03	0.3
62	ind62	Do you procure energy from providers that generate energy from 100% renewable sources with certified	0.03	0.3
65	ind65	Do you have formal practices for waste prevention?	0.03	0.3
102	ind102	Does the organisation offer or facilitate alternatives or assistance related to transportation? (e.g. videocon	0.03	0.3
74	ind74	As a result of your activity, do you generate any kind of goods, services or materials (recipes, techniqu	0.03	0.3
77	ind77	Does your organisation implement measures to promote workplace health?	0.03	0.3
78	ind78	The policies of the organisation improve the conditions of the collective labour agreement	0.03	0.3
80	ind80	Does your organisation implement measures to improve work-life balance beyond legal obligations?	0.03	0.3
58	ind58	Are wages and other remunerations publicly disclosed to workers?	0.03	0.3

Figure 91. The weighting of the indicators


Improvement planning 2020 | Dashboard



Figure 92. Results of the improvement planning for ethics, social and environmental topics at CaseResearch