

2020

Research Plan ADS-B project

THE GLOBAL GOALS For Sustainable Development



Ecovillage Boekel works on all SDGs



Nikita Andrianov, Luuk Geraats, Nguyen,
Kate Popova, Aleksander Sopiotti, Danial
Zarei, and Taurius Antanevičius
Group A
4/12/2020

Contents

Introduction.....	2
1. Project idea.....	3
1.1 Prototype.....	4
2. Research questions.....	5
3. Method of approach	6
4. Data sources	7
5. Enriched research plan.....	8
5.1 Responsible consumption and production	8
5.2 Life on Land	9
5.3 Clean water and Sanitation	10
5.4 Sustainable cities and communities	11
5.5 Quality Education	12
5.6 Affordable and Clean Energy.....	13
References.....	14

Introduction

In this document, you will read about the research plan that has been set up for the project. The project team will discuss the project idea, which sustainable development goals they are using and why. How the desired product will look like (prototype) and what research questions to the project team set up for this research. Also, the method of approach and the possible data sources for this research will be mentioned.

1. Project idea

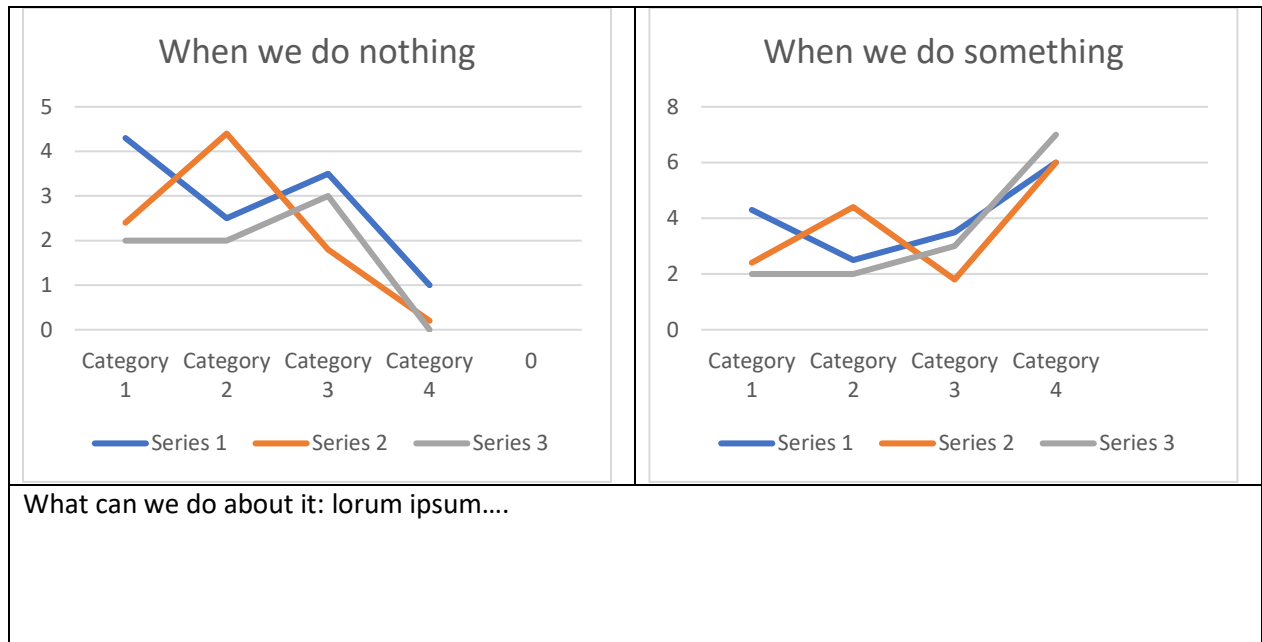
Our idea: For every SDG that is in our opinion important to the world and eco-village Boekel. We will do research on what will happen if we (the people) do nothing, what will happen if we do something and how we can do something. By doing that we can show the negative impact if we do nothing and the positive impact if we are getting more sustainable. We are working out the following SDG's:

- Quality education
 - o Equal access to affordable technical, vocational and higher education
 - o Education for sustainable development and global citizenship
- Clean water and sanitation
 - o Safe and affordable drinking water
 - o Increase water use efficiency and ensure freshwater supplies
- Affordable and clean energy
 - o Universal access to modern energy
 - o Increase the global percentage of renewable energy
- Sustainable cities and communities
 - o Safe and affordable housing
 - o Reduce the environmental impacts of cities
- Life on Land
 - o Conserve and restore terrestrial and freshwater ecosystems
 - o End deforestation and restore degraded forests
- Responsible consumption and production
 - o Sustainable management and use of natural resources
 - o Remove market distortions that encourage wasteful consumption
- Climate action
 - o Strengthen resilience and adaptive capacity to climate-related disasters
 - o Build knowledge and capacity to meet climate change

We have chosen these SDG's with two of their sub-goals because we believe that we can make a good story (storytelling) about these SDG's and that these are the SDG's people can work on in a short time or need to be more aware of. A good story is important to convince the people of the urgency of the SDG's. (sdg-tracker, n.d.)

1.1 Prototype

This is a prototype on how our final product will look like (per SGD)



2. Research questions

Main question	How can we make people more aware and take active action in short notice on contributing to the chosen SDG's?
Sub question	What will happen if we do nothing on the SDG's?
Sub question	What will happen if we do something about the SDG's?
Sub question	What can people do on short notice and on long terms to contribute to the SDG's?

3. Method of approach

The project team also needs to research the project on the different SDG's. In order to do proper and reliable research, the project uses a research framework named Development Oriented Triangulation Framework (DOT-framework). This framework helps you to structure the research and to communicate about it. The DOT-framework consists of three levels:

- The 'What' of your research (the domains)
- The 'Why' of your research (the trade-offs)
- The 'How' of your research (the strategies and methods)

The DOT-framework will support the project team with the 'How'. In figure two you can see the five strategies the DOT-framework provides. Every strategy has a few methods on how to do research. (<http://ictresearchmethods.nl/>, 2018)

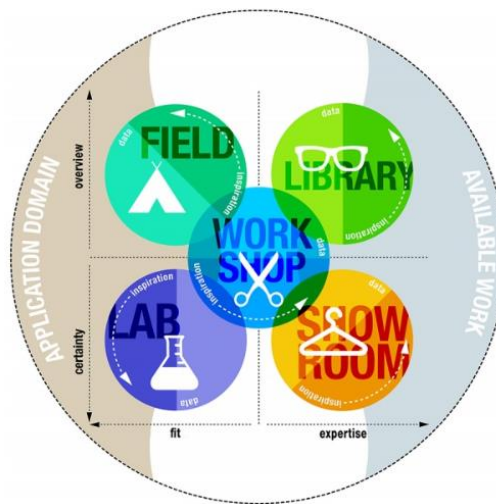


Figure 1 DOT-framework Strategies (<http://ictresearchmethods.nl/>, 2018)

In the table below (table two) the possible research methods the project team can use are mentioned. For a more detailed explanation of the methods you can have a look at this website:

<https://www.cmdmethods.nl/>

Strategy	The methods used on the project
Library	Literature Study Expert interview Best, good & bad practices (cmdmethods, n.d.)
Field	Interview Cultural probes (cmdmethods, n.d.)
Lab	Online analytics (cmdmethods, n.d.)

4. Data sources

We will use the data regarding the SDG's on the following websites:

- <http://hdr.undp.org/en/data> (datasets and information about the world)
- <https://ourworldindata.org/> (dataset and information about the world)
- <https://www.ecodorpboekel.nl/> (information about the eco-village)
- <http://cci.esa.int/> (all kind of data regarding climate change)
- <https://catalog.data.gov/dataset?groups=climate5434> (climate change dataset)
- <https://www.ncdc.noaa.gov/stormevents/> (Weather datasets)
- <https://data.knmi.nl/datasets> (Weather datasets)
- <https://data.worldbank.org/topic/climate-change> (all kind of data regarding climate change)
- <https://datahub.io/collections/climate-change> (datasets regarding CO2)
- <https://www.eea.europa.eu/data-and-maps/indicators/direct-losses-from-weather-disasters-3/assessment-2> (economic impact on climate change)
- <https://data.world/datasets/education> (datasets about education)
- <https://data.worldbank.org/topic/education> (datasets about education)
- <https://data.world/datasets/energy> (datasets about (clean) energy)
- <https://data.world/datasets/environment> (datasets about environmental impact)
- https://fhict.instructure.com/courses/9501/pages/semester-project?module_item_id=468960 (extra sources about the eco-village)
- <https://sdgacademy.org/course/tech-for-good/> (courses on ICT and SDG's correlation)

More datasets can be used during the research, these are just guidelines for the project team to gather data from.

5. Enriched research plan

In this chapter you will read about the enriched research plan the project team made, here they will describe per SGD what they will do exactly and what specific sources they will use.

5.1 Responsible consumption and production

Sub goals:

- Sustainable management and use of natural resources
- Remove market distortions that encourage wasteful consumption

To do research on this SDG (responsible consumption and production) and its two chosen subgoals the project team is going to use the following research methods and strategies:

Strategy	The methods used for this SDG
Library	Literature Study Best, good & bad practices (cmdmethods, n.d.)
Field	Interview Problem analysis (cmdmethods, n.d.)
Lab	Online analytics (cmdmethods, n.d.)

The project team will do Literature Study and Best, good & bad practices using the following sources:

- <https://www.twente.com/en/global-goals/12-responsible-consumption-and-production>
- <https://dm.pwc.com/SDGSelector/Resources/12.pdf>
- <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>
- <https://www.un.org/en/actnow/>
- <https://sdgcompass.org/sdgs/sdg-12/>

The project team will interview other people on how they think they can contribute to the SDG about responsible consumption and production. Also, an online analysis of the following datasets will be part of the research for this SDG. They will use the following datasets:

- https://unstats.un.org/SDGAPI//staging/20200328163207697_luuk.geraats@student.fontys.nl_data.csv
- https://ec.europa.eu/eurostat/statistics-explained/index.php/Packaging_waste_statistics#Waste_generation_by_packaging_material
- <https://data.world/buffalony/ru4s-wz29/workspace/file?filename=recyclable-materials-1.csv>
- <https://ourworldindata.org/plastic-pollution>

The goal the project member has with this SDG is to let people see the impact of when they are doing responsible consumption and production. Therefore he will make a list of 'solutions' and actions people can do at home or in their daily lives to really make an impact on this SDG. Therefore the story with the data is very important and it needs to be clear what will happen if people do nothing and what will happen if people do something.

5.2 Life on Land

Sub goals:

- Land usage today, how it affects the world globally and how to improve it.
- Where deforestation leads and how to end it.

To do research on this SDG (Life on Land) and its two chosen subgoals the project team is going to use the following research methods and strategies:

Strategy	The methods used for this SDG
Library	Literature Study Available product analysis
Field	Problem analysis Task analysis
Lab	Online analytics
Showroom	Peer review

The project team will start by researching what is already there (Literature Study, Available product analysis) to gather information about the land usage and deforestation to further analyze the subgoals (problem analysis). The following sources will be used:

<https://ourworldindata.org/global-land-for-agriculture>

<https://ourworldindata.org/land-use>

<https://ourworldindata.org/forests>

<https://ourworldindata.org/environmental-impacts-of-food>

The data sets that will be used are from the Food and Agriculture Organization of the United Nations:

<http://www.fao.org/faostat/en/#data>

The team will need to learn some new techniques to better visualize global data, therefore, task analysis will be used to learn how to achieve certain visualization with the help of the following (and maybe more) sources:

<https://towardsdatascience.com/a-complete-guide-to-an-interactive-geographical-map-using-python-f4c5197e23e0>

The team will also use peer review to get feedback on whether the story is compelling and has a meaningful message to share.

The main goal of this SDG is to have an overview of current trends in land usage and deforestation, and how it affects the world. With this in mind, we will show what actions can be taken to improve the situation and in contrast, what would happen if we would not take the action.

5.3 Clean Water and Sanitation

Sub goals:

- Safe and affordable drinking water
- Increase water use efficiency and ensure freshwater supplies

To perform our research on this SDG (Clean Water and Sanitation) along with two sub-goals, our team is going to take advantage of the following research methodology and strategy:

Strategy	The methods used for this SDG
Library	Literature Study Available product analysis Best, good & bad practices
Field	Problem analysis
Lab	System Test Data analytics

Our method for the project team will be finding general information, and guidance using search engines. Then Identify existing solutions that may solve the problem (or a part of it).

- <https://unstats.un.org/sdgs/indicators/database/>
- <https://ourworldindata.org/water-access>
- <https://ourworldindata.org/water-access#drinking-water-coverage>
- <https://ourworldindata.org/water-access#how-many-people-do-not-have-access-to-safe-drinking-water>
- <https://www.kit.nl/sdg6/>
- <https://sustainabledevelopment.un.org/sdg6>
- <https://www.un.org/sustainabledevelopment/water-and-sanitation/>

And we will be using the following data sets for our online data analytics:

- https://www.who.int/water_sanitation_health/monitoring/coverage/wastewater-country-files/en/
- <https://data.unicef.org/wp-content/uploads/2017/07/WASH-data-tables.xlsx>
- https://data.unicef.org/wp-content/uploads/2017/07/Estimates-on-water-sanitation-hygiene-waste-management-and-environmental-cleaning-in-health-care-facilities-by-country-2016_final.xlsx

Before solving a problem, it is important to understand it. Moreover, problem analysis ensures that we are not solving the wrong problem. Furthermore, we want to gain insights by measuring and analyzing our data. Researching the dataset can give us useful quantitative information about this topic.

One of our biggest global problems is a lack of pure and clean water in many different places. Our goal is to show the importance of water with the help of data visualization in the form of a story. We want to show what consequences we will face if we don't take action and what we can do to fight this crisis.

5.4 Sustainable cities and communities

Sub goals:

- Safe and affordable housing
- Reduce the environmental impacts of cities

Following research methods will be used to make research on this SDG:

Strategy	The methods used for this SDG
Library	Literature Study
Field	Survey Interview
Lab	Online analytics
Showroom	Peer review

First, the team will start to search for all relevant information related to sustainable cities. For this, the following resources will be used:

- Key features of a sustainable city: <https://www.bbc.co.uk/bitesize/guides/zqvxdmn/revision/1>
- Future cities and environmental impact: <https://futurecitiesandenvironment.com/articles/10.1186/s40984-016-0014-2/>
- About SDG 11: <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-11-sustainable-cities-and-communities.html>
- 10 Ways to build more sustainable cities: <https://ensia.com/notable/sustainable-cities/v>
- How sustainable cities can improve life: <https://www.weforum.org/agenda/2015/02/how-sustainable-cities-can-improve-lives/>
- Task for 2030: Access to safe and affordable housing: <https://edujesuit.org/sdg-11-for-2030-safe-and-affordable-housing-and-basic-services/>
- <https://unstats.un.org/sdgs/indicators/database/>
- <https://smartcities.data.gov.in/>

The data sets that will be used:

- <https://data.europa.eu/euodp/en/data/dataset/WF1ZSq4HIDrRFC6Z5zXA>
- <https://data.world/datasets/air-pollution>
- <https://data.oecd.org/price/housing-prices.htm>
- <https://data.world/datasets/noise-pollution>

To analyze awareness of people on the topic “sustainable cities and communities”, the team will use Survey.

The team will also use peer review to get feedback on whether the story is compelling and has a meaningful message to share.

There are many reasons why sustainable cities are important. Our goal in this research is to find out the key features of a sustainable city and measures that must be made to achieve sustainability.

5.5 Quality Education

Sub-goals:

- Equal access to affordable technical, vocational and higher education
- Education for sustainable development and global citizenship

To will complete research on “Quality Education” (and it’s sub-goals) we are going to use some strategies and methods, mentioned below:

Strategy	The methods used for this SDG
Library	Literature Study Best, good & bad practices
Field	Interview, surveys
Lab	Online analytics
Showroom	Peer review

The project team will do Literature Study and Best, good & bad practices using the following sources:

- <https://www.sdgfund.org/goal-4-quality-education>
- <https://onlinelibrary.wiley.com/doi/full/10.1111/1758-5899.12591>
- <https://grdspublishing.org/index.php/people/article/view/1451>
- <https://soeonline.american.edu/blog/5-ways-policy-makers-can-improve-the-quality-of-education>
- <https://futuristspeaker.com/business-trends/the-future-of-education/>
- https://books.google.nl/books?hl=en&lr=&id=J-quBgAAQBAJ&oi=fnd&pg=PP1&dq=ecology+and+society+education&ots=SQ6ViF1pmm&sig=ko0731PqW3UggO_FAZmXLofuNlc#v=onepage&q=education&f=false
- https://www.jstor.org/stable/26269470?seq=1#metadata_info_tab_contents

The project team will interview other people on how they think they can contribute to the SDG about responsible consumption and production. Also, an online analysis of the following datasets will be part of the research for this SDG. They will use the following datasets:

- <https://ourworldindata.org/global-education>
- <https://data.world/worldbank/education-statistics>
- <https://www.weforum.org/agenda/2017/09/countries-with-best-education-systems/>
- <http://documents.worldbank.org/curated/en/706141516721172989/Global-data-set-on-education-quality-1965-2015>

Everything starts with education. The moment we want to change our life we change education. This SDG is one of the most important, because if we want to reach SDG “Clean water and sanitation” - we need to find the solution using education, we need to explain people the problem of pollution and teach them how to live “now” for the better future “later”.

5.6 Affordable and Clean Energy

Sub-goals:

- Ensure access to affordable, reliable, sustainable and modern energy for all.
- Renewable energy solutions are becoming cheaper, more reliable and more efficient every day.

To will complete research on “Affordable and Clean Energy” (and it’s sub-goals) we are going to use some strategies and methods, mentioned below:

Strategy	The methods used for this SDG
Library	Literature study Best, good & bad practices
Field	Problem analysis
Lab	Data analytics System test
Showroom	Peer review
Workshop	Brainstorm

The project team will do Literature Study and Best, good & bad practices and Data analytics using the following sources:

- <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-7-affordable-and-clean-energy.html>
- <https://www.globalgoals.org/7-affordable-and-clean-energy>
- <https://www.unenvironment.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-7>
- <https://worldslargestlesson.globalgoals.org/global-goals/modern-energy/>

The project team will analyze the problem and brainstorm the upcoming development ideas. Also, data analytics on the following datasets will be part of the research for this SDG. They will use the following datasets:

- <https://data.world/datasets/energy>
- <https://www.data.gov/energy/>
- <https://www.energy.gov/data/open-energy-data>

One of our biggest global problems is the demand for affordable and clean energy in many countries. Our goal is to demonstrate the value of energy in the context of a story, using data visualization. We want to illustrate what repercussions we're going to face if we don't take action and what we can do to tackle the crisis.

5.7 Climate action

Sub-goals:

- Strengthen resilience and adaptive capacity to climate-related disasters
- Build knowledge and capacity to meet climate change

To will complete research on “Affordable and Clean Energy” (and it’s sub-goals) we are going to use some strategies and methods, mentioned below:

Strategy	The methods used for this SDG
Library	Literature study Best, good & bad practices
Field	Problem analysis
Lab	Data analytics

The project team will do Literature Study and Best, good & bad practices and Data analytics using the following sources:

- <https://unfccc.int/>
- <https://www.un.org/en/sections/issues-depth/climate-change/>
- <https://sustainabledevelopment.un.org/sdg13>
- <https://www.undp.org/content/undp/en/home/sustainable-development-goals/goal-13-climate-action.html>

The project team will analyze the problem and brainstorm the upcoming development ideas. Also, data analytics on the following datasets will be part of the research for this SDG. They will use the following datasets:

- <https://data.world/datasets/environment>
- <https://datahub.io/collections/climate-change>
- <https://catalog.data.gov/dataset?groups=climate5434>
- <https://data.worldbank.org/topic/climate-change>

One of our biggest global problems is climate change around the world. Our goal is to demonstrate the value of climate to the world using data visualization. We want to illustrate what repercussions we're going to face if we don't take action and what we can do to tackle the crisis.

References

cmdmethods. (n.d.). CMD Methods Pack - find a combination of research methods that suit your needs. Retrieved March 10, 2020, from <https://www.cmdmethods.nl/>

sdg-tracker. (n.d.). Measuring progress towards the Sustainable Development Goals - SDG Tracker.
Retrieved March 13, 2020, from <https://sdg-tracker.org/>