

The integration of the SDGs in the budgeting and geographic sustainable reporting approaches for (Dutch) municipalities.

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ABSTRACT:

This study investigates the possibilities of integrating the SDGs in the budgeting and geographic sustainable reporting approaches for (Dutch) municipalities. This is executed by a case study at the Municipality of Rheden. The Municipality of Rheden has been awarded with the title of ‘Most promising Global Goals municipality of The Netherlands’ in 2019. At the moment, the municipality is already working with the SDGs in their budget and reporting approaches and in this study research has been done to improve that. The current budget has been analysed with the Grounded Theory in order to determine the extent to which the SDGs are already been integrated in the budget. The analysis showed that the SDGs are currently integrated into the budget reasonably well. ‘SDG 11: Sustainable Cities and Communities’ is the SDG that is integrated most in the budget. Furthermore, three visualisations of projects of the Municipality of Rheden are made to illustrate the possibilities of this aspect. The local use of the food banks of the municipality, the costs of youth care and the increased amount of greenery in the streets are visualised to show the impact in line with the SDGs.

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Keywords

SDGs, municipality, Grounded Theory, ambition, performance, visualisation, Rheden.

1. INTRODUCTION

‘The Sustainable Development Goals (SDGs) are a universal call to end poverty, protect the planet and improve the lives of everyone, everywhere.’ (United Nations, 2015). There are 17 SDGs developed by the United Nations. However, the Municipality of Rheden has come up with an 18th SDG with the help of students. This SDG is focused on sharing knowledge and is called ‘Share and Pass On’ (Rheden 4 Global Goals, 2018). Those SDGs have a direct and indirect effect on companies, educational organisations, central governments and local municipalities as well.

The development of Corporate Social Responsibility (CSR) and Sustainability Reporting are examples of means that organisations are implementing to become a more sustainable organisation as a whole. CSR can be described as the business’ efforts to improve upon its environment, that is in the interest of a social good and not in the interest of the business itself (McWilliams, Siegel, Wright, 2006). Sustainability Reporting provides the stakeholders of a company with information regarding social, ecological and economic goals. There are multiple reasons for companies to implement Sustainability Reporting. An increased corporate reputation and brand value, gaining competitive advantage and increasing transparency and accountability within the company are examples of it (Schaltegger, Bennett, Burritt, 2006)

Furthermore, research has been done to determine the motivation a business has to incorporate the SDGs in their budget. First of all, it improves policy coherence. A more coherent budget will lead to less conflicts in an organisation. This can be on the basis of resource allocation and the commitments of an organisation. The next reason is that it can increase accountability. The progress made and performance regarding the SDGs can be assessed when they are included in the budget. This could lead to more transparent and accountable efforts made by organisations regarding the SDGs. Finally, it could lead to more standardised and thus more comparable budgets (Hege, Brimont, Pagnon, 2019).

Generally there is less known about ways to integrate the SDGs in the (program) budgets of (Dutch) municipalities and how to report the performance on the SDGs. Therefore, the Municipality of Rheden has been studied in the form of a case study. The Municipality of Rheden has integrated the SDGs in a lot of their day-to-day activities. This has resulted in winning two awards. They won the awards ‘Most promising Global Goal municipality of the Netherlands’ in 2018 and ‘Most inspiring Global Goals municipality of the Netherlands’ in 2019 (Gemeente Rheden). To continue this path, the next step has to be found and implemented: the SDGs and their targets should be integrated into their budgeting approach and into their performance and impact measures.

1.1 Research objective

The purpose of this paper is to determine how (Dutch) municipalities can integrate the SDGs in their (program) budget and sustainability performance reporting if possible in terms of neighbourhood performance and to determine a way to improve their performance. In order to do so the Municipality of Rheden will be used as a case study.

The ‘Rekenkamercommissie Rheden’ has done research in order to develop guidelines for the improvement of future budgets of the municipality to act as an instrument for the development of Rheden based on the SDGs. The budget should include the intended results in a clear and measurable manner, the efforts related to the intended results and the costs of those efforts. In order to objectively determine the quality of the budget, the three W-questions were used.

Those three questions are: what do we want to achieve (1), what are we going to do for it (2) and what will the costs be (3). The recommendation of this research is a four-step framework consisting of: plan (1), do (2), check (3) and act (4). The first step is to determine the priorities of the city council. The next step is to make a translation of the priorities in the form of a (program) budget. This is done by the councillors and mayors of the Municipality of Rheden. The third step is to report the performances of the program and this should be in line with step 2. The last step is to make adjustments in order to achieve what was intended. The last step is executed by the city council.

In this study it will be determined how the Municipality of Rheden is budgeting the SDG targets at the moment. Furthermore, possibilities will be described to improve the budgeting and (geographically) reporting approaches based on the SDGs and their targets.

1.2 Research question

There are no specific guidelines for municipalities to integrate the SDGs in their budget and how to report their performances regarding the SDGs. Therefore, this research sets out to answer the following research question: ‘How is it possible for (Dutch) municipalities to integrate the SDGs with their budgeting approach and (geographic) sustainable performance reporting? A case study at the municipality of Rheden.’

1.3 Sub-questions

To answer this main research question, there are three sub-questions to be answered:

1. To what extent are the SDGs incorporated in the current budget?
2. How could the Municipality of Rheden report the geographic impact of SDGs?
3. How is it possible for the Municipality of Rheden to have a more SDG based budget?

1.4 Academic and practical relevance

The academic relevance of this research is to develop guidelines for integrating the SDGs in the budget approach and sustainable performance reporting (if possible differentiated for their neighbourhoods). The theoretical object of this study is answering the question: What is the relevance of the SDGs for budgeting and reporting the geographic impact of municipality policies? The results of this research could be used by the International Cooperation Agency of the Association of Netherlands Municipalities (VNGi) and other Dutch municipalities as an example on how to tackle some issues that they might be dealing with regarding this topic.

This research focusses on one specific case regarding the integration of SDGs and their targets: can they be concretised in budgets and reports of geographical impact (if possible neighbourhood oriented). Therefore, the outcome of this research will be useful mainly to the Municipality of Rheden. The research will provide conclusions and recommendations for the Municipality of Rheden as a result, as well as examples a few for visualisations.

1.5 Outline of this thesis

The following section is the literature review. A comprehensive overview of theories known regarding the topic, implementation aspects and a step towards collaboration are shown. Secondly, the current situation of the Municipality of Rheden is analysed and data regarding the geographical impacts of the SDGs is collected with the help of experts.

The results are shown after this section. The last part of this paper is a discussion of the results and recommendations for future research regarding the topic.

2. THEORETICAL FRAMEWORK

The SDGs are in place to create a better, more sustainable future for people and planet (United Nations). Those SDGs can also be incorporated into the budgets of companies, educational organisations, central governments, and local municipalities.

The United Nations has outlined a process to incorporate the SDGs into existing business and reporting processes. This outline consists of three main steps; define priority SDG targets (1), measure and analyse (2) and report, integrate and implement change (3). The three main steps of this model all have three sub-steps in order to achieve the main steps. The complete model can be found as figure 1 in the appendix. This framework has been developed with input from a variety of sources like companies and governments (United Nations, 2018). This model could apply to (Dutch) municipalities and enable them to better report their performances on the SDGs. If there is a better insight in what is done regarding the SDGs, then a new budget could be better designed to include more elements of the SDGs and their targets. At the moment, the Municipality of Rheden is using this framework to determine the progress made on prioritising the SDGs, measuring and analysing the performances on the SDGs and reporting, integrating and implementing changes on the SDGs. However, in the end the choices that are made by the city council are guiding and the SDGs are used as guidelines to achieve the objectives set by the council. The SDGs are not the objectives itself. To prevent this from happening, the SDGs could be used to guide the objectives of the municipality in the form of a checklist. This results in the integration of the SDGs in the activities of the municipality without the SDGs being the objective. Furthermore, this ensures that the interests of the community of the municipality are not neglected.

The Balanced Scorecard is a framework that is used to translate strategic objectives into performance measures (Kaplan, Norton, 1993). An adaptation of this model, called the Sustainability Balanced Scorecard (SBSC), is developed by Chai (2009). This model can be used by municipalities to communicate, align, prioritise, and monitor and measure their strategies based on the SDGs. This can only be achieved when the 17 SDGs are categorised. Those categories are Social, Economic, and Environmental. Those three are the primary categories or perspectives in the SBSC model. Furthermore, there are two secondary perspectives; Learning and Growth and Internal Processes. Those two secondary perspectives enable the primary perspectives. The perspectives all consist of four components: objectives, measures, targets and initiatives. The objectives state what the desired outcome is as explicitly as possible. This is followed by the measures. The measures are in place to determine the performance of an objective by formulating rather intangible objectives into measurable units. Furthermore, the targets are set to represent the result that is desired based on the performance measures. Lastly, the initiatives are the means that are used to achieve the set targets. When this is all combined, a causal relationship is formed that enables specific action based on the strategy. This is illustrated in figure 2 in the appendix (Chai, 2009). The Municipality of Rheden has categorised the SDGs in 5 different programs: Economic Development, Welfare, Spatial Development, Sustainability and Governance & Safety. Figure 3 in the appendix is an example of how the SBSC (Chai, 2009) can be implemented by the Municipality of Rheden. It uses the programs of their budget as the categories for the framework.

Another framework for strategic management is Hoshin Kanri. This framework consists of four main objectives. First of all, it sets a few strategic priorities to focus the direction of a business.

What follows is that those priorities are aligned with the local programs and plans. The third step is to implement the priorities with daily management. Lastly, the performance on the strategic priorities is reviewed. A crucial part of this framework is planning and deployment. This includes the determination of the priorities and the determination of means to achieve the priorities. Furthermore, the Catchball Process is another crucial part of the implementation of Hoshin Kanri. This process works as follows: an idea moves from one employee to another. What this ensures is the continuous communication needed for the four objectives of Hoshin Kanri (Tennant, Roberts, 2001).

The implementation of one of the frameworks described above is a difficult task. It requires companies, educational organisations, central governments or local municipalities to perform beyond what is generally expected from them. To implement a major change like that, Kotter's eight-step process (1996) could be a helpful guideline. The eight steps that were developed can be described as follows:

1. Create a sense of urgency
2. Form a guiding coalition
3. Create a vision
4. Communicate that vision
5. Empower others to act on the vision
6. Generate quick wins
7. Consolidate the gains and build on it
8. Anchor the change

This is a well-known process and is often used in organisational change management (Pollack, Pollack, 2014). However, there are some common errors made by companies, educational organisations, central governments or local municipalities. Those mistakes could lead to discouraged employees and lost resources. Eight of these errors made are outlined by Kotter (2012) and can be found in table 1. When this method is not being implemented successfully, it could have some severe consequences. For example, new policies are not implemented as intended (Kotter, 2012).

Common errors
• Allowing too much complacency
• Failing to create a sufficiently powerful guiding coalition
• Underestimating the power of vision
• Undercommunicating the vision by a factor of 10 (or 100 or even 1,000)
• Permitting obstacles to block the new vision
• Failing to create short-term wins
• Declaring victory too soon
• Neglecting to anchor changes firmly in the corporate culture

Table 1. 8 Common errors made

A major change in the organisational structure of a company, educational organisation, central government or local municipality could lead to resistance among its employees. According to Kotter and Schlesinger (1979) there are four reasons that can lead to the resistance towards a change. The first reason is self-interest in a community. This means that a person is afraid to be in a worse position after the change has occurred. Secondly, misunderstanding and a lack of trust could be a reason to resist change.

This is the case when employees do not understand the implications of the change. They might fear that they will lose more than they will gain. A lack of trust between the employee and the person initiating the change can cause such situation. A different assessment of the situation is the third reason that can cause resistance. When employees believe that there are more costs than benefits resulting from the change, either for the company or themselves, it could lead to them resisting the change. Finally, a low tolerance for change can be a reason. Every employee has a limit for coping with changes. Their ability to develop the skills that are needed during and after the change occur differ. The uncertainty of being able to cope with the change or not can cause fear. This fear could result in resistance towards the intended change. In order to resolve the resistance towards a change, six approaches are developed (Kotter, Schlesinger 1979). The six approaches are: education and communication (1), participation and involvement (2), facilitation and support (3), negotiation and agreement (4), manipulation and co-optation (5) and explicit and implicit coercion (6). Each approach is used for different causes of resistance. When the resistance is caused by inaccurate or incomplete information, the education and communication approach is often used. The second approach, participation and involvement, is used when the initiators have incomplete information needed for the change and other people have power. The facilitation and support approach is used when there is resistance caused by adjustment problems. When a certain individual or group will be negatively affected by the change and they have power to resist it, the negotiation and agreement approach is commonly used. The fifth approach is the manipulation and co-optation approach. It is used when the other options are too costly or too ineffective. Finally, the explicit and implicit coercion approach is used when speed is of the essence. Furthermore, the initiators of the change must have reasonable power. The advantages and disadvantages of all these approaches can be found in table 2 (Kotter, Schlesinger, 2014).

Approach	Advantages	Drawbacks
Education + communication	Once persuaded, people will often help with the implementation of the change.	Can be very time consuming if lots of people are involved.
Participation + involvement	People who participate will be committed to implementing the change, and any relevant information they have will be integrated into the change plan.	Can be very time consuming if participants design an inappropriate change.
Facilitation + support	No other approach works as well with adjustment problems.	Can be time consuming, expensive, and still fail.
Negotiation + agreement	Sometimes it is a relatively easy way to avoid major resistance.	Can be too expensive in many cases if it alerts others to negotiate for compliance.
Manipulation + co-optation	It can be a relatively quick and inexpensive solution to resistance problems.	Can lead to future problems if people feel manipulated.
Explicit + implicit coercion	It is speedy and can overcome any kind of resistance.	Can be risky if it leaves people mad at the initiators.

Table 2. Advantages and drawbacks per approach

The following step, after a company, educational organisation, central government or a local municipality has implemented a new framework, is to collaborate with partners to become more sustainable. This can be a difficult task for the initiators of the change, since the implementation of the SDGs is a complex challenge. Kuenkel (2016) has developed a tool, the Collective Leadership Compass, for diagnosis and action regarding

collaborative change initiatives. This tool includes the planning, the implementation and the evaluation of a collaborative change initiative. This compass focuses on six human competency dimensions and suggests that it improves the initiators' extent for successful collaboration.

The six dimensions are: future possibilities, engagement, innovation, humanity, collective intelligence, and wholeness. Effective patterns of collaborative interaction are analysed and this guides the initiators during the change process. A collaboration of this kind requires a shift in the way leadership is seen. Leading the change process becomes a collective process instead of an individual one. For example, leadership becomes non-hierarchical and based on cooperation. Thus, no initiator has more power than another. Furthermore, competitive thinking is replaced by collaboration where all interests are included (Kuenkel, 2018). A company, educational organisation, central government or a local municipality can become more sustainable when the Leadership Compass is integrated in their budgeting and reporting approaches. Figure 4 is an example of how the Municipality of Rheden can integrate the Leadership Compass into their budgeting and reporting process for their programs. When this is done successfully, certain ambitions, which otherwise would not be realised, can be realised by collaborating with others. Overall, this results in a more sustainable municipality.



Figure 4. The Leadership Compass and SDG based budgeting/reporting

3. METHODOLOGY

In this part of the paper the methodology is described. First of all, the research design is discussed. After this the data collection used in the research and the data analysis are discussed.

3.1 Research design

This research is a case study and focuses in depth on the situation of the Municipality of Rheden. This will result in indications to answer the research question rather than a complete answer directly (Shuttleworth, 2008). In order to achieve the research objective for this, qualitative research, multiple data sources were used. In order to determine the current situation of the Municipality of Rheden regarding the SDGs, their budget is analysed by means of the Grounded Theory. Furthermore, experts of the municipality are contacted to gather data regarding performances on the SDGs. The collected data is then visualised to illustrate the possibilities for geographic sustainable performance reporting.

3.2 Data collection

The latest budget (2020) of the Municipality of Rheden is used for the data collection of this research. This budget consists of 5 programs: Economic Development, Welfare, Spatial Development, Sustainability and Governance & Safety. Those programs all consist of several sub-programs and the same layout has been used for all programs: they start with a general introduction. After that, each sub-program's developments, objectives, ambitions and performances are described. The Municipality of Rheden has allocated all the SDGs to the program it contributes most to. The Grounded Theory is applied to form the dataset that is used for analysis in order to determine their current situation.

For visualisation of the possibilities for geographic sustainable performance reporting that the Municipality of Rheden has on its neighbourhoods, experts will be contacted for the necessary data. The visualisations demonstrate what can be done to measure the societal impact on the SDG framework. The employees of the municipality and some partners are going to be the experts that are contacted. This research focuses on data regarding the food banks within the Municipality of Rheden, certain parts of youth care that were paid in 2018 and the increased amount of greenery in the streets. There are five food banks in the Municipality of Rheden: two are located in Velp, two are located in Dieren and one is located in Rheden. The data consists of the total number of people using that food bank and the zip-codes of their neighbourhoods, the number of standard packets, the number of packets for large families and the type of users of the food bank. There are two types of users: single-person users and multi-person users. This visualisation is in line with SDG target 2.1: 'By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round' (United Nations). For the data of youth care within the Municipality of Rheden, the total costs and the costs per product are used. The maps regarding the youth care already existed and will be included in this research. This visualisation is in accordance with the third SDG: 'Ensure healthy lives and promote well-being for all at all ages' (United Nations). Finally, the data from an initiative called 'Operatie Steenbreek' is used to visualise the increased amount of greenery in the streets. The goal of this initiative is, in collaboration with municipalities, regional water authorities and provinces, to increase the amount of greenery (Stichting Steenbreek). The visualisation corresponds to SDG target 13.1: 'Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries' (United Nations).

3.3 Data analysis

The Grounded Theory is applied to form the dataset that is used to determine the current situation of the Municipality of Rheden. The Grounded Theory is a way of analysing existing data to find a theory inside that data (Strauss, Corbin, 1994). This theory has been discussed and further developed over the years and there are different variations of it. For this research the Interpretive Grounded Theory is used (Strauss, Corbin, 1994). This theory allows for (prior) knowledge of the subject. In this case, knowledge of the subject is needed because otherwise not everything that is described in the budget of the municipality can be allocated to the appropriate SDG target (Sebastian, 2019). This theory requires the formulation of main- and sub-categories and is done via coding. For this analysis the SDGs are taken as the main categories and the SDG targets are the sub-categories. The ambitions/objectives/developments (hereinafter referred to as 'ambitions') and the actual performances described in the budget are separately divided among the sub-categories.

Table 3 in the appendix is a fragment of the format that was used for the analysis. The budget of the Municipality of Rheden is analysed line-by-line and divided accordingly among the sub-categories. In order to be able to recognise from which program each sentence is, different font colours are used. For example, every ambition or performance from the Welfare program has orange as its font colour. This is needed for later analysis. It was stated before that the Municipality of Rheden has allocated each SDG to a certain program. However, all of the SDGs are taken into account when the line-by-line analysis is executed. The analysis is executed by 2 researchers separately at first. The second step is the comparison of those findings via a (online) meeting. Both analyses are compared to one another. If there is a difference in the placement of a specific line of the budget, this is discussed and the best fit is determined. The result of this process is a more reliable and complete dataset that is used by both researchers for further analysis. After the allocation of the complete budget of the municipality, it is determined whether there are coherences between ambitions and performances. This process is also done by the 2 researchers and follows the same order: first of all, the researchers determine the coherences separately. The way of doing this is by comparing all the ambitions and performances per SDG target with each other. If a clear connection between an ambition and a performance is found, then it is seen as a coherence. Furthermore, it is possible that one ambition is coherent with multiple performances and vice versa. When this is done, the findings of both researchers are compared and the best coherences are determined and combined into one dataset again.

The following step is to process all this raw data into clearly structured information. This is done via several graphs and tables. The data is going to be analysed based on two different aspects. The first analysis is going to be based on each SDG itself and the second analysis is going to be made based on the programs in the budget of the Municipality of Rheden.

For the first analysis, all of the ambitions, performances and coherences are counted and visualised in one table and one graph per SDG per target. Furthermore, a general table and a graph is made that visualises the total number of ambitions, performances and coherences per SDG. The final aspect of the first analysis is a comparison between the amount of SDG targets with and without ambitions or performances. By doing this, it becomes clear what the Municipality of Rheden is currently doing per SDG and also, in more detail, what they are doing per SDG target.

The second analysis takes a closer look at the programs that the budget consists of. Similarly to the first analysis, the ambitions, performances and coherences are counted per SDG per target. However, the coherences are only counted when both the ambitions and performances are related to the same program. As said before, each program's ambitions and performances has a certain font colour, which are used for this analysis. This results in a table and a graph per SDG that has ambitions or performances in one of the programs. Furthermore, a table and a graph are made per program to visualise which SDGs the program is focused upon and to what extent. This creates a better insight in the current situation of the Municipality of Rheden regarding the SDGs per program.

The data that was gathered regarding the geographic impact of the SDGs is visualised via a geo tool (Geoview) that the Municipality of Rheden owns. The result of it are several maps. Those maps create a clear visual representation of what impact is realised by the Municipality of Rheden and give an insight of what can be visualised regarding the geographic impact on the SDG targets in neighbourhoods.

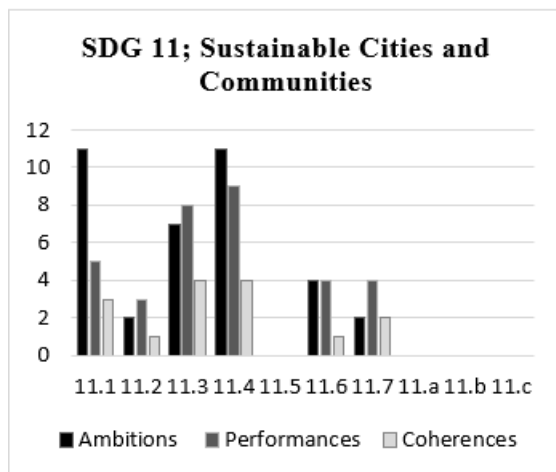
4. RESULTS

4.1.1 Current situation regarding to the program budget

When the current budget of the Municipality of Rheden is analysed, multiple conclusions can be made. Divided over the 175 SDG targets, 186 ambitions, 172 performances were found. Furthermore, there were targets that had ambitions and performances, targets that had either an ambition or a performance, and there were targets that had neither an ambition nor a performance. Lastly, SDG 2 and SDG 14 do not have any ambitions or performances at all.

4.1.2 Current situation per SDG

The analyses of the current situation per SDG revealed that there are 75 coherences between the 186 ambitions and 172 performances spread across the 18 SDGs. When the data is illustrated, it shows that there is a high variety in the number of ambitions, performances and coherences per SDG. SDG 11: 'Sustainable Cities and Communities', is the one that has the highest amount of ambitions, performances and coherences in the current budget of the Municipality of Rheden. It has 37 ambitions, 33 performances and 15 coherences between them. This is spread across 6 out of the 10 SDG targets and graph 1 illustrates this.



Graph 1. Ambitions, performances and coherences of SDG 11

Furthermore, the 6th SDG: 'Clean Water and Sanitation', is the SDG that has the least amount of ambitions, performances and coherences in the budget, aside from the two SDGs without any ambitions, performances or coherences. It has only two ambitions and there are no performances related to it. Logically, there are no coherences found as well. Graph 2 in the appendix illustrates the number of ambitions, performances and coherences per SDG. To put this in numbers, nearly 20% of the ambitions, performances and coherences of the budget of the Municipality of Rheden are allocated to SDG 11. On the contrary, just over 1% of the ambitions and none of the performances or coherences are related to Clean Water and Sanitation. Table 4 gives a quick overview of all the 18 SDGs.

When the SDG targets are analysed further, it becomes clear that most of them do not have ambitions or performances allocated to them. To put it in number, only 53 SDG targets (30%) have either an ambition or a performance compared to 123 targets (70%) that do not have it. Only five out of the 18 SDGs have more targets with an ambition or a performance than without and graph 3 in the appendix illustrates this.

SDG	Ambitions in %	Performances in %	Coherences in %
1	6.45	6.98	6.67
2	0.00	0.00	0.00
3	6.99	9.30	8.00
4	3.76	4.65	4.00
5	3.76	8.14	2.67
6	1.08	0.00	0.00
7	2.15	0.00	0.00
8	14.52	13.95	18.67
9	1.08	2.33	2.67
10	11.83	7.56	10.67
11	19.89	19.19	20.00
12	7.53	7.56	5.33
13	2.69	2.91	2.67
14	0.00	0.00	0.00
15	1.61	2.33	2.67
16	6.45	6.40	5.33
17	8.60	7.56	9.33
18	1.61	1.16	1.33

Table 4. Percentages of ambitions, performances and coherences per SDG

4.1.3 Current situation per program

The five programs of the Municipality of Rheden are: Economic Development, Welfare, Spatial Development, Sustainability and Governance & Safety. Those programs are analysed and, logically, the number of ambitions and performances are still 186 and 172. However, the number of coherences is different. When the programs are analysed, the number of coherences is 62 instead of 75. This is caused by the method that is used to count the coherences. In case of the current situation per program of the Municipality of Rheden, a coherence is only counted when the ambition and the performance which form the coherence are found in the same program. The coherences in the current situation per SDG are merely an ambition/ambitions and a performance/performances that are coherent to one another. The programs they derive from are not taken into account in this instance.

When the five programs of the budget of the Municipality of Rheden are analysed, the following results are found. There is quite some variety in the percentages of ambitions, performances and coherences that are found in the budget. The program that has the most ambitions, performances and coherences in the budget is the Welfare program. This program has 80 ambitions, 68 performances and 28 coherences. The Sustainability program has the least amount of ambitions, performances and coherences of all. It has merely 16 ambitions, 11 performances, and 3 coherences. The five programs and their ambitions, performances and coherences in numbers are illustrated in graph 4 in the appendix. When this is expressed in percentages, the Welfare program has roughly 40% of the ambitions, performances and coherences. Furthermore, only about 7% is related to the Sustainability program. All of the programs and their percentages respectively are shown in table 5.

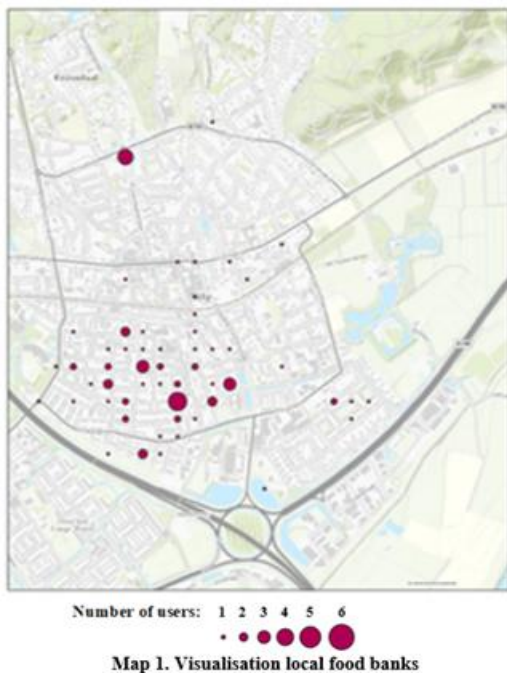
Program	Ambitions in %	Performances in %	Coherences in %
Economic Development	25.27	26.16	27.78
Welfare	36.56	46.51	40.28
Spatial Development	14.52	10.47	16.67
Sustainably	8.60	6.40	6.94
Governance & Safety	15.05	10.47	8.33

Table 5. Percentages of ambitions, performances and coherences per program

4.2.1 Visualisation of food banks

There are five food banks located across three villages of the Municipality of Rheden. Velp and Dieren both have two food banks and Rheden has one food bank. Map 1 is a visualisation of the local use of the food banks of Velp in 2020. Multiple conclusions can be made when this map is analysed. First of all, it can be concluded that the local food banks are used by more inhabitants in the south-east part of Velp. Furthermore, it can be concluded that the north-west part of Velp has the lowest use of the local food banks.

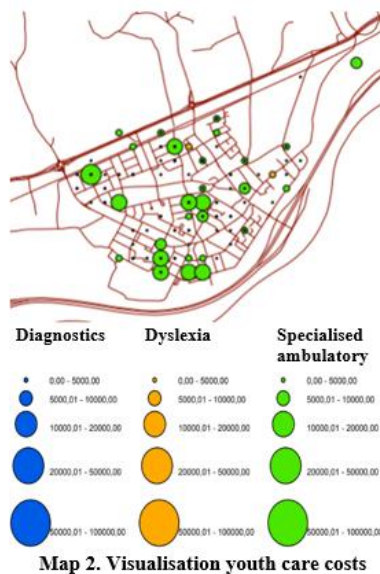
Local use of the food banks of Velp in 2020



4.2.2 Visualisation of youth care

The Municipality of Rheden has several types of products regarding youth care. Map 2 is a visualisation of five products of youth care and their costs in the village of Rheden. The five products are: basic ambulatory, diagnostics, dyslexia, specialised ambulatory and specialised residence. The bigger a circle is, the greater the costs are of that product. The full map of the villages Velp and Rheden, including the complete legend, are found as map 3 in the appendix. When the full map of Velp and Rheden is analysed, multiple conclusions can be made. For example, the largest expense in these villages is specialised ambulatory youth care. Furthermore, when dyslexia is analysed, it can be concluded that most of its costs are in the northern part of Velp and in the eastern part of Rheden.

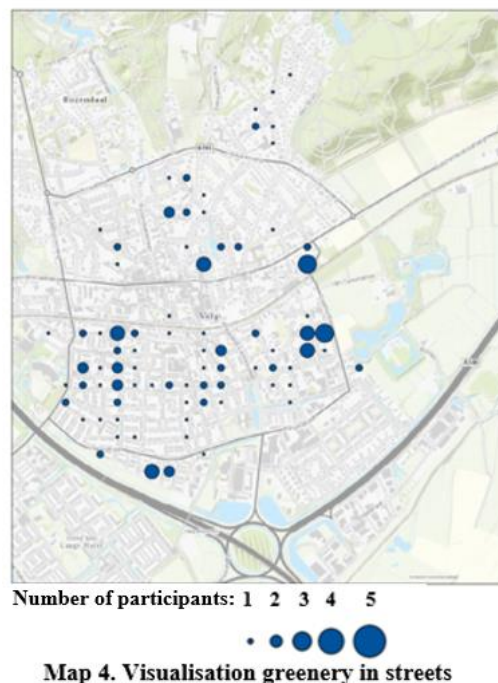
Youth care in Rheden



4.2.3 Visualisation of the increased amount of greenery in the streets

‘Operatie Steenbrek’ is an initiative of the Municipality of Rheden to increase the amount of greenery in the streets. The data of this project in Velp, which includes the number of participants and the location of a project, is visualised in map 4. A number of conclusions can be made when the visualisation is analysed. First of all, there is a higher number of participants in the southern part than there is in the northern part of Velp. Furthermore, it can be concluded that the western part has far less participants in this initiative than the eastern part of Velp.

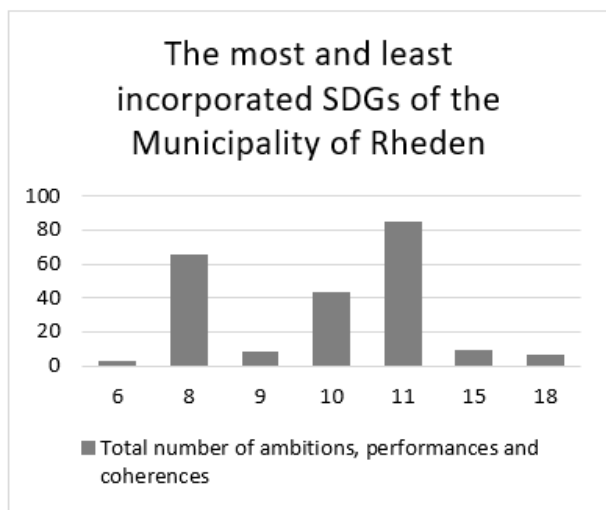
Participants of ‘Operatie Steenbrek’ in Velp



5. DISCUSSION

This research set out to answer the following research question: ‘How is it possible for (Dutch) municipalities to integrate the SDGs with their budgeting approach and (geographic) sustainable performance reporting?’ To answer this broad research question, a set of sub-questions need to be answered first.

The first sub-question that needs to be answered is: ‘To what extent are the SDGs incorporated in the current budget?’ The results of the first analysis of the current budget of the Municipality of Rheden show that almost all of the SDGs are incorporated into the budget. Only two of the 18 SDGs are not incorporated into the budget. However, this can easily be explained. The first SDG that is not incorporated into the budget is SDG 2: ‘Zero Hunger’. When the targets of this SDG are carefully analysed, it becomes clear that most of those targets are not at all applicable to the situation of the Municipality of Rheden. The second SDG that is not incorporated into the budget of the municipality is SDG 14: ‘Live Below Water’. Again, when the targets that come with this SDG are analysed, it becomes clear that there is little affiliation to the situation in the Municipality of Rheden. Thus, 16 out of the 18 SDGs are incorporated into the budget. The SDGs that are incorporated the most in this budget are SDG 11: ‘Sustainable Cities and Communities’, SDG 8: ‘Decent Work and Economic Growth’ and SDG 10: ‘Reduced Inequalities’. On the contrary, SDG 6: ‘Clean Water and Sanitation’, SDG 9: ‘Industry, Innovation and Infrastructure’, SDG 15: ‘Life on Land’ and SDG 18: ‘Share and Pass On’ are the SDGs that are least incorporated into the budget. A clear overview is given in graph 5 of those SDGs.



Graph 5. The most and least incorporated SDGs

When the amount of SDG targets with or without ambitions or performances is analysed, it becomes clear that only 30 percent of the SDG targets have either an ambition or a performance allocated to them. This rather small percentage will not affect the overall determination to what extent the SDGs are incorporated into the current budget much. The reason behind this is that a substantial amount of these SDG targets without ambitions or performances do not apply to the situation of the Municipality of Rheden. The second analysis, which analysed the current situation per program, shows that the SDGs are incorporated in all of the programs of the municipality. The SDGs are most incorporated in the Welfare program of the Municipality of Rheden. The Sustainability program has the least amount of SDGs incorporation.

To conclude, when the current budget of the Municipality of Rheden is analysed, it shows that the SDGs are reasonably well incorporated at the moment.

The second sub-question is: ‘How could the Municipality of Rheden report the geographic impacts of SDGs?’ The results illustrate a manner of doing this by means of a geo tool (Geoview). When the geographic impact of the SDG performances is reported, there is the need for several things. First of all, it needs the right kind of data. The first aspect of the right kind of data is a location where the impact has been made. This can be a general location or a more specific location. A general location could be a neighbourhood in the Municipality of Rheden. However, if the geographic impact wants to be measured with more accuracy, a more specific location like a house address is the better option. The second aspect of the right kind of data is a way of measurement. For example, this can be the costs of a certain performance, the surface of a place that has been improved or the number of people involved in a project. This is needed to create a scale and that scale is used to illustrate the impact the SDG has had in a certain area. Besides the right kind of data, it also needs to be linked to an SDG or an SDG target. When a visualisation is made, it needs to have a connection to an SDG or an SDG target. Otherwise the geographic impact of the SDGs is not measured at all.

‘How is it possible for the Municipality of Rheden to have a more SDG based budget?’ is the final sub-question that needs to be answered. As said before, the Municipality of Rheden has incorporated the SDGs reasonably well into their budget. However, there are still some improvements to be made. The first step for the municipality to have a more SDG based budget, is to include more, if possible all, of their activities, projects, ambitions and performances into their budget. After discussing the findings of the analysis with some employees of the Municipality of Rheden, it became clear that not everything is included in the budget. The three visualisations that are made are based on data of projects that were executed by the municipality. Those visualisation regard: the food banks, the youth care and the increased amount of greenery in the streets. However, the food banks and the increased amount of greenery in the streets are not mentioned at all in the current budget. Despite the fact that both of them can be linked directly to an SDG target. The food banks can be linked to SDG target 2.1: ‘By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round’ (United Nations). The increased amount of greenery in the streets can be linked to SDG target 13.1: ‘Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries’ (United Nations). When those kind of projects are added in future budgets, it will make that budget even more SDG based. This is in line with the findings of the ‘Rekenkamercommissie Rheden’. The three W-questions were used to objectively measure and analyse the quality of the budget. The three questions are: what do we want to achieve (1), what are we going to do for it (2) and what will the costs be (3). The recommendations that were made based on this analysis were to plan, do, check and act. When the priorities of the city council are determined (plan), a translation is made of those priorities in the form of a (program) budget (do), the progress made on the (program) budget is clearly reported (check) and the city council makes adjustments to achieve the intended objectives from a (program) budget (act), then more projects will be included in the budget. This will lead to a more SDG based budget for the Municipality of Rheden.

Making a local translation of some SDG targets is the second step for the Municipality of Rheden to have a more SDG based budget.

In the process of answering the first sub-question, it was discussed that not all SDGs and their targets are applicable for the situation of the Municipality of Rheden. Furthermore, a relatively small amount of the SDG targets have an ambition or a performance. When the SDGs and their targets are more applicable to the situation, then more of the ambitions and performances could be allocated to them. This will result in more SDG targets that have ambitions and/or performances allocated to them. This would lead to a more SDG based budget for the Municipality of Rheden. A disadvantage of making a local translation of the SDGs is that it becomes extremely difficult to compare the progress the Municipality of Rheden has made regarding the SDGs with another (Dutch) municipality, if needed.

After answering the three sub-questions, the research question can be answered: ‘How is it possible for (Dutch) municipalities to integrate the SDGs with their budgeting approach and (geographic) sustainable performance reporting?’ This research question will be answered in the form of a six-step process for integrating the SDGs in the budgeting and geographic sustainable performance reporting approaches for (Dutch) municipalities. This six-step process is outlined in table 6.

- | |
|--|
| <ol style="list-style-type: none"> 1. Select an appropriate framework. 2. Implement that framework. 3. Analyse the current situation by means of the budget. 4. Visualise the geographic impacts. 5. Monitor the progress regularly. 6. Collaborate with others. |
|--|

Table 6. The six-step process for integrating the SDGs

The first step is to choose a framework that is appropriate for the situation. The municipality that wants to integrate the SDGs into their budgeting and reporting approaches, needs to analyse which framework works best for them. The Three Step Process (United Nation), The Sustainability Balanced Scorecard (Chai, 2009) and Hoshin Kanri (Tennant, Roberts, 2001) are examples of frameworks that could be used. The next step for a (Dutch) municipality is to implement the chosen framework. The implementation of a new framework could cause some major changes and therefore could lead to some difficulties. In order to implement a framework as smooth as possible, the eight-step change model from Kotter (1996) could be used. If there is any resistance towards the change, the municipality should deal with it and find out what causes the resistance. The four reasons for resisting change, described by Kotter and Schlesinger (1979), could be useful in determining why there is any resistance. Furthermore, the six approaches to overcome resistance to change are helpful to implement the change as smooth as possible as well. After the implementation of the framework, the current situation of the municipality needs to be determined. To get an insight of what is done regarding the SDGs already, the latest budget should be analysed by means of the Grounded Theory. When the municipality knows what is and what is not done already regarding the SDGs, it becomes easier to improve upon it. However, the SDGs should act as guidelines to achieve an objective of the municipality, not as an objective itself. If the SDGs are seen as an objective for a municipality, then the local interest of the municipality could be ignored. The SDGs could act a checklist for sub-development regarding the objectives of the municipality. By doing this the municipality incorporates the SDGs into their activities without using them as objectives. The priority of a municipality is to act in the best interest of its community and the SDGs should guide the municipality in acting upon those interest in a responsible and sustainable manner.

The fourth step is to visualise the geographic impact of the SDGs based on the analysis of the latest budget. The visualisation of several performances create a geographic overview of the impacts of those projects. It shows what locations in the municipality are being positively impacted by the performances and what locations are not impacted. Those visualisations should be used when designing similar projects in the future. This should ensure that no area of the municipality is neglected. The fifth step of this process is to regularly monitor the progress of the integration of the SDGs into the budget and geographic sustainable reporting approaches of the municipality. To determine whether a municipality has made any progress in the integration of the SDGs into their budget and reporting approaches, steps 3 and 4 should be repeated on a regular basis. For instance, this can be done yearly to determine what has changed over time. The final step is to collaborate with other institutions like companies or educational organisations. This can be done by following the guidelines of the collective leadership compass (Kuenkel, 2018). Collaboration can result in achieving certain ambitions that otherwise would not have been achieved.

5.1 Strengths of this research

One of the strengths of this study is the data used for the visualisations regarding the geographic impact of the SDGs. The data used is up-to-date, with the data used to visualise the youth care costs being the least up-to-date (2018). Furthermore, the data is extremely reliable. The used data is closely monitored by the experts involved and reported in a structured manner.

Another strength of this research is that it provides a general framework for integrating the SDGs in the budget and (geographic) sustainability reporting approaches for (Dutch) municipalities. This framework can be used by multiple different municipalities and VNGi that have difficulties regarding this topic.

5.2 Limitations of this research

This research has several aspects which limit the strength of it. First of all, the number of researchers determining the current situation of the Municipality of Rheden was merely two. The research would have been much more reliable when a greater number of researchers helped with determining the current situation of the Municipality of Rheden. Furthermore, the knowledge of the researchers is limited. Both researchers, who determined the current situation, did not have any history with the Municipality of Rheden beforehand and therefore there knowledge regarding certain ambitions and performances is somewhat limited. The limited knowledge could have led to assumptions that are incorrect and that affects the analysis of the current situation.

The second limitation of this research is the use of the Grounded Theory. In this case the budget of the Municipality of Rheden was analysed with the Grounded Theory. However, a budget is not made to be analysed and for that reason it does not always provide sufficient detail (Bowen, 2009). This could lead to biased results of the analysis, since the researchers will have to make assumptions.

The final limitation to this study is that it is a case study at the Municipality of Rheden. This means that the actual results found, only apply to one specific case. This limits the possibilities to compare it with other cases.

5.3 Further research possibilities

This research uses the SDGs that are developed by the United Nations and by the Municipality of Rheden in order to determine the current situation. While this framework of SDGs is broad and well-defined, it is not always applicable to the situation, in this case The Netherlands. Therefore, it could be the case that some SDG targets are left out. For further research it could be interesting to make a 'local translation' of the SDG targets. An example of this is SDG target 14.2: 'Protect and restore ecosystems.' This SDG focuses on the preservation and protection on sea- and coastal ecosystems in a sustainable manner. For a municipality like Rheden, which has no sea in it, this is not applicable at all. When a local translation is made and it becomes applicable, it could give a broader insight in the current situation.

Another possibility for further research is to determine what the local council of the municipality is interested in regarding the SDGs. To determine the interests of the local council, a survey could be conducted. Each SDG target needs to be included in that survey and all members of the local council need to rate the importance of each target based on the five-point Likert scale (McLeod, 2019). The Likert scale is often used in research to determine people's opinion towards a subject. The members of the local council can express how much they agree or disagree with each SDG target. When such survey is conducted and analysed, it could be interesting to further analyse whether the current budget's ambitions and performances are in line with the interests of the council. If there are major inconsistencies between the interests of the local council and the actual budget, this could be used in future budgets. When done properly the results are more accurate budget priorities for (Dutch) municipalities. A survey for the Municipality of Rheden has already been made as described above. However, the moment this survey will be conducted is not within the timespan of this research.

A final suggestion for further research is to develop the visualisations of the geographic impact of the SDGs further. What this research has shown are some examples of what can be done if data is structured and kept up-to-date. Those examples are visualising a particular moment in time and it could be improved when developed further. To better measure the geographic impact of the SDGs, it could be measured and visualised on a regular basis. When this is done every year or for every budget period, it becomes clearer what the actual impact geographically has been regarding the SDGs. The developments that have or have not been made can instantly be seen and the budget can be adjusted when the actual performances differs from the desired performances.

6. CONCLUSION

This research set out to describe how (Dutch) municipalities could integrate the SDGs in their budgeting and (geographic) sustainable reporting approach. This was done via a case study at the Municipality of Rheden. It is described what their current situation is, it gives some examples of geographic sustainable reporting and it describes how the municipality can have a more SDG based budget. After the conclusions and recommendations for the municipality, a general framework was given for other (Dutch) municipalities to integrate the SDGs in their budget and reporting approaches.

The latest budget of the Municipality of Rheden was analysed with the Grounded Theory and showed that SDG 11: 'Sustainable Cities and Communities' had the most ambitions and performances.

On the contrary, SDG 2: 'Zero Hunger' and SDG 14: 'Live Below Water' had no ambitions or performances at all. Furthermore, it became clear that 30% of the SDG targets have either an ambition or a performances. Finally, it showed that the program of the Municipality of Rheden that had most ambitions and performances allocated to it, was the Welfare program.

The following aspect of this research showed some possibilities of geographic sustainable reporting. This was done by getting relevant data from experts of the municipality regarding the SDG targets. The gathered data was then visualised via a geo tool (Geoview). The process of visualising the data gathered into a clearly structured maps, was done by an employee of the Municipality of Rheden.

Finally, two recommendations are given for the Municipality of Rheden to have a more SDG based budget. The first recommendation that is given is to include more, if possible all, activities, projects, ambitions and performances into their budget. At the moment, not all of their efforts are included in the budget and when this is improved, the budget becomes more SDG based. This is illustrated with two of the examples used for the visualisations. Both are not included in the current budget, whilst they directly contribute to two SDG targets. The findings of the 'Rekenkamercommissie Rheden' support this recommendation. The findings were that the Municipality of Rheden should better plan, do, check and act in order to improve the quality of their budget. When this is done properly, more projects will be included in the budget.

The second recommendation of this research is to make a local translation of the SDGs and their targets. Not all of the SDG targets are possibly fully applicable for the situation of the Municipality of Rheden. When this is done, the ambitions and performances can be better allocated to certain targets. This results in a more SDG based budget.

To answer the research question the following six-step process is described for other (Dutch) municipalities to integrate the SDGs into their budget and reporting approaches. The first step is to choose the appropriate framework for the situation. The second step is to implement that framework and deal with any difficulties that may arise from it. What follows is an analysis of the latest budget of that municipality and the visualisations of some geographical impacts on the SDGs. The fifth step of this process is to monitor the progress that is made regarding the SDGs regularly. The final step of this process is to collaborate with others to achieve more ambitions.

This research contributes insights for the Municipality of Rheden on their current situation and what is possible for the future. The general answer to the research question gives practical suggestions for other (Dutch) municipalities when they want to focus more on the SDGs in their budget and a (geographic) sustainable reporting approach.

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9. APPENDIX



Figure 1. The Three Step Process

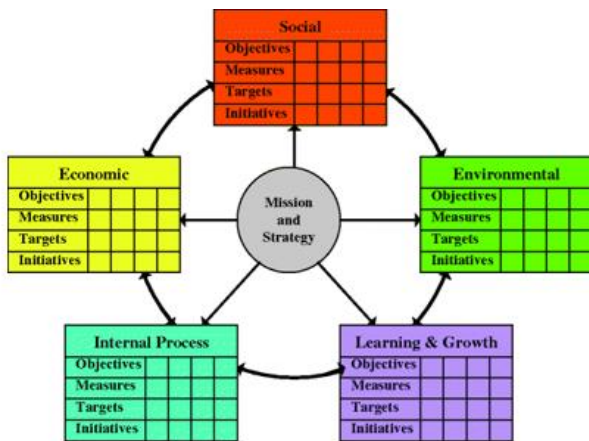


Figure 2. The Sustainability Balanced Scorecard

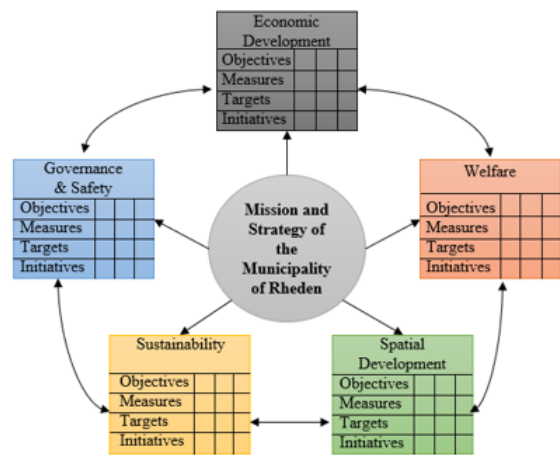
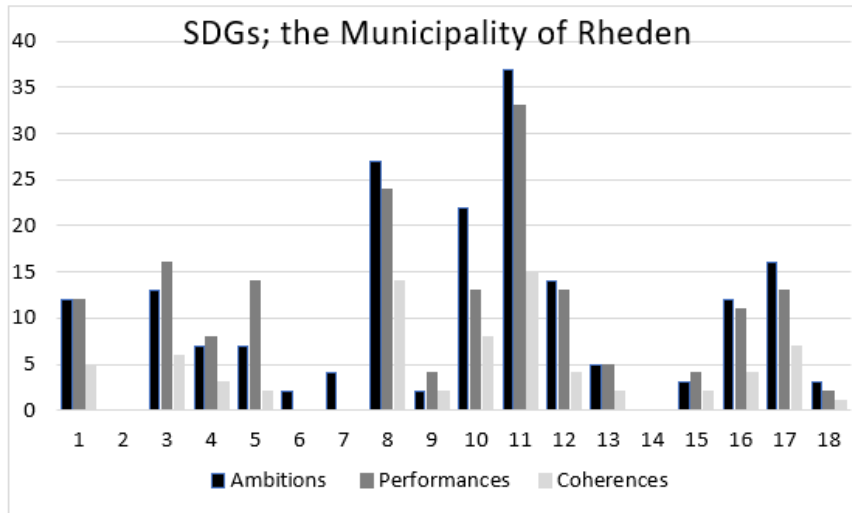


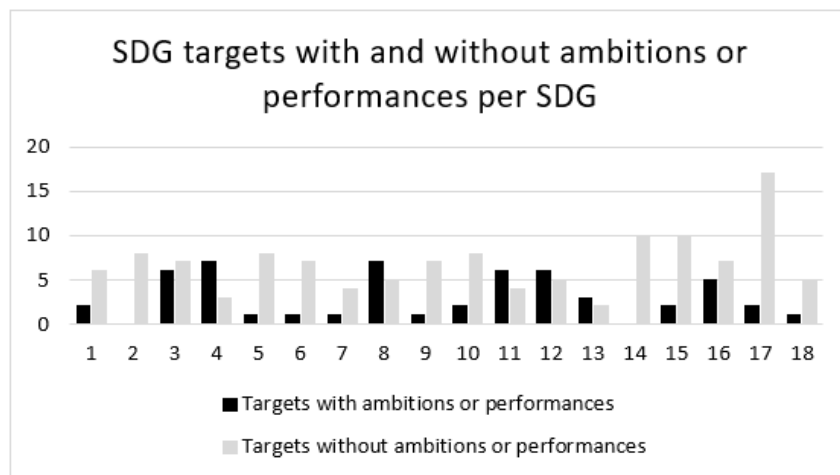
Figure 3. An example of the implementation of the SBSC

Program		1. DEEN AMBODIE	
2. Welfare			
GG 1: End poverty in all its forms everywhere			
Present ambitions, objectives and developments	Present performances	Icon	Global Goal Target
			1.1. By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day
			1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
			1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable
			1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance

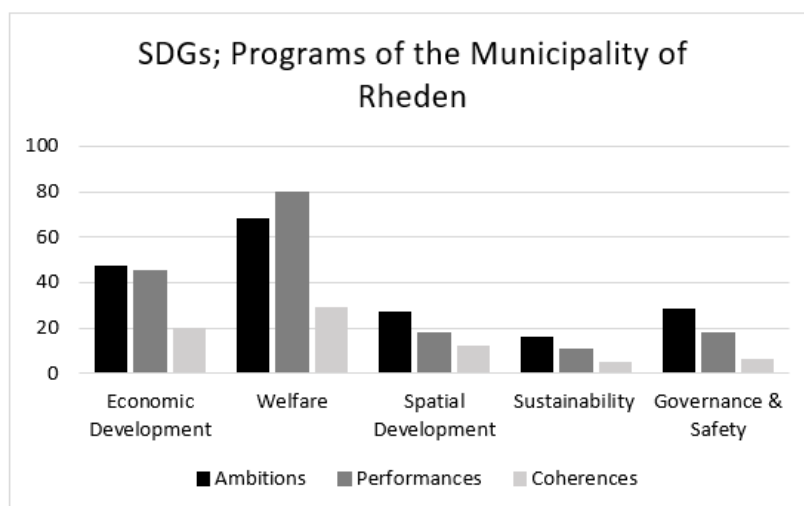
Table 3. Grounded Theory analysis format



Graph 2. Ambitions, performances and coherences per SDG

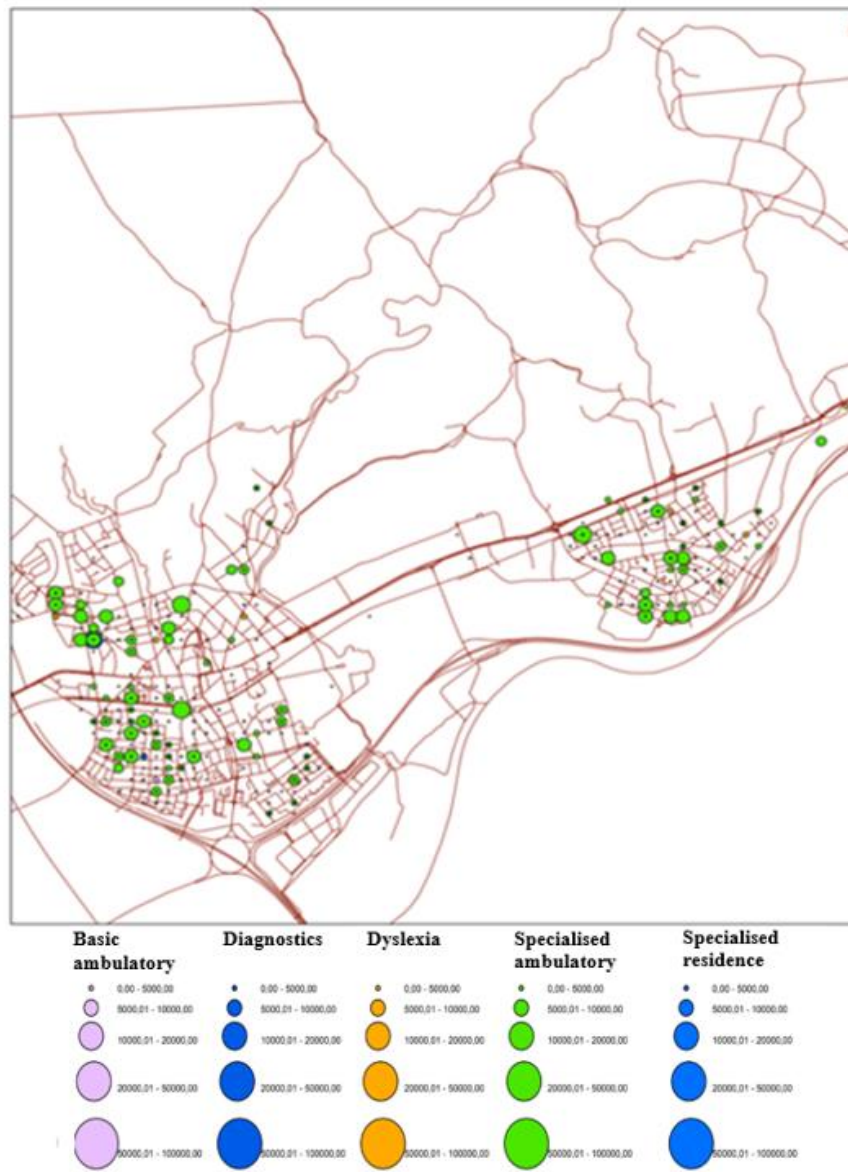


Graph 3. Amount of SDG targets with and without ambitions or performances per SDG



Graph 4. SDGs per program

Youth care costs in 2018



Map 3. Visualisation youth care costs in Velp and Rheden