

Research and the UN SDGs

Contribution to the United Nations Sustainable Development Goals through research funded by the Dutch Ministry of Agriculture, Nature and Food Quality



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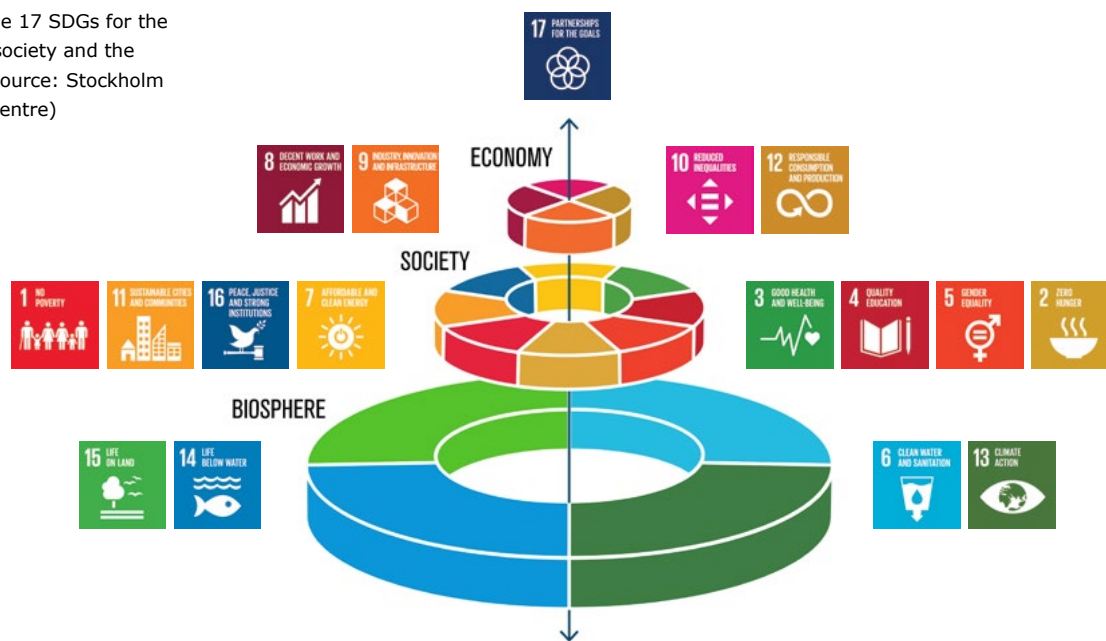
The United Nations Sustainable Development Goals

In 2015, the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) were adopted by all 193 UN member states. The 17 goals and their 169 targets provide a framework for realising the sustainable use of the biosphere, a more inclusive society and a more just economy. As the biosphere, society and economy are intertwined (vertical axis in figure 1), the realisation of all SDGs is interdependent and targets are

set for all three domains. Since 2015 governments, businesses and civil society have been mobilizing efforts to achieve the SDGs.

Research can contribute to reaching the SDGs by providing innovative solutions for their operationalization, implementation and scaling, as well as by monitoring progress towards their respective targets.

Figure 1. The 17 SDGs for the biosphere, society and the economy (Source: Stockholm Resilience Centre)



Research funding by the Dutch Ministry of Agriculture, Nature and Food Quality

The Ministry of Agriculture, Nature and Food Quality (ANF) funds research executed by Wageningen Research Institutes as part of its societal task to guarantee sustainable agriculture, protect the environment, and ensure safe and good quality food. This research funding by the Ministry is divided into four main domains – each with their own goals and ambitions:

- The policy supporting research (BO) is aimed at advising policy makers on policy implementation related to the work of the Ministry in the fields of agriculture, nature and food quality.

- Public-private partnership (TOP-sector) are undertaken in co-operation with businesses in agro-food, horticulture, the chemical industry and water management.
- The strategic research program supports strategic research (KB) into the biosphere, society and economy.
- The Statutory Research Task (WOT) supports the research required under national and international legislation in the fields of sustainable agriculture and fisheries, protection of the environment and nature and ensuring safe and good quality food.

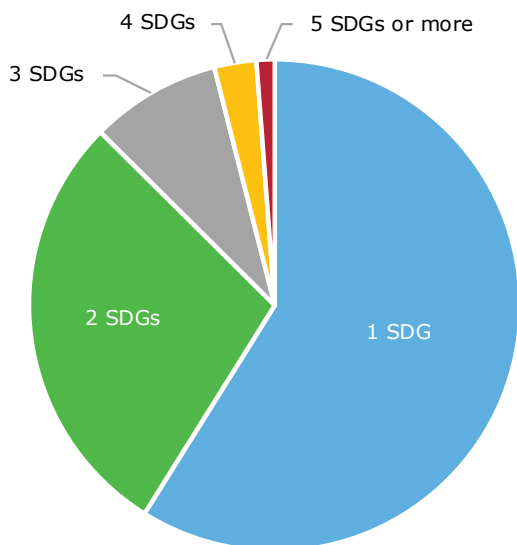
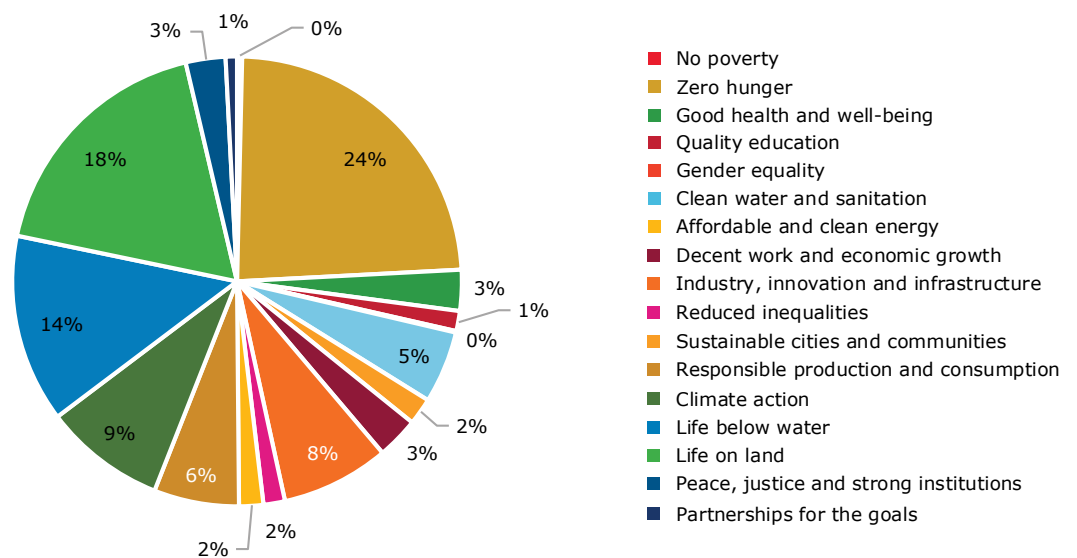
How research contributes to the SDGs

A review was made of the distribution of funding in the period 2014-2017 over the various SDGs in order to understand how ANF funded research¹ by Wageningen Research Institutes supports the SDGs and to identify whether there are areas that need to be strengthened. An expert assessment of the main research themes in each domain showed that the majority of the ANF research funds are spent on four SDG themes; Zero Hunger, Good Health and Wellbeing, Life on Land, and Responsible Production and Consumption. Research on Zero Hunger focusses on food security as well as sustainable agriculture (including

the use of new technologies such as smart farming). Research on Good Health and Wellbeing includes the relationship between food and health as well as research on animal-human transferable diseases.

A keyword analysis based on the title and summary of the publications resulting from the research, both scientific articles as well as reports, shows that these publications mainly relate to the SDGs Zero Hunger (24%) and Life on Land (18%) (see figure 2).

Figure 2. Allocation of the publications in the period 2010-2017 to the SDGs based on a keyword analysis



Most research funding as well as publications relate to only one or two SDGs (see figure 3). As a result trade-offs and synergies between SDGs receive little attention. Greater consideration should be given to the analysis of potential synergies and trade-offs between: life on land and zero hunger; zero hunger, climate change and renewable energy; and zero hunger, life on land and sustainable cities. Furthermore integrated research is needed to develop solutions that have the potential to realize more SDGs and targets.

Figure 3. Allocation of the SDG connections in publications in the period 2010-2017 based on a keyword analysis

1) BO 11, BO 20-42, KB 21-32

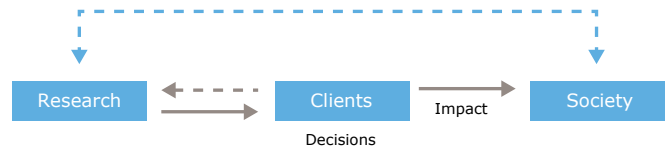
From science to impact

Over time different approaches for assessing the impact of research funding have been developed – depending on the type of research as well as the disciplinary background of the researchers. Some of the different views on how research creates impact are depicted in figure 4. As part of the Statutory Research Task (WOT) monitoring data about the state of the biosphere, society or economy are gathered to support policy making. For this type of research impacts are often considered using a rational approach. In public-private partnerships the focus is more on co-production of knowledge in order to find more sustainable solutions for businesses. However, the impact of research is not always easily demonstrated since there is often no direct relationship between a policy-relevant study today, and a research-based decision tomorrow. Other factors also play an important role when applying the results of research in policy, business or society; these include the values of involved stakeholders, political support for solutions proposed, governance of production chains and available financial resources. New solutions need to be accepted and taken up in order to make actual changes to existing policy, production and consumption patterns. This upscaling is an essential part of the transition approach (fig. 4). In the transition approach impact is often judged based on the extent of system change that has occurred for instance due to a new technology.

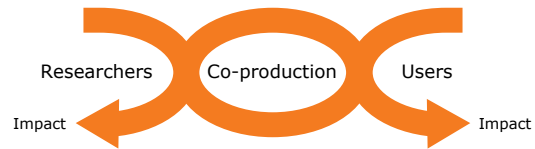
The contribution of research to monitoring progress towards the goals, the evaluation of sustainability policy and the development of more sustainable solutions are all needed to reach the SDGs. For research on monitoring progress towards the SDG five priorities have been formulated being to devise metrics, establish monitoring mechanisms, to develop criteria to evaluate progress, to enhance infrastructure and to standardize and verify data. Research can contribute in a wide variety of ways to the SDG's. To illustrate this six project examples of the different funding programs are presented in this brochure.

SDG Connections

Rational approach



Co-production approach



Transition approach

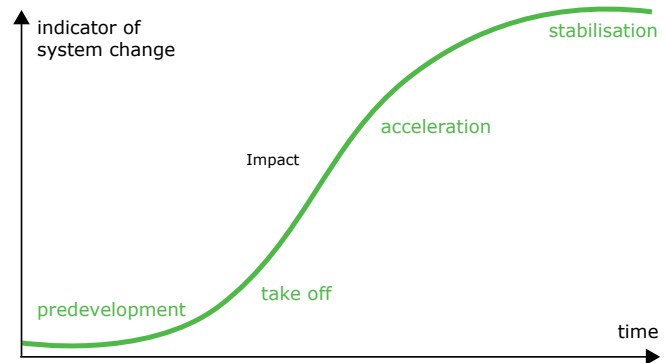


Figure 4: Different approaches showing how research may have impact

Research towards sustainable fisheries in the North Sea and North Eastern Atlantic Ocean

The European Common Fisheries Policy (CFP) aims to ensure that fishing and aquaculture are environmentally, economically and socially sustainable and that they provide a source of healthy food for EU citizens. The Ministry of Agriculture, Nature and Food Quality finances long term research to monitor the fish populations in the North Sea and North Eastern Atlantic Ocean. One part of the programme focusses on monitoring the landings in the major fish auctions in the Netherlands. The predecessors of this programme had already begun before 1960.

Using representative sampling, information is gathered for commercial fish species on length, weight, age, sex and reproductive status. This information, together with information collected during sea going surveys and on board commercial vessels, is used to assess the state of commercial fish in the North Sea and North Eastern Atlantic Ocean. The monitoring programme is part of the European obligation to monitor commercial fish populations under the Data Collection Framework (DCF). Based on the information gathered, the size and composition of fish populations is assessed. Advice is

developed for the Ministry and the European Commission, for management of commercial fish populations through setting fish quota by the European Commission under the European Common Fisheries Policy.

The impact on SDG 14: Life below water is through monitoring and advice. Good quality data are essential for making sound policy decisions over total allowable catches. In the end, however, the decision on the allowable fish quota is a political one as the European Commission prepares the proposals and it is up to national governments to enforce them.

Statutory Research Task: Monitoring fish landings (WOT-05-001-012)

For more information

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Supporting food security and quality education in Afghanistan

Revitalizing agriculture is central to sustaining economic growth, creating jobs and fighting malnutrition in Afghanistan. In 2009, the Dutch Ministries of Agriculture, Nature and Food Quality and Foreign Affairs therefore chose to co-fund the Agricultural Technical Vocational Education and Training project in Afghanistan. Since then, and under difficult circumstances, the project has spread its activities across Afghanistan. As part of the project the National Agriculture Education College (NAEC) was established. NAEC has so far trained 645 new teachers for Agricultural High Schools of whom 18% are women. Text books and teacher instructions, in both national languages were also developed and direct support was provided, largely in the form of simple farm tools, laboratory equipment and library books, in support of the new curriculum to pilot schools.

The impact on SDG 4 Quality Education is directly demonstrated. More girls and boys have access to quality education, all teachers acquire knowledge and skills to promote sustainable development and the project supports the building and upgrading of education facilities. The impact on SDG 2 Zero Hunger is indirect. The improved quality of education for teachers and students leads to better services in the agricultural sector throughout Afghanistan. Better education should lead to:

more sustainable food production systems, implementation of resilient agricultural practices and more and higher quality production that is accessible and affordable for rural households in Afghanistan.

Agriculture in Afghanistan- Facts and Figures

- more than 50% of the workforce is tied to agriculture (WB 2016)
- 83% of the poor (36% of total population) live in rural areas and 63% work in agriculture (WB 2016)
- agriculture provides 25% of GDP (WB 2016)
- 25% of the population faces food insecurity (FSAC 2015)
- The growth of 55% of children is inhibited due to inadequate food intake (WFP 2014)

The Agricultural TVET project
(BO 20-007 and BO 27-03)

For more information

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Understanding food systems for healthier diets

An increasing share of the world's urban population suffers from hidden hunger or obesity. The situation is most critical in Africa, where around 40% of the population already live in cities and malnutrition amongst the urban population is increasing, even among children. Urbanization, which is one of a number of structural changes in food systems, has significantly affected nutrition worldwide. This has largely taken place through adults and children suffering the effects of reduced dietary diversity and by the replacement of fresh food with processed food.

The project "Food systems for healthier diets" examines how food supply in urban centres in Kenya and Nigeria can contribute to healthy dietary patterns. For instance, it is expected that boosting the supply of fresh and healthy products in the cities will help to ensure the transition to more nutritious diets.

The impact on SDG 2 Zero Hunger and SDG 3 Good Health and Wellbeing: is through better understanding of individual dietary patterns and how the value chain influences them, ultimately supporting the development of better policies for food quality and availability.



Strategic Knowledge Research: Understanding food systems for healthier diets (KB 22-003)

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Restoration of endangered grasslands in the Netherlands

The European ambition to halt the loss of biodiversity in the EU is supported by legislation such as the Habitats Directive; framed in 1992 it ensures the protection of specific species and habitats. One of these habitats, named after one of its main botanical components, 'matgrass' (*Nardus stricta*) is species rich *Nardus* grassland. It is severely threatened in the Netherlands, where less than 40 hectares remains. Although many *Nardus* grasslands still look relatively good in terms of

species composition, they are becoming highly acidified. Due to deposition of sulphur in 1970-1990 and nowadays nitrogen, the acid buffering capacity of the soil has been severely affected. Policy makers and site managers therefore needed to understand how to protect the existing grassland area and expand its current area.

Research was therefore undertaken to review the different causes of habitat decline and the required measures to

improve the situation. Based on the first research findings an action plan has been developed that included options for genetic rescue as well as field experiments. The measures required are now eligible for pilot-funding as part of the national program for nature management. The plan is due to be executed in the coming years in close consultation with researchers, nature conservationists and provinces.

The impact on SDG 15 Life on Land will be through the implementation of the plan thereby improving the conservation status of the habitat in the coming years, in particular by protecting and preventing the national extinction of threatened species.



Policy Support Research: Restoration of threatened grasslands (BO 11-019)

For more information

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Soil data for sustainable spatial planning

Reliable soil information is essential for sustainable spatial planning. The Dutch Key Register of the Subsurface (BRO - Basisregistratie Ondergrond) is a central database containing public data for the Dutch soil and subsoil. The BRO makes it possible to request standardized data (free of charge) and to use it for well-founded spatial development choices.

The register has been operational since 2017 and users can download information on soil and subsoil such as the Soil Map of the Netherlands, the Geomorphological Map of the Netherlands and over 330,000 profile descriptions. The information is essential for the planning phase of many different projects as the timely use of available data for new spatial developments can avoid unforeseen costs through taking into account the condition of the soil. In particular within dossiers such as food production, soil conservation, climate change, nature and biodiversity, spatial planning and large-scale infrastructure.

Since the 1st of January 2018 a new law ensures that the database is kept up to date and is used by various

governmental and private planning agencies during the process of spatial planning.

The impact of the research on SDG 15 Life on Land and SDG 9 Industry, Innovation and Infrastructure is to avoid land degradation as well as to provide high quality, reliable, sustainable and resilient infrastructure.





Knowledge for more efficient resource use in dairy farming

Dairy is a major farming sector in the Netherlands. In order to improve the resource efficiency of dairy farming and to decrease pressure on the environment a guidance tool has been developed for dairy farmers: ANCA - Annual Nutrient Cycling Assessment (in Dutch: "Kringloopwijzer"). The guidance tool provides farmers with information on the environmental performance of their farm and allowing them to see how well the farmer is performing compared to other dairy farms. By filling in the tool with their own farm data and connecting the tool with other existing data sources, the farmer receives information on management and environmental performance. ANCA calculates several farm related indicators.

ANCA calculates the following indicators:

- 1 Efficiency of feeding (conversion of N and P from feed into milk and meat)
- 2 Production of manure: excretion of N and P
- 3 Ammonia losses from excrements and mineral fertilisers
- 4 Crop yields: N, P, C, energy (kVEM)
- 5 Efficiency of fertilisation: conversion from fertiliser and manure into crop yields
- 6 Surpluses of N, P on farm balance
- 7 Surpluses of N, P on soil balance
- 8 Dynamics C-content soil (C- sequestration)
- 9 Green House Gas emissions (CH₄, N₂O, CO₂)

Policy Support Program: Annual Nutrient Cycling Assessment (BO 22-02-12)

For more information

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W www.mijnkringloopwijzer.nl

To ensure uptake the tool was developed in co-operation between the farmers, the Dutch dairy supply chain, the Dutch Farmers Union, the fodder industry, the Dutch Ministry of Agriculture Nature and Food Quality and the Ministry of Infrastructure and Water Management. A central database has been built to collect all the data from each dairy farm.

Use of the tool is currently mandatory for all Dutch dairy farms; however it is not the Dutch government that obliges the use of ANCA, but all dairy processors. The aim is that dairy farmers become more efficient in relation to resources and to show how this can be achieved.

The impact on SDG 13 Climate Action: by the tool is to contribute by reducing greenhouse gas emission (whilst at the same time ensuring more sustainable agriculture - SDG 2 Zero Hunger).





Information of the research of the Ministry of ANF can be found on:

www.wur.nl/en/Research-Results.htm

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Advice was provided by Theo Jetten and Peter van der Toegt of Wageningen Library

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