

Sustainability report 2022

Results of the CSR and environmental policy
of Wageningen University & Research



WAGENINGEN
UNIVERSITY & RESEARCH

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Summary

This sustainability report describes the activities of Wageningen University & Research (WUR) regarding sustainability, the environment and social responsibility (CSR) in 2022. The sustainability ambition of WUR is formulated in general terms in the Strategic Plan 2019-2024. This general ambition has been developed into a CSR agenda that identifies themes that WUR's stakeholders consider important. The CSR strategy revolves around trade-offs that strike a balance between scientific, societal and economic interests. In all our activities, we consider sustainability in the most comprehensive sense and take responsibility for consequences extending beyond our own operations.

CSR agenda

The document describes the themes of the CSR agenda and reports on the corresponding progress using key performance indicators (KPIs). Where possible, we have aligned these indicators with the overall objectives and Change Performance Indicators (CPIs) of the Strategic Plan. By working on the themes of the CSR agenda, WUR contributes to the United Nations Sustainable Development Goals.

Environment

The environmental permits issued for all WUR sites result in various activities related to the environmental policy fields of energy, waste, water, soil, noise, biodiversity, asbestos and mobility. The progress, results and details for 2022 are explained by policy area.

To manage all these activities, the responsibility for the environment, sustainability and CSR has been allocated to different levels in the organisation. At the corporate level of WUR, the CSR group guides the organisation's CSR strategy, and this group directly advises the Executive Board. At the executive level, the sub-department of Safety and Environment (V&M) of Facilities & Services is responsible for keeping the legal frameworks up to date, while the Quality, Health & Safety and Environment (KAM) sections of the organisational units specify the environmental and sustainability policy at this level.

Results

Here we list the most salient results with impact in 2022.

Energy

The energy and climate crisis made it essential to accelerate plans for the energy transition. WUR, for instance, decided to connect buildings to the ATES loop (aquifer thermal energy storage) sooner than planned, making it possible to achieve the targeted 90% gas reduction as early as 2025. In the autumn of 2022, we implemented additional energy-saving measures such as lowering the temperature in buildings and closing buildings during the Christmas holidays. This resulted in substantial energy savings compared to 2021: 17% less gas and 2% less electricity.

Diversity and inclusion

Diversity and inclusion are important topics on our CSR agenda. These topics are becoming increasingly important in society, also on our campus, with themes such as anti-racism (DARE), neurodiversity, inclusion, LGBT+ and gender balance. To achieve a more inclusive organisation, WUR has a comprehensive programme focused on all aspects of diversity and inclusion. In 2022, we held a highly successful Diversity & Inclusion Week with more than 1,000 visitors. We have effectively deployed a wide range of approaches, including coaching in recruitment committees and multiple safe space meetings and lectures.

Biodiversity

During the UN Biodiversity Summit in 2022, WUR joined the new global Nature-Positive Universities Alliance. By doing so, we pledged to prevent or remediate damage to nature caused by our activities, and to do as much as possible to ensure biodiversity on our sites. In the words of Rector Arthur Mol: "*By signing the pledge, we have shown how important it is for WUR to contribute to a nature-positive future.*"

Recognition for our results was evident from the good scores on sustainability benchmarks. For instance, WUR was named the world's most sustainable university by the UI Green Impact Rankings for the sixth year in a row.

1 Introduction

Corporate Social Responsibility (CSR) fits seamlessly into the domain of Wageningen University & Research (WUR). In everything we do, we set high standards regarding social responsibility and sustainability. The premise is that the social impact is taken into account as a matter of course.

Annual reporting and the GRI

The [WUR Annual Report](#) has been prepared in accordance with the guidelines of the Global Reporting Initiative (GRI). The annual report includes information about CSR and sustainability in broad terms.

The Sustainability Report provides more detailed information about the progress of CSR and sustainability policies at WUR. It presents the activities and results arising from the CSR agenda and the Multi-Year Environmental Plan. The Sustainability Report and the GRI table, with the GRI indicators relevant to WUR and references to the passages in the report, can be viewed on the [WUR website](#).

The content of the Sustainability Report is coordinated with the members of the CSR group. The CSR Group invites stakeholders to send their questions and comments on CSR and sustainability to sustainability@wur.nl.

Corporate Social Responsibility

"Consciously targeting business activities at value creation over the longer term in three dimensions – Profit, People, Planet – combined with a willingness to engage in dialogue with society. CSR is part of the core business of organisations".

Definition of the Dutch Social and Economic Council (SER)

Organisation

WUR consists of various organisational units (see the [organisation chart](#)) that are spread across 23 [locations](#). The operational management at Wageningen University (WU) and Wageningen Research (WR) are intertwined with one another. Therefore, this report discusses the operational management for WUR as a whole. The various organisational units within WUR also prepare their own health and safety and environmental reports, the main points of which are included in this report.

2 Strategy and policy

Sustainability is a key component in research, education and value creation. This is also expressed in the WUR mission, 'To explore the potential of nature to improve the quality of life'. The main focus is on global challenges, such as the destruction of natural habitats and depletion of natural resources, the global food problem and the changing climate. WUR is also a forerunner in sustainable management and is keen to maintain and build on this position.

2.1 Ambition for CSR and sustainability

The starting point for WUR's CSR and sustainability policy is articulated in the [Strategic Plan 2019-2024](#) (including Extension & Update). This ambition has been developed into a CSR agenda with the CSR themes that stakeholders inside and outside WUR consider important (see Table 2-1). As much as possible, the 17 themes of the CSR agenda are linked to the Change Performance Indicators (CPIs) from the Strategic Plan. In Appendix 1 the CSR agenda is explained in more detail.

Comprehensive approach

The CSR policy includes not only environmental sustainability, but also social and economic sustainability. Sustainability is an integral part of our operational management and is thus included in all decision-making. WUR strives to have a clear and recognisable CSR strategy that ties in with everything we do. The core of this strategy is making trade-offs in which scientific, societal and economic interests balance each other. We consider the full impact of everything that we do, whereby our responsibility extends beyond our own activities. Three pillars are essential to this approach: do what you say and show what you do, create awareness within and outside the organisation and search for connections between research, education and operational management.

Sustainable Development Goals

With its CSR agenda, WUR contributes to the Sustainable Development Goals (SDGs) of the United Nations. For each theme, Table 2-1 shows the SDGs that we contribute to. The GRI table explains the link to the SDGs (including the sub-goals) in more detail.

CSR in the WUR Strategic Plan 2019-2024

WUR prioritises the vitality of staff and students, healthier and more sustainably produced food in canteens and reducing food waste. In making our organisation more sustainable, we take a 'Living Lab' approach that provides opportunities for research and for educational experiments. In our procurement policy, we put pressure on chains to operate transparently, sustainably, circularly and free of modern forms of slavery.

2.2 CSR and the WUR value chain

The coherence of the CSR strategy with WUR's mission and strategy and our value chain is shown in Figure 2-1. The main inputs in the value chain are financial resources, HR management and research infrastructure. The value chain can be understood as the set of activities surrounding education, research and value creation, where the main outputs are education and research programmes and communication with stakeholders. These outputs add value not only for our stakeholders, but also for society as a whole and for our surroundings. This is how we contribute to the major global challenges involving food, biodiversity and climate.

Our knowledge is applied in practice by the partners we work with. WUR publishes about research in scientific journals, but we also like to share our acquired knowledge with society in other ways. For example, our students and scientists publish [web blogs](#) about their research. The WUR [Impact Stories](#) is a collection of in-depth stories that tell more about our research and its corresponding impact.

Table 2-1 The CSR agenda and the Sustainable Development Goals

The Sustainable Development Goals to which WUR contributes		
CSR Agenda	Ambition	Contributing to the SDGs
<p>In our research and education activities </p>	<ul style="list-style-type: none"> Research and education designed to make a contribution to societal challenges Innovative and challenging research and education 	
<p>In how we do our work </p>	<ul style="list-style-type: none"> Sharing and disseminating knowledge Ethically responsible research Entrepreneurship and applied research High-impact partnerships Flexible learning paths 	
<p>Governance </p>	<ul style="list-style-type: none"> Responsible collaboration Responsible economic policy Chain responsibility 	
<p>Students and employees </p>	<ul style="list-style-type: none"> Vitality Development and training Diversity 	
<p>Environment </p>	<ul style="list-style-type: none"> Climate-adaptive environment Waste and circularity Sustainable energy Sustainable mobility 	
CSR agenda themes ¹	Vision/plan WUR	Link with SDGs
In our research and education activities		
Research and education to contribute to societal challenges (1)	Strategic Plan: Finding answers together	SDG 2 - 3 - 6 - 11 - 12 - 13 - 14 - 15 - 17
Innovative and challenging research and education (3)	Strategic Plan: Finding answers together	SDG 4 - 8
In how we do it (process)		
Knowledge sharing and dissemination (2)	Strategic Plan: Finding answers together	SDG 4
Ethically responsible research (5)	Integrity and social safety	
Entrepreneurship and applied research (7)	Strategic Plan: Finding answers together	SDG 8
High-impact partnerships (10)	Strategic Plan: Finding answers together	SDG 17
Flexible learning paths (17)	Vision for education	SDG 4
Governance		
Responsible collaboration (9)	Strategic Plan: Finding answers together	SDG 17
Responsible economic policy (11)	Strategic Plan: Finding answers together	SDG 8
Chain responsibility (13)	Sustainable/socially responsible procurement	SDG 12
Staff members and students		
Vitality (4)		SDG 3
Development and training (14)	Personal development	SDG 8
Diversity among staff and students (15)	Diversity & Inclusion	SDG 5
Environment		
Climate-adaptive surroundings (6)	Green Vision for Wageningen Campus	SDG 13 - 14 - 15
Waste and circularity (8)	Circular economy vision & strategy	SDG 12
Renewable energy (12)	Rough outline Energy Transition 2050	SDG 7 - 13
Sustainable mobility (16)	Vision on mobility 2030	SDG 12 - 13

¹ The number in brackets indicates the order of prioritisation for each CSR theme; see the explanation of the CSR agenda and materiality analysis in Appendix 1.

To explore the potential of nature to improve the quality of life

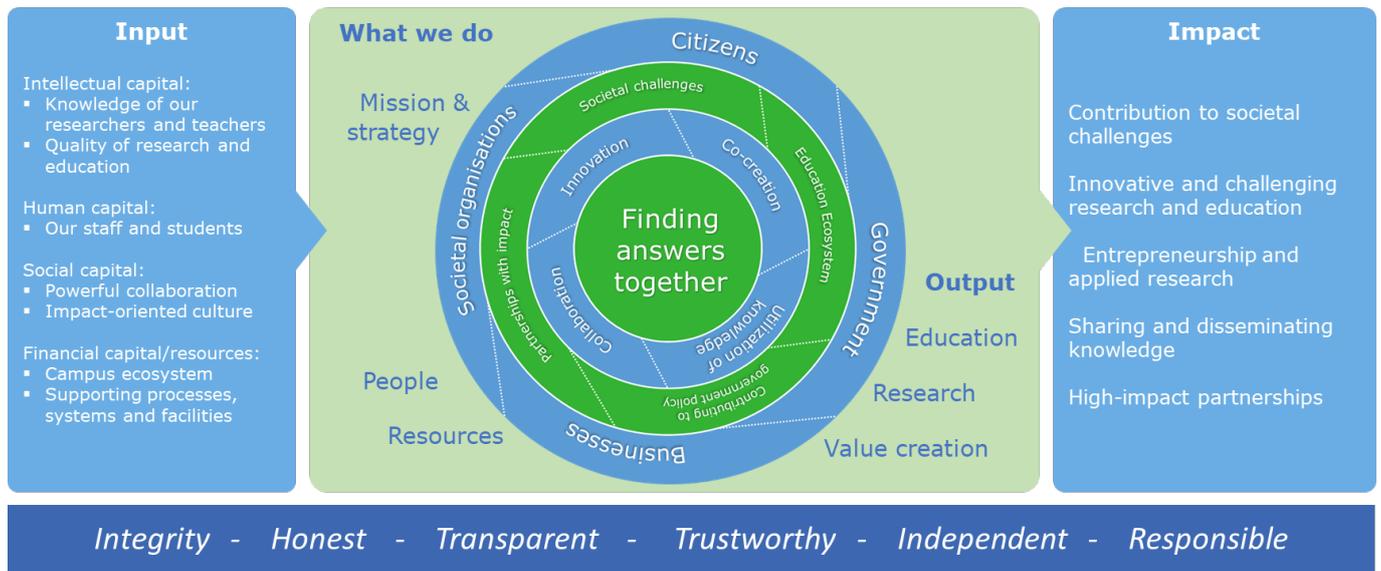


Figure 2-1 CSR strategy and the WUR value chain

Negative impact

We are aware that our activities can have a negative impact as well as a positive one. Below we mention some examples of this negative impact and indicate how we are continuously improving in this regard.

Natural capital: All our activities result in greenhouse gas emissions. In response to the energy crisis, WUR decided to connect a number of buildings to the ATES loop earlier than planned. Additional energy-saving measures were also taken in the autumn, such as lowering the temperature in buildings and closing buildings during the Christmas holidays. As a result, our energy use and related emissions have fallen sharply.

In 2022, we began to measure the negative impact resulting from our procurement of goods based on the purchased goods data model we developed for making our operations circular. We also use this data model to acquire a better and more complete picture of our emissions, especially our indirect (scope 3) emissions. This is needed to calculate our Science Based Targets for Climate, which we started in 2022. With this approach, we can see whether our emissions of greenhouse gases are in line with the goals of the Paris Climate Agreement. We will also use the same data model to show our impact on biodiversity. This gives us the opportunity to fulfil the promise of the Nature-Positive-Universities Alliance, which WUR joined in 2022. Participation in this alliance means that we will

prevent or remediate damage to nature as a result of our activities and business operations and encourage positive change.

Human capital: In 2022 there was a national focus on the theme of social safety in science. At the request of the Minister of OCW, the KNAW published the guide [Social Safety in Dutch Academia – From Paper to Practice](#) with practical tips to prevent problems with undesirable behaviour or make timely corrections to this behaviour. With this approach, the KNAW aims to initiate a process to enhance social safety in Dutch academia.

At WUR [social safety](#) is also a top priority. As part of an ongoing programme at WUR, various interventions and activities will be undertaken in 2023 for both staff and students aimed primarily at raising awareness about social safety and providing an accessible support structure. In 2022, WUR launched the programme "[Looking out for each other](#)". As a starting point for this programme, employees were invited to attend the theatre performance [Mindlab](#).

Work pressure has been a major concern for a number of years. The most recent Employee Monitor (2021) showed that 44% of respondents think the work pressure is too high or much too high. To reduce excessive work pressure, WUR wants to identify the causes.

WUR attaches great importance to good working conditions and to employees being able to work with enthusiasm, motivation and inspiration. Personalised support is provided to employees, for example by continuing the Vital@Work programme. Various activities, including in-person and online courses, help employees become and remain physically and mentally healthy.



3 Committed to sustainability

Responsibility for CSR and sustainability is shared by the entire organisation. All WUR organisational units have an important role in advancing our CSR and sustainability ambitions.

3.1 Stakeholders

WUR is involved with a wide range of stakeholders. Our customers include not only companies and organisations in agriculture, horticulture and industry, but also government agencies and public bodies and non-profit organisations. In addition to current students, prospective students and alumni are also important stakeholders. For CSR policy, our stakeholders have been identified based on the impact WUR has on them and the influence they have on WUR. The various stakeholder groups and corresponding stakeholder dialogues are summarised in Table 3-1.

Stakeholder dialogues start with the primary process. Research programmes have a steering committee in which stakeholders from different social backgrounds look at the design and implementation of the research. For education, the main stakeholders are organisations representing students, such as the Student Council and the various study and student associations. Moreover, each programme has a programme committee, in which students are represented, and a professional committee for permanent reflection on content. At the administrative level, discussions take place almost daily with representatives from nature conservation organisations, directors of food companies, representatives of political parties and regional and local authorities. Internationally, we are also building close ties with key stakeholders, such as the CGIAR Institutes, the United Nations, the World Bank and various NGOs.

In 2022, the Executive Board (the highest governing body at WUR) participated in dialogues with employees, students, government agencies and public bodies, and political and international organisations. Progress on the Strategic Plan was discussed with

employees, in addition to consultation with the participational body. As a member of the Executive Board, the Rector Magnificus consulted with the Student Council and with other student organisations on issues including the Vision for Food & Beverage, the sustainability fund, sustainable transport and the energy consumption of the education buildings.

3.2 CSR group

The CSR group assesses the approach and progress on social responsibility and sustainability. The CSR agenda is managed by the CSR group. The chairman of the CSR group is accountable to the Executive Board/Board of Directors. The members of the CSR group are:

- Director of Facilities and Services (FB) – Chair of the CSR group;
- Director of Corporate Human Resource (CHR);
- Director of Corporate Communications & Marketing (CC&M);
- Managing Director of Environmental Sciences Group (ESG);
- Manager of Corporate Value Creation, representing the Corporate Strategy & Accounts (CSA) department, the Corporate Value Creation (CVC) department and the Education & Student Affairs (ESA) department;
- a representative from of the Student Council;
- a representative from research;
- Policy officer CSR;
- Coordinator of CSR.

Each topic on the CSR agenda is linked to a staff department as the process owner. The responsibility for "rolling out" a topic lies with the process owner. Almost all topics also involve the primary process. Staff departments work together on some topics. Process ownership and responsibilities within the units of the WUR organisation are explained in Appendix 1.

This report is linked directly to the [Annual Report](#) of WUR. Its content is coordinated with members of the CSR group. The CSR Group invites stakeholders to send their questions and comments on CSR and sustainability to sustainability@wur.nl.

Table 3-1 Overview of stakeholders and stakeholder dialogues

Stakeholder group	Interest of WUR	Most important contact points
Staff members	Offering an inspiring work environment with possibilities for development.	Participational bodies, Finding Answers Together (FAT) sessions about the Strategic Plan, working visits of the Executive Board to organisational units, talent development programme, confidential advisers.
Students	Offering an inspiring learning environment and high-quality education that provides the answers to societal needs and offers good career perspectives.	Education, participational bodies (Student Council) programme committees and Board of Education, study associations and student associations, activities of various committees such as the annual student introduction days (AID) and the Green Office.
Clients	Providing knowledge for innovation in their business processes and products.	Contacts with account management, researchers and administrators at WUR. Participation in debates. Authorities.
Authorities	Providing knowledge to strengthen the policy foundation and initiate new policy; identifying social issues; contributing to legal tasks.	Researchers and account managers at the research project level. Contact at the executive level on broader policy themes and on cooperation with WUR.
Politics	Supplying knowledge to support decision-making regarding fields in our domain.	Contacts at the board and management level, visitors to our organisation.
Societal organisations	Providing knowledge to help improve issues that are important to society such as climate problems, animal welfare and the environment.	Involvement in research projects through sounding board groups or as commissioning parties for research projects. Active dialogue (face-to-face and online) on the topic of current social issues.
EU	Strengthening the economic climate in the EU by contributing to the innovative capacity, to the policy foundation and to the development of new policy.	Contact at the research project level with researchers and account managers, contributions to Horizon Europe.
International organisations	Working towards a common research agenda for contributing to solutions for the UN Sustainable Development Goals.	Contacts at the executive and management board level and with research projects Researchers and directors of CGIAR institutes, such as CYMMIT and IRRI; WUR regional account managers for Brussels/Europe, Africa, Asia, Latin America and China.
Suppliers	Provision of goods and services to support our primary processes.	Discussions are held with contracted suppliers about the prevailing agreements, while taking agreements on sustainability and CSR into account.
Alumni	Maintaining the good reputation of their alma mater; providing a network of alumni worldwide.	Organisation of alumni meetings worldwide on the topic of themes in our domains. Newsletters and Wageningen World (magazine for alumni and contacts).
Secondary school students	Offering inspiring degree programmes with interesting career prospects in line with the interests of secondary school students.	Organising open days and participation days for secondary school students interested in Wageningen University degree programmes. Contributing to secondary education through activities such as offering input for school assignments, participating in the Green Knowledge Cooperative, and membership in the Food Valley school network.
Local residents	Contributing to a good living environment in the surroundings of our locations.	Organising or participating in meetings with local residents on future developments in or around our locations. Talks with resident associations from the surrounding neighbourhoods.

3.3 Quality, Health & Safety and Environment column (QHSE)

Within WUR, the QHSE column is tasked with promoting a safe, healthy and environmentally friendly working and study environment and contributing to compliance with health & safety and environmental regulations. The acronym QHSE (KAM in Dutch) stands for Quality, Occupational Health, Safety and Environment.

The QHSE column consists of the Safety & Environment office, positioned within Facilities and Services, and the various decentralised QHSE sections

of the organisational units. The QHSE sub-departments and the Safety and Environment sub-department work together closely. This involves working at the various levels according to the Deming cycle: 'PLAN', 'DO', 'CHECK' and 'ACT'. Chapter 6 outlines the activities of the organisational units. Appendix 2 describes how the QHSE organisation is embedded within WUR.



One of the posts on *Instagram* from Green office Wageningen

3.4 Green Office Wageningen

Green Office Wageningen plays a central role in connecting and supporting students and staff with the aim of realising sustainable projects. It is also the students' voice for WUR policy makers. The Green Office organises activities and meetings and communicates about sustainability through its [website](#) and social media ([Instagram](#), [Facebook](#) and [LinkedIn](#)). See also the [vision and mission](#) of Green Office.

The main tasks of the Green Office are the following:

- create a platform for, and maintain a network with, organisations and individuals interested in sustainability with the aim of promoting information exchange and collaboration;
- initiate, catalyse and realise innovative projects to make WUR more sustainable, on various themes and in collaboration with various parties;
- contribute to effective sustainability communication at WUR, both through its own channels and through collaborative projects;
- strengthening WUR's sustainability strategy.

Green Office Wageningen is part of the Green Active Network (GAN), a collaborative platform involving over 15 organisations (including student organisations) with sustainable objectives. Several collaborative activities were organised in 2022, including Regreening weekends with the primary aim of introducing new first-year students to sustainability at WUR and in Wageningen.

Highlights of projects in 2022

In 2022, the Green Office intensified its involvement in policy development within the organisation. For instance, the Green Office was more frequently involved in sustainability aspects of tenders and it represented students' interests during the formulation of policy documents. The latter has given the student population a clearer voice about sustainable development of the organisation.

The Green Office also participates in the [Wageningen Biodiversity Initiative](#) (WBI), which focuses on enhancing biodiversity and promoting the importance of biodiversity within the organisation and on campus. Participants in the initiative include researchers, lecturers, other employees and other stakeholders. The Green Office represented students' interests within this initiative and contributed ideas on how to increase biodiversity on campus.

At the initiative of the Student Council and Green Office Wageningen, a Sustainability Fund for study associations has been established. The Executive Board has provided €10,000 per year for the next three years as a pilot. A protocol for initiatives has been drawn up with the following eligibility criteria: "innovative, high impact, long lasting, and collaborative". In 2022, study associations could apply for a financial contribution for their eligible initiatives.

The [#greenwur](#) project aimed to expand the reach of WUR's sustainability story. This was not so much about making WUR more sustainable, but mainly about communicating what WUR is doing on sustainability with the aim of inspiring the WUR community to join in. The Instagram posts were developed in collaboration with staff and students. The posts can be found on the Instagram accounts of [@uniwageningen](#) and [@greenofficewageningen](#).

Annual activities

- In November, the Green Office held the Seriously Sustainable Week. In collaboration with employees, other GAN organisations and parties involved a varied programme including the Alternative Thesis Market, a sustainability market, several lunchtime lectures and a farm excursion was provided.
- The Green Office facilitates the **Student Cooking Corner**. Every Wednesday, students are allowed to sell home-made vegetarian or vegan meals in the canteen in Forum, in collaboration with the caterer.
- With Green Match, the Green Office has established a link between education and sustainable management at WUR. The Green Office mediates between students and clients on possible topics for course assignments, internships or theses.
- A **Sustainability Blog** appears regularly on the Green Office website.

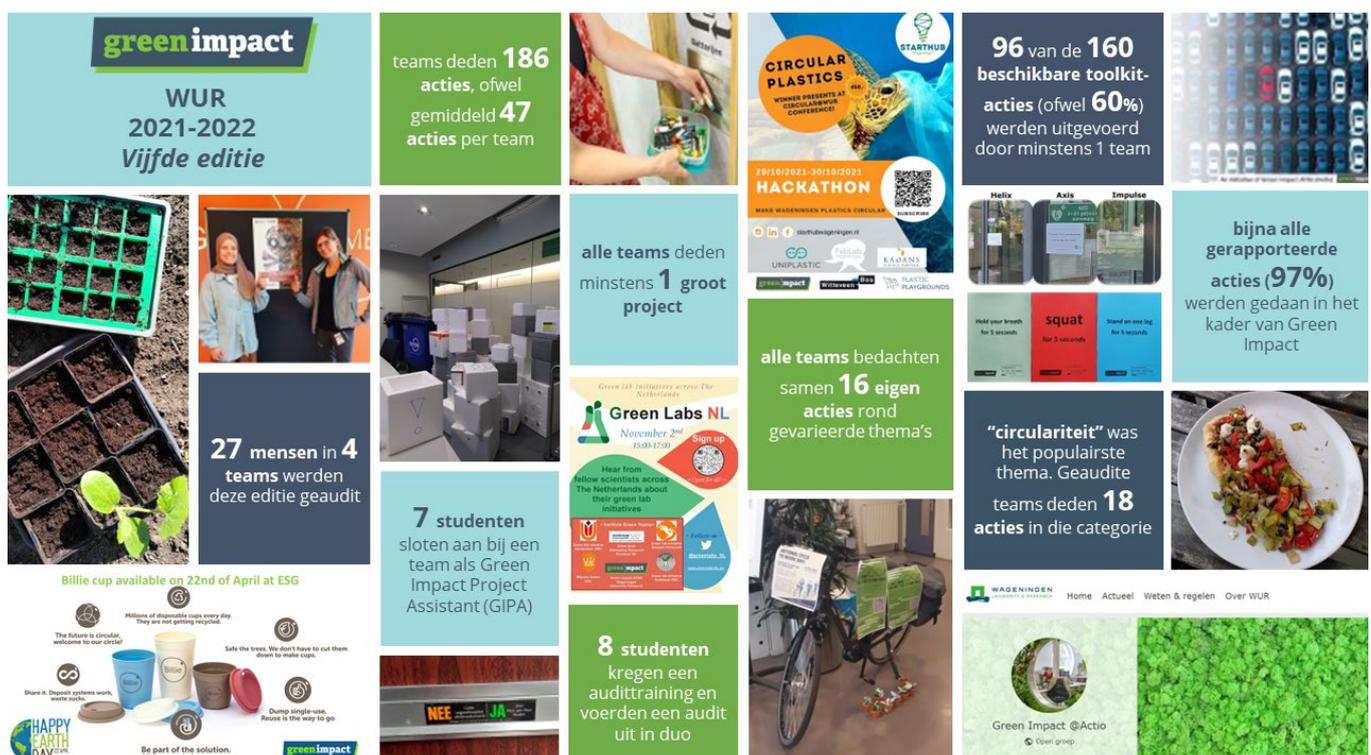
3.5 Green Impact

WUR Facilities and Services and the Green Office have organised the Green Impact programme, in which various teams within WUR worked together to promote sustainability in the workplace. In this programme, teams of employees and students work on concrete plans for sustainable initiatives. The teams use an

online toolkit that registers their activities. In 2022, there were four Green Impact teams located at Actio (Facilities and Services), Axis & Helix (AFSG), the Leeuwenborch (SSG) and Gaia & Lumen (ESG).

In 2022, the AFSG team introduced **LEAF**, a sustainability programme for laboratories, at WUR. The team also worked on a plan to raise awareness about plastic waste in laboratories. The ESG Green team prepared the report **"The butt in the drain"** on the environmental impact of cigarette butts on campus. They did this in part by engaging in discussions with smokers on World No Smoking Day (31 May) and handing out "cigarette butt pockets". The SSG Green Team worked mainly on the theme of mobility by promoting cycling. The Actio(n) team challenged colleagues to the Three Sisters Challenge: growing maize, beans and squash together.

Several Green Impact workshops were held throughout the year. Besides the workshops for exchanging ideas and experiences, during the holidays thematic workshops were held on energy, communication and sustainability.



Impression of the activities of the Green Impact teams in 2021-2022

4 Activities and results in 2022

4.1 Progress on CSR agenda themes

As part of *CSR Next level*, action plans linked to the CSR agenda are being developed.

The project on biodiversity continued in 2022. This project aims to compile accessible information on biodiversity on campus and invite staff and students to help map this biodiversity. The theme was given a huge boost by the activities of the [Wageningen Biodiversity Initiative \(WBI\)](#). The WBI is an umbrella organisation for organisation divisions within WUR, with the aim of bringing them together so they can join forces and contribute to efforts to halt and reverse the decline in biodiversity. The WBI aims to collectively develop a nature-inclusive society.

Under the banner [WUR UP TO](#) the enhancement of the CSR vibe on campus was continued. With this campaign, we want to show on campus what WUR is doing about sustainability. The overall concept is in line with the CSR agenda of WUR, the established sustainability goals, ambitions and achieved results.

The CSR group met several times to develop a Theory of Change under the guidance of experts in monitoring & evaluation from the Wageningen Centre for Development Innovation (WC DI). The same approach was used for the CPIs from the Strategic Plan. This showed what we are doing to have the intended impact and how the CSR group can go about it (e.g. advising, signalling, agenda-setting, organising dialogue and linking education with research and operational management). The Theory of Change from the CSR agenda is included in Appendix 1.

Table 4-1 explains the progress for each theme on the CSR agenda. The themes are clustered into five main groups:



<p>From your screen.. ..to peaceful green</p>	<p>Did you know almost half our campus area is covered by green? Time has come to swap your screen for a walk through our beautiful campus garden. Nature is only a stone's throw away!</p>
<p>You don't see them, but they are there! Over 10,000 solar panels are eager to soak up sun on our roofs and around our buildings, generating power for WUR. Wanna find out where exactly?</p>	<p>From empty roofs.. ..to 10,000 solar panels</p>
<p>From bulging trash cans.. ..to 50% less waste*</p>	<p>The average Dutch inhabitant produces around 490 kg of waste per year. At the campus we want to at least halve the amount of waste in 2030. We can only do this together. Join the movement?</p> <p><small>* Compared to 2014</small></p>
<p>Did you know that the WUR policy is not to fly when your destination is also reachable within less than 6-8 hours by train? It is our ambition to lower our flight emissions. Covid-19 enabled us to accelerate this movement. Let's build on this silver lining and make video conferencing the new normal. Are you with us?</p>	<p>From frequent flying.. ..to digital first</p>
<p>From conventional heating.. ..to zero gas use</p>	<p>90 meters below your feet, our thermal storage is hidden. In the years ahead more buildings will be connected, working towards our goal to achieve 85%* less gas use on campus in 2025.</p> <p><small>* Compared to 2016</small></p>

- **CSR in research and education:** Value creation through research and education is an inseparable part of WUR's activities. With knowledge, education and research of the highest possible standard, WUR aims to tackle global challenges and shape and accelerate the required transitions. Continually improving research excellence is paramount.
- **CSR in processes:** CSR is an important factor in how we design and conduct our research and education.
- **Governance:** Corporate governance creates the conditions by which an organisation takes responsibility for the impact of its activities and decisions. This ensures the integration of CSR policy in the organisation. In other words, without governance, there is no CSR.
- **Staff members and students:** In the HR domain, we interpret CSR as inclusivity. This means that we deliberately hire people from various target groups and pay attention to talent, mobility, equal opportunities and representativeness.
- **Environment:** For four themes dealing specifically with the environment, KPIs were chosen from current policy.

Indicators

Wherever possible, the themes of the CSR agenda are linked to the Change Performance Indicators (CPI) from the Strategic Plan 2019-2024. For the CSR themes that do not have a direct link to these CPIs, appropriate KPIs have been established. For the CSR themes that can be directly linked to the CPIs, table 4-1 explains the progress on each theme in key words, with reference to the 2022 Annual Report or this sustainability report.

For those CSR themes for which KPIs are already available, we use them to illustrate progress. Linking CPIs to CSR themes is not a one-to-one process because different CPIs can often be linked to a CSR theme and vice versa. To avoid repetition, there is only one explanation for each CPI and it is indicated (in italics) where it can be found.

Table 4-1 CSR agenda themes and CPIs

In our research and education activities	
<p>Themes from the CSR agenda</p> <ul style="list-style-type: none"> Research and education designed to make a contribution to societal challenges (1) Innovative and challenging research and education (3) 	<p>CPI Strategic Plan</p> <p>1: Continuous improvement to maintain excellence in research.</p> <p>2: Significant scientific and social impact on the three investment themes.</p> <p>4: Further integration and innovation of the Education Ecosystem.</p> <p>6: Greater entrepreneurial culture and practice in education, research and value creation</p>
<p>SDGs</p> 	
CSR theme	Results and activities in 2022
1. Research and education designed to make a contribution to societal challenges	<p>CPI 2 and 6</p> <p>CPI 2: The three WUR-wide investment themes from the Strategic Plan are: connected circularity, the protein transition and digital twins. These themes expired at the end of 2022 and will be reviewed in 2023 in terms of quality, output and possibilities for continuation. Three new investment themes have been chosen for 2022-2024. These are: Biodiversity-positive food systems, Transformative bioeconomies and Data-driven discoveries in a changing climate. See Annual Report 2.5.1 Policy and organisation, subsection on pp. 35-36</p> <p>CPI 6: See Annual Report, 2.6 Value creation pp. 47-58, specifically 2.6.2 The entrepreneurial use of knowledge pp. 49-50; Appendix 2 Knowledge valorisation indicators, pp. 150-155</p>
3. Innovative and challenging research and education	<p>CPI 1, 4 and 5</p> <p>CPI 1: The following applies for education: "As an international university, we contribute to the development of solutions for urgent and relevant scientific and societal challenges. The power of WUR lies in its potential to combine the expertise of WU with that of the specialised research institutes of WR. The interdisciplinary nature of WU enables us to integrate our efforts and insights from various scientific, social, scientific and technical academic fields. Combining this expertise leads to scientific breakthroughs that can quickly be implemented in practice." See Annual Report, 2.4.1 Profile and policy, pp. 22-23; The following applies for research: "The quality of our research is high, and that applies to both WU and WR. The evaluation of WR in 2020 and the peer review of WU in 2021 confirm this." See Annual Report, 2.5.6 Outlook pp. 45-46; Evaluation: See Annual Report, 2.4.4 Quality assurance in education, pp. 26-27; 2.5.3 Results (research), pp. 41-44; on the website. Research evaluations</p> <p>CPI 4: Annual Report, 2.4.7 Outlook, p. 34; 2.6.4 Wageningen Campus, Ecosystem & Facilities, pp. 53-56</p> <p><i>CPI 5: see 17. Flexible learning paths</i></p>

Table 4-1 CSR agenda themes and CPIs (continued)

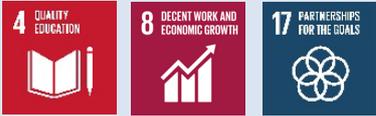
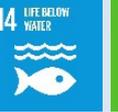
In how we do it (process)	
<p>Themes from the CSR agenda</p> <ul style="list-style-type: none"> ▪ Knowledge sharing and dissemination (2) ▪ Ethically responsible research (5) ▪ Entrepreneurship and applied research (7) ▪ High-impact partnerships (10) ▪ Flexible learning paths (17) <p>SDGs</p> 	<p>CPI Strategic Plan</p> <p>5: Greater flexibility in learning paths and educational spaces</p> <p>6: Greater entrepreneurial culture and practice in education, research and value creation</p> <p>7: Expansion of our campus ecosystem and sharing of research facilities.</p> <p>10: Increased connection with society and partners</p> <p>11: Improved culture of trust and taking responsible risks.</p> <p>12: Higher volume and higher margin of clients and contracts in our applied research</p>
Theme	Results and activities in 2022
2. Knowledge sharing and dissemination	<p>CPI 6, 7, 10 and 12</p> <p>CPI 7: Campus ecosystem, see Annual Report, 2.6.4 Wageningen Campus, Ecosystem & Facilities, pp. 53-56</p> <p>CPI 12: "The turnover in bilateral research with the business community is a measure of the contribution of WUR to the innovative capacity of businesses." For WU and WR, the turnover in bilateral research with industry has declined (to 2019 levels). See Annual Report, 2.6.1.1 Co-creation and the development of new partnerships, pp. 47-48; Annual Report Appendix 2, Table B2.14, p. 154</p> <p>CPI 6: see 7. <i>Entrepreneurship and applied research</i></p> <p>CPI 10: see 10. <i>High-impact partnerships</i></p>
5. Ethically responsible research	<p>CPI 11</p> <p>Governance and scientific integrity are laid down in codes, regulations and rules. See Annual Report, 2.7.8 Corporate Social Responsibility (CSR), subsection Integrity and Social Safety, p. 63; 2.8.3 International collaboration and knowledge security, pp. 66-67; 2.9.1 Governance, pp. 73-74; 2.9.2 Independence, p. 74</p> <p>For responsible risk-taking, see Annual Report, 2.9.3 Risk management, pp. 75-79</p>
7. Entrepreneurship and applied research	<p>CPI 6 and 10</p> <p>CPI 6: Entrepreneurship education, StartHub, StartLife and spin-offs, see Annual Report, 2.6.2 The entrepreneurial use of knowledge, pp. 49-51</p> <p>CPI 10: see 10. <i>High-impact partnerships</i></p>
10. High-impact partnerships	<p>CPI 7 and 10</p> <p>CPI 10: "Collaboration with partners is key to putting Wageningen education and research into practice. Collaboration with other European universities and knowledge institutes has intensified over the past year. An integrated consideration framework for collaboration was drawn up in 2022..." See Annual Report, Letter from the Executive Board, Impact and partners, p. 9. In education: see Annual Report, 2.4.1 Profile and policy, pp. 22-23; 2.6.3 Sharing knowledge, pp. 51-53, including 2.6.3.4 Society Based Education and 2.6.3.5 Collaboration with primary, secondary and green education. In research: see Annual Report, 2.5.1 Policy and organisation, pp. 34-36; 2.5.2 Internationalisation, pp. 37-40; 2.6.1 Collaboration, tech transfer and co-creation with partners, pp. 47-49; 2.6.3 Sharing knowledge, pp. 51-53, including 2.6.3.6 Science shop and 2.6.3.7 Wageningen in the region</p> <p>CPI 7: see 2. <i>Knowledge sharing and dissemination</i></p>
17. Flexible learning paths	<p>CPI 5</p> <p>Flexible and personalised learning paths is one of the three pillars for education development as part of the implementation of the <i>Vision for Education</i>. See Annual Report, 2.3.2 Strategic Plan 2019-2022, pp. 19-20; 2.4.2 Highlights, under "Educational reform", p. 23</p>
Governance	
<p>CSR Agenda</p> <ul style="list-style-type: none"> ▪ Responsible collaboration (9) ▪ Responsible economic policy (11) ▪ Chain responsibility (13) <p>SDGs</p> 	<p>CPI Strategic Plan</p> <p>10: Increased connection with society and partners</p> <p>12: Higher volume and higher margin of clients and contracts in our applied research</p>
Theme	Results and activities in 2022
9. Responsible collaboration	<p>CPI 10</p> <p>See 10. <i>High-impact partnerships</i></p>
11. Responsible economic policy	<p>CPI 12:</p> <p>See 2. <i>Knowledge sharing and dissemination</i></p>
13. Chain responsibility	<p>CPI 10</p> <p>Chain responsibility is an important theme within Socially Responsible Procurement SRP. See Annual Report, 2.8.6 Procurement policy and chain responsibilities, pp. 72-73</p> <p>See also CSR theme 10. <i>High-impact partnerships</i></p>

Table 4-1 CSR agenda themes and CPIs (continued)

Staff members and students	
Themes from the CSR agenda	CPI Strategic Plan
<ul style="list-style-type: none"> Vitality (4) Development and training (13) Diversity among staff and students (15) 	<p>2 Significant scientific and societal impact on the three investment themes</p> <p>6: Greater entrepreneurial culture and practice in education, research and value creation</p> <p>8 Greater mobility, diversity and rejuvenation of WUR personnel</p> <p>9: More harmonisation of the organisation and greater satisfaction</p>
<p>SDGs</p>   	
Theme	Results and activities in 2022
4. Vitality	<p>CPI 8 and 9</p> <p>For students: Study and student counselling: including Student Training & Support and the Surf Your Stress week. See Annual Report, Section 2.4.6.1 Study counselling, student counselling, and student wellbeing, pp. 27-29; 2.4.6.2 Student services and study climate, pp. 29-31; 3.1.2.2 More and better study guidance, pp. 96-97</p> <p>For employees: In close cooperation with Sports Centre de Bongerd the Vital@Work programme offers a varied programme for employees focusing on vitality. Besides sports, WUR helps employees work healthily and vitally in many ways, such as providing fruit in the workplace and offering chair massages. The WUR Vitality week focused on informal care and financial resilience, among other things. An exercise app, in which employees can save Fitcoins by exercising, is also being used by four units. See Annual Report 2.7.5 Vitality & Health theme, pp. 60-61</p> <p>Key figures: Sickness absence employees, See Annual Report 2.7.5 Vitality & Health theme, pp. 60-61 and Appendix 3 Corporate Social Responsibility Annual Report, Figures B3.12 and B3.13, p. 161</p>
14. Development and training	<p>CPI 2, 6 and 8</p> <p>CPI 2: for research: Annual Report, 2.5.1 Policy and organisation, pp. 34-36; for employees: Annual Report, 2.7.1 One Wageningen, p. 57; 2.7.3 Leadership & talent development theme, pp. 58-59; for education: Annual Report 3.1.2.4 Lecturer professionalisation, p. 98; for students: Annual Report, 2.4.6.1 Study counselling, student counselling and student wellbeing, pp. 27-29; 2.4.6.2 Student services and study climate, pp. 29-31; 3.1.2.2 More and better study guidance, pp. 96-97; 3.1.2.3 Educational diversification, pp. 97-98; 3.2.3.1 Theme: Transitions and study progress, pp. 105-107</p> <p>CPI 8: See Annual Report, 2.7.2 Recruitment, Onboarding & Inclusion theme, pp. 57-58; 2.7.3 Leadership & Talent Development theme, pp. 58-59</p> <p><i>CPI 6: see 7. Entrepreneurship and applied research</i></p>
15. Diversity in staff and students	<p>CPI 8</p> <p>To achieve a more inclusive organisation, WUR has a comprehensive programme focusing on themes such as anti-racism (DARE), neurodiversity, inclusion, LGBT+ and gender balance. In 2022, we held a highly successful Diversity & Inclusion week with over 1,000 visitors. We have effectively deployed a wide range of approaches, including coaching in recruitment committees and multiple safe space meetings and lectures. See Annual Report, 2.7.2 Recruitment, Onboarding & Inclusion theme, subsection Inclusion, and Figure 2.8 Diversity & Inclusion, p. 58; 2.8.4 Corporate Social Responsibility, p. 67</p> <p>Social safety was a major societal issue in 2022. At WUR, we continue to work towards a pleasant and safe work and study environment. The social safety programme started in 2022. Its components include workshops and training programmes, the theatre performance Mindlab, a code of conduct and the establishment of the Social Safety Contact Point for employees and students. See Annual Report, Letter from the Executive Board, p. 8; 2.7.8 Corporate Social Responsibility, subsection Integrity and Social Safety, pp. 63-64; 2.4.6.1 Study counselling, student counselling and student wellbeing, pp. 27-29; 2.3.3 Attention to Corporate Social Responsibility, pp. 20-21</p> <p>Key figures</p> <ul style="list-style-type: none"> Age distribution: growth in employee category <35 years. See Annual Report, Appendix 3 Corporate Social Responsibility Report, Figure B3.9 Age Distribution WR and WU, p. 159 Man-to-woman ratio, including growth in proportion of women in executive positions, see Annual Report, Appendix 3 Corporate Social Responsibility Report, Figure B3.6 Salary scale Male/female WU, p. 158; Figure B3.8 Male/female ratio at WU by job category in tenure track, p. 159; In the national Monitor female professors 2022 WU had 21.9% female professors. Internationalisation: recruitment of international staff. Figure B3.11 Dutch/non-Dutch nationality, p. 160

Table 4-1 CSR agenda themes and CPIs (continued)

Environment		
Themes from the CSR agenda		For the themes dealing specifically with the environment, KPIs were chosen from current policy. The WUR-wide annual report summarises the results of the four environmental themes from the CSR agenda. These and other policy fields are presented in Section 4.3 of this sustainability report.
<ul style="list-style-type: none"> Climate-adaptive surroundings (6) Waste and circularity (8) Renewable energy (12) Sustainable mobility (16) 		
SDGs	    	
Theme	KPIs	Results and activities in 2022
6. Climate-adaptive environment	Key figures from the GreenMetric ranking: <ul style="list-style-type: none"> Area of forest or woody vegetation Area of planted vegetation Area suitable for water absorption 	For now, KPIs from the GreenMetric ranking are used: a total of 73% of the Wageningen Campus area is suitable for water absorption. See Annual Report, 2.8.5.2 Environment, p. 69 and this report 4.8, p. 30
8. Waste and Circularity	<ul style="list-style-type: none"> Total in kg, recycled waste and residual waste, target: 50% reduction by 2030 compared to 2014 material use target: 50% reduction by 2030 compared to 2014. Circularity (KPI to be determined) 	These are the goals from WUR's vision for circularity. In 2022, the amount of waste (in kg) decreased slightly compared to 2021. The separation rate was 65% in 2022, which is the same as in 2021. See Annual Report, 2.8.5.2 Environment, <i>circularity and waste</i> , p. 70 and this report 4.4 Circularity and waste, pp. 20-21
12. Sustainable energy	<ul style="list-style-type: none"> annual reduction in %, annual reduction target of 2%, reduction in gas consumption Generating renewable energy CO₂ footprint, annual reduction of at least 2%. 	Energy consumption decreased in 2022: compared to 2021, 4.3% less energy was consumed (with climate correction). The 2% annual target has thus been met. See Annual Report, 2.8.5.2 Environment, <i>Energy</i> pp. 70-71 and this report 4.5 Energy, pp. 22-24 Compared to 2021, total CO ₂ emissions increased by 13% in 2022. Compared to the "pre-pandemic" year 2019, CO ₂ emissions fell by 28%. See Annual Report, 2.8.5.2 Environment, <i>CO₂ footprint</i> p. 72 and this report 4.9 CO ₂ footprint, pp. 31-32
16. Sustainable mobility	<ul style="list-style-type: none"> CO₂ related to mobility 2% reduction per year 	In 2022, transport emissions in CO ₂ equivalents amounted to 11.2 ktons. This is 33% of the total calculated CO ₂ emissions. CO ₂ emissions for mobility were 49% higher than in 2021. This sharp increase is linked to the scaling-down of measures during the coronavirus pandemic. See Annual Report, 2.8.5.2 Environment, <i>Sustainable mobility</i> pp. 71-72 and this report 4.7 Mobility, pp. 26-29

4.2 WUR-wide results for sustainability & environment

For sustainability and the environment, targets have been formulated in the [Multi-Year Environmental Plan](#) of Wageningen University & Research. In Table 4-2 the 2022 targets and results are summarised. An explanation by theme follows in Sections 4.3 to 4.9. See also the reference to the relevant section in the table.



Figure 4-1 Key figures for sustainability in 2022

Table 4-2 Sustainability targets and realisation

Theme	Target for 2022	Achieved in 2022	See
Climate-adaptive environment	Making our buildings and environment climate-adaptive: percentage of area suitable for water absorption	Wageningen Campus: 73%	§4.8 p. 30
Waste and Circularity	Reduction in waste produced compared to 2021	-0.2%	§4.4
	Reduction in waste produced compared to 2014 Percentage of waste separation	+25% 65%	p. 20-21
Energy	Compared to reference year 2005: - 2.0% reduction per year - Purchase of sustainable energy - Production of sustainable energy	compared to 2021: -4.3% (including climate correction) 100% wind energy (Certiq) 70,248 MWh of which 54,472 MWh from wind energy	§4.5 p. 22-24
Mobility	2.0% reduction in transport-related CO ₂ emissions per year	+49%	§4.7 p. 26-29
	Share of transport in CO ₂ footprint	33%	
CO ₂ footprint	Compared to reference year 2010: - reduction of the CO ₂ footprint	-60%	§4.9 p. 31-32
	- growth of the CO ₂ -compensation footprint	+45%	
Purchasing	Socially responsible procurement	SRP criteria have been used in tenders	§4.8 p. 30
Water	Reduction in water use compared to 2021	+1.5%	§4.8 p. 31

Benchmarks and rankings

WUR is a leader in sustainability rankings. In the [UI GreenMetric](#) for 2022, Wageningen University was named the most sustainable university in the world for the sixth year in a row. [SustainaBul](#), the annual student-organised ranking of Dutch educational institutions, ranked Wageningen University third in 2022.

In 2022 WUR participated in the Times Higher Education [Impact Ranking](#) for the second time and

secured the 65th spot. This ranking lists universities according to their contribution to the Sustainable Development Goals (SDGs). WUR scores high on the SDGs Climate Action (3rd) and Zero Hunger (22nd). In the biennial [Transparency Benchmark](#) of the Ministry of Economic Affairs and Climate WUR was ranked in position 36 in 2021, making it the most transparent of all Dutch universities in CSR reporting.

4.3 Biodiversity

The Green Management Plan for Wageningen Campus focuses on enhancing landscape and natural values. Every year, various experts (including from the ESG garden committee), look at how the mixtures in the flower meadows on campus have responded to their growing locations. Based on this assessment, they determine the best mowing date and mowing method to support the development into a flowering hay meadow. Measures to enhance biodiversity have also been taken on experimental farms at various locations around the country.



Green Vision for Wageningen Campus

The [Green Vision Wageningen Campus](#) (adopted in 2019) describes how WUR intends to make Wageningen Campus a showcase of resilient, climate-resistant, liveable and healthy public spaces. The green component of the campus ecosystem is representative of WUR's expertise. Based on a living lab approach, the green spaces will be developed and managed in consultation with 'campus residents' and other stakeholders of the campus ecosystem and with input from WUR experts from education, research and operational management.

Replanting of trees

In recent years, many new tree plantings have failed despite extra watering during dry spells. Moreover, replacing a felled tree in the same location often fails, while the same species planted a few metres away does well. As an alternative, WUR is taking a dual approach:

- First, we are looking for species that are more resilient to changing growing conditions. Sometimes this is at the site where a species keeps failing, sometimes at another site to test whether that site is better suited for trees.

- Second, we are focusing more on varied shrub plantings that better suit the growing conditions on campus.
- A shrub planting with a single tree in it can provide a buffer to absorb weather extremes, contributing to biodiversity, CO₂ sequestration and particulate matter capture. We are taking these approaches incrementally.

Fallen oak trees (*Quercus robur*) are no longer replaced by new oaks due to the increasing nuisance caused by the oak processionary moth. We no longer plant the native willow and poplar species, but we do give seedlings a chance to grow in places where they cannot become a danger to traffic safety, such as near the Dassenbos (Badger Forest).

Brown hairstreak (butterfly) on Wageningen Campus

The rare brown hairstreak (butterfly) is protected under the Dutch Nature Conservation Act. This special butterfly is found on Wageningen Campus, as reported several times on waarneming.nl.

During the 2022/2023 season, volunteers from Dutch Butterfly Conservation counted brown hairstreak eggs on blackthorn bushes in and around The Field, the experimental garden on the edge of Wageningen Campus. A total of 80 eggs were counted (compared to 23 in 2021). Brown hairstreak eggs were also found again in the Lumen garden, on the Hoge Born and in the [food forest on Kielekampsteeg](#).

The branches on which eggs were found were marked so that they could be left alone when pruning. This allows the eggs to hatch and the caterpillars to develop into butterflies in the summer. Phased pruning ensures that the brown hairstreak has branches at the right growth stage to deposit its eggs. Green management at WUR takes this into account when maintaining the campus.



Plantings on Wageningen Campus

In 2022, several infrastructure and construction projects were completed, which enabled us to realise several proposed plantings:

- Around Omnia, we extended the wet nature garden.
- The construction of the new cycle path between Aurora and Impulse was followed by the landscaping around Aurora and the planting in the strip between the bus lane and the new cycle path near the amphitheatre.
- Borders were planted around the new patio in front of Impulse, with mixed hedges, borders of ornamental trees and shrubs with mixed perennials. Extensive maintenance makes them attractive year-round for humans and animals.
- The [Landscape Garden NL2120](#), designed according to the principles of the WUR project Netherlands 2120: what does the Netherlands look like when using nature-inclusive solutions for site planning? Besides flower meadows, native shrubs and trees planted in soil moisture gradients (from dry to wet), we are experimenting with flower fields: mixes of ornamental perennials and shrubs with wild flowers sown in between. We clean these in fields in the early spring only to give some light and air to the plants. As a result, hiding places and food sources are always available for insects and small mammals.
- The experimental forest garden to the north of the Dassenbos, with plantings of over 2,500 native trees and shrubs, where students can follow the ecological progression to a mixed forest.
- Along Droevendaalsesteeg, a long lane with a mixture of bulbs, including naturalised (*stinsen*) bulbs, was planted in the grass strip.
- In redesigning the entrance to Helix, we replaced the grass with flowering shrubs.



Nature-Positive Universities Alliance

Since 8 December 2022, WUR has been a starting member of the new global Nature-Positive Universities Alliance, which was launched at the UN Biodiversity Summit. Participation in the Alliance means that we will prevent or remediate damage to nature as a result of our activities and operations, and that we will encourage positive change. By joining this alliance of universities, we have demonstrated our commitment to a nature-positive future and we are taking responsibility for our activities in research, education and management. Our membership in the nature-positive alliance helps us accelerate our nature-positive actions. The [Wageningen Biodiversity Initiative](#) is one of the driving forces behind WUR's participation in this alliance.

The wolf returns

After 150 years of absence, wolves have returned to the Netherlands. Wageningen University & Research is monitoring the [return of the wolf](#) through DNA testing. Collected droppings are tested for DNA in our lab to determine whether the animal is actually a wolf and to identify individual wolves. We are also examining DNA taken from sheep suspected to have been killed by a wolf, to determine if that is indeed the case.

With this information, the provinces can make an informed decision on policy about wolves. This is much needed as wolves are an asset for biodiversity, but wolf management is very complex. Wageningen researchers have a substantial knowledge on this topic and are regularly interviewed in the news about the wolf's place in Dutch nature and how humans can best deal with it. In this way WUR helps manage the return of the wolf.

4.4 Circularity and waste

By implementing Material Flow Management, WUR works on resource and waste management. This policy is specified in the [circular economy policy](#) (approved in January 2020). The approval of this policy marked the transition from waste management to a circular economy. In line with the Dutch government's circular economy policy, WUR's ambition is to cut the use of abiotic raw materials by 50% before 2030 (relative to 2014). Our aim is to reduce not only WUR's use of raw materials, but also the amount of waste. We will do so by no longer using certain products, using other products more intelligently, and by using products longer (or reusing them) within WUR and elsewhere. To track progress, raw material use will be monitored in addition to the already existing waste monitoring.



Strategies to achieve circularity include the following:

- Using products longer and reusing the products that are already there.
- Closing the circle for newly purchased products: the amount of material in the product should equal the amount of material that can be recovered for new uses at the end of the product's life.
- Explore other circular options, such as sharing, multifunctionality or no longer purchasing some types of products.

After the innovative procurement strategy for Material Flow Management, the original waste contracts were replaced by a raw materials contract. A collaborative consortium emerged from the tender: waste processor PreZero and consulting firm Witteveen+Bos will support WUR in achieving its circularity goals. The new

contract took effect from 1 February 2022. The first year of this collaboration was mainly used to gain insight. For example, in 2022 PreZero conducted a raw materials analysis to find out which usable raw materials can still be found in WUR's residual waste.

Waste Streams

Based on the circular economy vision, the focus is on resource management and waste prevention as much as possible. In doing so, we want to get to the highest possible rung on the circularity ladder and focus mainly on prevention and reuse. For waste that still needs to be disposed of, WUR follows Lansink's Ladder for waste treatment. This means prioritising the most environmentally friendly treatment methods for waste management and disposal.

What is Material Flow Management?

With **Material flow management** WUR acquires more control on its raw material flows with the aim of being able to keep as many raw materials as possible in the chain for as long as possible. In doing so, WUR wants to look not only at the end-of-life of products and sustainable processing, but also at the influx of raw materials (procurement) to ensure that the products/raw materials that enter the chain can also be effectively reused or recycled.

In addition to existing waste monitoring, the use of raw materials is also intensively monitored. By managing the inflow of raw materials into the organisation through procurement, the outflow of raw materials (waste) can be made more sustainable. Strategies include:

- more reuse
- refurbishment
- recycling.

Within WUR, waste is divided into three primary streams: industrial waste, paper waste and hazardous waste. See Table 3-2 and Appendix 3). Waste assessment provides insight into the waste streams in 2022. By 2022, 91% of waste was subjected to a processing method classified as recovery: 49% recycling, 36% energy recovery and 7% other recovery (see Table B3-2c in Appendix 3).

Several changes in operational management were made in 2022. As a result, exact figures cannot be assigned to the effects of these changes.

- At locations with offices, labs, education and sports, in 2022 there was a trend for increased waste compared to 2021. This can be attributed to is the 'back-to-office' effect after the pandemic years 2020 and 2021.
- In 2022, WUR switched to a different service provider for waste collection. This led to a shift

Sustainability network 'waste and circularity'

WUR is one of 18 participants in the 'waste and circularity' sustainability network for higher education institutions. This network was initiated and funded by the VANG outdoors programme of the Directorate-General for Public Works and Water Management (Rijkswaterstaat) and is supervised by Stichting Stimular.

In October 2022, a meeting was held in Wageningen on the **topic of waste prevention** (in Dutch). WUR made a presentation on the progress of the Material Flow Management project and its link to waste prevention. Green Office Wageningen described the introduction of the Billie cup on campus.

Following the meeting, Stichting Stimular published an article on the transition WUR is making to meet its circularity ambitions: **from waste contract to raw materials partners** (in Dutch).

between waste streams and the corresponding treatment methods.

The amount of hazardous waste fluctuates annually, but is showing a downward trend. Compared to the peak in 2018, the decrease in 2022 was 115 tonnes (-21%). Research-related waste, from sources such as greenhouses, cultivation, animal husbandry and fisheries, varies greatly between years. For instance, compared to 2021 the amount of green waste increased by 415 tonnes, but the amount of manure waste decreased by 82 tonnes. Construction-related waste decreased by 334 tonnes compared to 2021. At 868 tonnes in 2022, the total amount of residual waste was the same as in 2021. The waste separation rate for WUR was unchanged in 2022 and remained at 65%.

Table 4-3 Quantity of waste WUR 2018 to 2022 compared to 2014 (in kg; excluding third parties)

	2022	2021	2020	2019	2018	2014
Industrial waste	1,807,511	1,844,319	2,248,879	1,874,524	1,393,294	1,361,400
Paper waste	240,304	165,508	184,986	298,000	300,983	329,447
Hazardous waste	442,888	486	464,293	486,333	492,186	305,932
Total WUR (excluding third parties)	2,490,703	2,496,702	2,898,158	2,659,657	2,186,463	1,996,779
Waste produced by each employee	332	345	422	416	376	394
Waste produced by each student	182	183	218	207	176	209
Waste produced by each employee and student	118	119	144	138	120	136



4.5 Energy

In 2022, the [Rough Outline for the Energy Transition WUR 2050](#) was developed into an implementation agenda. The war in Ukraine and the ensuing energy crisis in Europe meant that planning had to be changed early in the year. Due to the energy crisis, WUR decided to accelerate the connection of buildings to the ATES loop. As a result, the targeted 90% gas reduction could be achieved as early as 2025. Additional energy-saving measures were taken in the autumn, such as lowering the temperature in buildings, taking a critical look at how lights and equipment are left switched on, as well as closing buildings during the two weeks around the December holidays. These measures have resulted in absolute gas consumption savings of 17% and electricity consumption savings of 2% compared to 2021. Looking only at the last three months of 2022, the savings achieved were 23% and 5%, respectively.



Energy transition

Energy transition requires a major overhaul of Europe's energy system. This was made all the more obvious due to the war in Ukraine. The war, the subsequent energy crisis and the tightened Dutch energy policy had substantial consequences for WUR. The crisis caused the supply rates for electricity and gas supply to rise sharply. The rapid development in energy policy and engineering presents opportunities, but also uncertainties. To respond to this, based on the set framework of the rough outline, an implementation agenda for energy transition has been drawn up with the energy-saving measures for the next 3 to 5 years.

An important element in the energy transition at WUR is the aquifer thermal energy loop (ATES) as an extension of the existing thermal energy storage network on Wageningen Campus. The underground infrastructure was completed in 2021, and in 2022 we started connecting buildings to the network. The remaining campus buildings are also being connected, and the work will be completed in 2025 or 2026.

Climate

By signing the [climate agreement of the Association of Dutch Universities](#) and joining [Wageningen Climate Neutral](#) initiative of the municipality of Wageningen,

WUR is participating in national and regional climate agreements ([RES Foodvalley](#)), with measures such as phasing out the use of natural gas, reducing CO₂ emissions and generating more sustainable energy at our various locations. Within the [Energy Alliance](#) WUR employees and stakeholders in the region and elsewhere exchange knowledge and experience on the theme of energy. The Alliance focuses on cooperation. Last year, an undergraduate project on designing solar carports on campus emerged from the Alliance.

Energy conservation and efficiency

Measures that have contributed to energy efficiency in recent years are:

- Energy management, assured at all levels of the organisation.
- Energy-saving measures resulting from the EED audit (Energy Efficiency Directive audit) and the energy label requirement for offices. Energy-saving measures have been identified, including measures involving ventilation, heating, insulation and building use.

In addition to the legal requirements, ambitions for energy and sustainability have been set out in the General Technical Programme of Requirements for new construction and renovation projects. The aim is to include energy performance improvement in all construction projects.

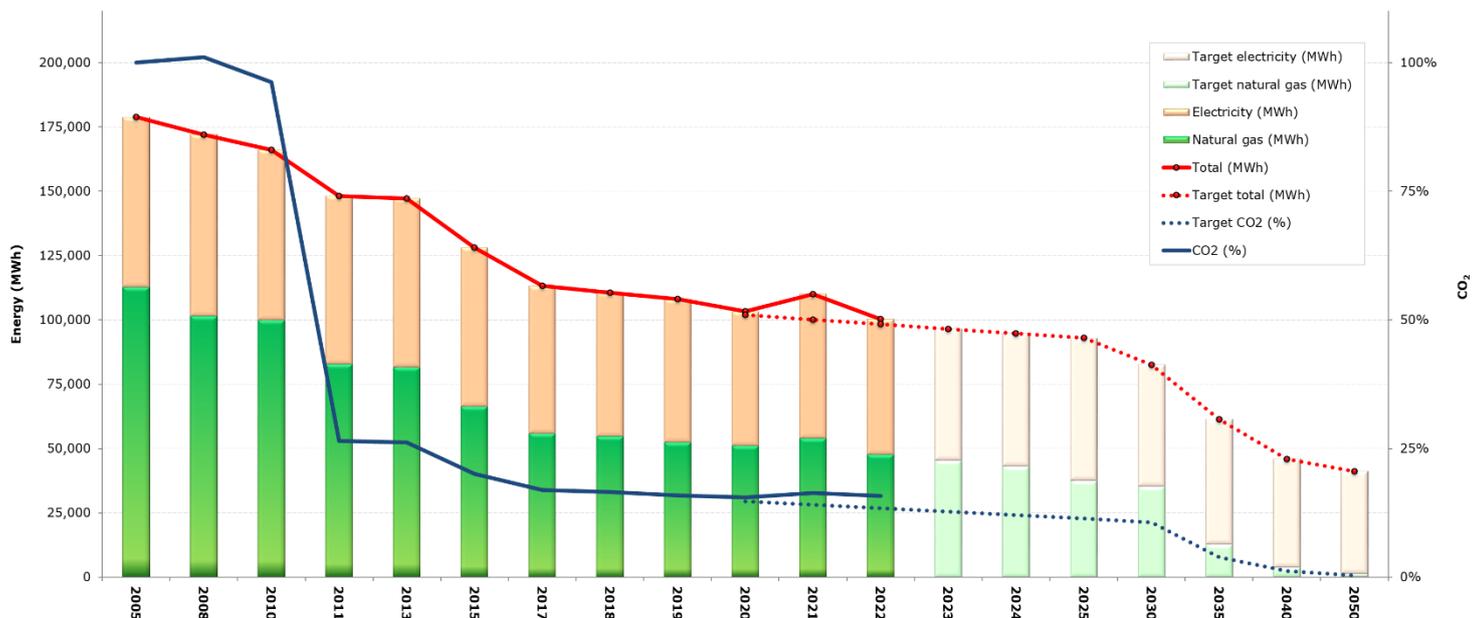


Figure 4-2 Development of Rough Outline for the Energy Transition 2050

- Procurement of 100% green wind energy and solar energy of Dutch origin (Certiq registered).
- Energy efficiency and savings plans for each WUR organisational component were enhanced by the energy incentive.

As a result of the construction of the ATES loop, however, the energy incentive was discontinued in 2022. Although calculations can be made about the expected level of energy use with the ATES loop, this strongly depends on practical circumstances. If the incentive is to be continued, it is advisable to wait until ATES use has normalised and most buildings are connected to the system. A new reference year can then be chosen in a few years' time.

Energy consumption in 2022

Due in part to a warm spring and energy-saving measures in all buildings (since May), substantial energy savings were achieved in 2022. Figure 4-3 shows the monthly consumption of electricity and gas for 2022 compared to 2020 and 2021. This clearly shows the impact of energy-saving measures in the months of October, November and December. All WUR's buildings used less energy in 2022: 8.9% less compared to 2021. This includes corrections for climatic influences.

Figure 4-2 shows the development of WUR's energy consumption in relation to the targets of the Rough Outline for the Energy Transition 2050. Energy consumption is shown in Table 4-4 and in Appendix B3.4.

Production of sustainable energy

In 2022, 67% of WUR's total energy consumption was generated sustainably (see Table 4-5). As for electricity, 18% more renewable electricity was generated than consumed. The wind turbines in Lelystad generated over 58 million kWh of wind energy in 2022. WUR now uses power from nearly 17,000 solar panels, including roof panels on Wageningen Campus and panels on roofs and land in Lelystad. In 2022, these solar panels generated 4.6 million kWh. Compared to 2021, nearly 40% more solar energy was generated.

Energy monitoring

The consumption figures for electricity, natural gas and thermal energy are measured and recorded for all WUR buildings and installations in the central monitoring system Erbis. Consumption figures can be accessed via the [Erbis dashboard](#).

Validated metering data of electricity, natural gas and water connections is provided daily by the certified metering companies. For keeping track internally of use by individual buildings and even individual users, private interim meters are used. Measurement data from a large proportion of the meters are entered daily into Erbis via the building management systems. The remaining meters are read manually on a monthly basis. When meter installation is not possible, an allocation is made based on the distribution (m²) from the accommodation account.

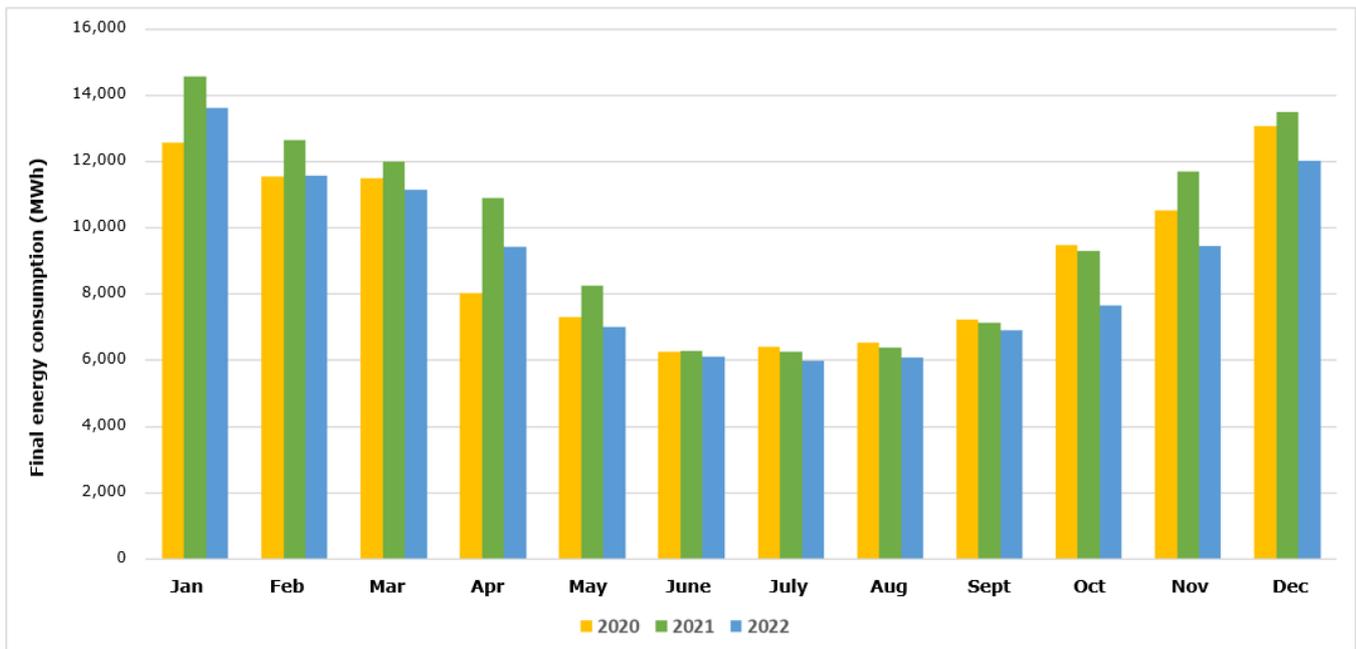


Figure 4-3 Final energy consumption per month for 2020, 2021 and 2022 (Final energy consumption is the total energy content of gas and electricity together expressed in kWh).

Table 4-4 WUR energy consumption and energy performance in the reference year 2005 and in 2019-2022²

Year	2022	2021	2020	2019	2005
Electricity (kWh)	53,292,589	56,123,986	52,072,490	55,486,852	66,019,426
Natural gas (Nm ³)	5,926,451	6,141,043	5,826,025	5,979,539	12,828,768
Total Energy (MWh)	105,387	110,104	103,283	108,047	178,784
Primary energy (GJ)	667,208	699,480	653,046	688,634	1,000,205
CO ₂ (tonnes)	10,617	11,001	10,437	10,712	67,307
Energy performance	% 2022 compared to 2021		% 2022 compared to 2005		
Electricity (kWh)	-5.0		-19		
Natural gas (Nm ³)	-3.5		-54		
Total Energy (MWh)	-4.6		-41		
Primary energy (GJ)	-4.3		-33		
CO ₂ (tonnes)	-3.5		-84		

*

Table 4-5 Renewable energy generation by WUR in 2020-2022 (in MWh)

Source	2022	2021	2020	Unit
Wind turbines Lelystad* ³	58,472	54,228	71,176	MWh
Wageningen Campus ATES	7,212	5,992	5,581	MWh
Solar panels	4,563	3,341	1,954	MWh
Total	70,248	63,562	78,711	MWh
Energy consumption	105,387	110,104	103,283	MWh
Sustainable generation as a percentage of total energy consumption	67%	58%	76%	
Electricity consumption	53,293	56,124	52,072	MWh
% sustainable generation compared to total electricity consumption	132%	113%	151%	

² Excluding third-party consumption and student accommodation. To improve the comparison of consumption in 2022 with previous years, adjustments have been made for climatic influences. For cooling and heating corrections, the figures provided annually by the Rijksdienst voor Ondernemend Nederland (RVO.nl) have been used.

³ Refers to the three wind farms in Lelystad owned by WUR. The test site for wind turbines, also in Lelystad on WUR land, is not included.

4.6 Food and beverages

In 2022, WUR approved the [Vision for Food & Beverage](#). The aim of the vision is for the Food & Beverage provision to reflect the aims and desired image of WUR: the food is fresh, healthy and based largely on plant protein. Food and ingredients will be seasonal and produced regionally as far as possible. In line with the Strategic Plan and WUR's CSR agenda, chain responsibility is a key theme in the new vision: promoting sustainability in the chain by maximising local sourcing, and establishing social and environmental requirements for suppliers.



The Strategic Plan 2019-2022 (p. 43) explicitly calls for making canteens more sustainable: "In this Strategic Plan period we give priority to promoting the vitality of staff and students, to offer healthier and more sustainably produced food in our canteens, and to reduce our food waste." A living lab approach is central to this: deployment of in-house scientific and other knowledge on sustainable and healthy food and student involvement.

In WUR's vision on circularity catering is a separate product group. As a result, the use of raw materials and reducing waste (including food waste) is closely examined. Moreover, together with our caterers WUR actively participates in national initiatives such as the [Zero Food Waste Week](#) and the Week without Meat.

Vision for Food & Beverage

The [Vision for Food & Beverage](#), which includes the themes 'healthy', 'sustainable' and 'inclusive' as priorities for all food & beverage facilities, is the starting point for all catering on campus. This includes catering facilities, banquets, event catering, dining facilities, hot and cold beverage facilities and vending machines. The vision focuses on eight themes: health and vitality, protein transition, reducing food waste, seasonal fresh and local, sustainable management, packaging-conscious, innovative and inclusion as a core value. The challenge is to achieve this whenever possible with a positive ecological and social impact. We do this largely by employing people who are disadvantaged in the job market, offering a menu with less meat and more vegetable protein.

The draft version of the Vision for Food & Beverage was already used in 2021 in the tendering processes for catering facilities in the new Aurora and Omnia buildings. In 2022, work continued on tendering for catering facilities in the other buildings.

What does this mean in practice?

- WUR has based its choice of caterers on the sustainability goals to which the caterers are also committed. For example, they have to meet the minimum requirements of the Netherlands Enterprise Agency (RVO) in terms of product

The Protein Transition

The [protein transition](#) is one of the investment themes in the WUR Strategic Plan. The central idea is that proteins are essential building blocks for our bodies, but the way we produce and consume them is no longer sustainable and is depleting our natural resources. WUR has a nuanced vision of animal protein consumption, in which the ultimate goal is not a strictly plant-based diet, but a sustainable and equitable food system that is globally balanced. As part of this vision, we encourage guests at WUR canteens to choose sustainable, plant-based products.

In 2022, as artist in residence, Remco de Kluzenaar drew inspiration from WUR's research and created the [Wageningen Campus protein transition audio tour](#) (in Dutch).

assortment and the processes of their comprehensive services.

- WUR encourages people to use their own cups at coffee vending machines. If you don't have your own cup, you can use the Billie Cup, the sustainable alternative to the disposable cup.
- For years we have observed Meatless Mondays, when only a limited selection of meat is offered by the caterers. We believe that a day without meat contributes to a more sustainable world. Besides Meatless Monday, WUR also participates in activities such as the Week without Meat.
- A number of caterers are participating in the 'Too good to go' programme. Using an app, they offer products that have not yet been sold, but are still too good to throw away.
- Some caterers work with Orbisk, a food waste meter. This gives the caterer valuable information about the type of food that is thrown away, when this happens and at what time of day.
- Hot beverage vending machines in office buildings serve [more circular coffee](#). Based on the 'Circle of Beans' concept, the coffee grounds are used to generate biogas, which is then used to roast new coffee beans and as a renewable fuel for cars.

- For the first time in 2022, the Annual Introduction Days (AID) were [entirely vegetarian](#).

Green Office Wageningen

Several recurring sustainability activities take place in collaboration with the Green Office Wageningen. In addition to the Meatless Mondays initiative, Green Office organises the [Student Cooking Corner](#) where students bring and sell homemade meals.

As part of its operational management, WUR also regularly takes the initiative to offer internships and graduate courses on sustainability at the university and campus. Through [Green Match](#), the Green Office supports this process by recruiting students for these internships, graduation projects or Academic Consultancy Training projects, which frequently involve an assignment related to food and/or beverage on campus.

4.7 Mobility

The [Mobility vision 2030](#) focuses on encouraging sustainable transport options such as cycling and public transport and discouraging travel by car or plane. WUR also wants to make all transport options as sustainable as possible. The goals of the mobility vision have been developed into an implementation agenda with concrete measures, including encouraging the use of public transport for business trips within the Netherlands and to nearby destinations in Europe, facilitating and encouraging the use of videoconferencing facilities, encouraging cycling for commuting and deploying electric vehicles.



Mobility as a Service

With [Mobility as a Service](#) (MaaS), WUR is working to make our business travel more sustainable. Since 2021, employees have been able to reserve a shared electric car for their business trips via the MaaS platform. These shared cars are replacing the pool of fossil-fuelled official cars. In the coming years the MaaS concept will be expanded to include shared bicycles, access to public transport and participation of local businesses and organisations. Ultimately, private use of the shared cars and bikes will also become possible. Work is underway with the MaaS supplier to provide shared bicycles. Due to supply problems, it was not possible to realise the hubs with shared bikes in 2022.

In 2021, 69,581 km were covered during 474 trips with a shared electric car (34% of trips and 21% of kilometres travelled, respectively). In 2022, the use of shared cars increased: employees made 1,431 trips with a shared electric car and covered 214,480 km (69.6% of trips and 52.8% of kilometres respectively).

Business travel: de WUR 'travel check'

In its business travel policy, described in the document 'Business travel: train and flight policy', WUR goes a step further than advising employees to travel by public transport as much as possible. Air travel within Europe is actively discouraged and booking a train journey is made easier. Train travel should become the standard for destinations within Europe with a travel time of less than 6-8 hours. To explain this to

employees, the WUR 'travel check' was developed with advice on sustainable travel. However, the introduction of this travel policy and the launch of the WUR travel check coincided with the start of the coronavirus pandemic, so the impact of the policy cannot yet be measured. In 2020 and 2021, the number of international business trips was very limited. The coronavirus measures were phased out in 2022. Although the number of business trips increased after this, they did not return to pre-2020 levels.

Hybrid working

We want to discourage business travel by car and plane in favour of travel by public transport. Moreover, the following question is asked: 'Is it necessary to travel or are there options other than being physically present?' A remote working policy was introduced during the coronavirus pandemic. This policy was updated to a hybrid working policy in 2022.

WUR offers several remote working options, such as video conferencing, webinars and working with Microsoft Teams. The collective labour agreements of Wageningen University and Wageningen Research adhere to the maximum working from home allowance of €2 net per day. Employees can also use a digital order button to order office supplies and furniture to equip their home office as effectively as possible. With a checklist and video instructions, employees can determine whether their desk, chair and computer screen are correctly adjusted. If necessary, a QHSE advisor (Quality, Health & Safety and Environment)

can check remotely with an employee whether the workplace is ergonomically set up. Facilities and arrangements are explained in the Guidelines on Hybrid Working@WUR.

Public transport

Since 2021, employees who commute by public transport have been eligible for 100% reimbursement of their travel expenses (for the first 100 km). In 2022, this scheme was amended and employees can claim the entire public transport trip. In the mobility measurement carried out in 2022, the share of public transport in commuting increased from 5.6% (2019) to 9.1% (2022).

WUR has urged the carrier and the province of Gelderland to maintain bus connections on campus. During the coronavirus pandemic, the bus service on campus was reduced. In 2022, the carriers struggled to return bus frequency to its previous level due to

staff shortages. The 'normal' timetable was resumed during the year, but bus frequency was still lower than before the pandemic. Accessibility to the campus by public transport will continue to be a priority of sustainable mobility policy in the coming years. More direct bus connections are expected to be realised. One example is the Rijnlijn. The route and timetable of this line has since been changed to reduce the travel time between the Arnhem Central railway station and the bus station in Wageningen. However, a direct connection to Wageningen Campus has not yet been realised.

Cycling

WUR has committed to the higher education Cycling Mission of the Ministry of Infrastructure and Water Management. With this mission, we want to increase the number of employees commuting to WUR by bike by 10%. As a participant in the higher education Cycling Mission, WUR joined the National Bike-to-Work Day on 19 May. The on-campus activities included a [Bike Pitstop](#) where cyclists could have quick repairs done on their bikes. WUR has also joined Fietsvalley from [Regio Foodvalley](#). Employees actively participated by registering their bike rides with Love to Ride for the Fietsvalley challenges of organisations and businesses in the Foodvalley Region. Furthermore, WUR was involved in developing an express cycle route between Ede, Ede-Wageningen Station, Bennekom and Wageningen, including Wageningen Campus. This cycle route, now called the [Pico Bello Path](#), will be completed in 2023.

Electric transport

- The IT department, the Construction and Installation Service and the Education Laboratory Service of the Facilities and Services has several fully electric vans operating on Wageningen Campus. The landscaping supplier also uses electric vehicles as much as possible.
- For business trips, employees can use Amber electric shared cars (as part of the MaaS concept). Charging facilities are available for the shared cars at Impulse and the Leeuwenborch. These charging facilities, some of which can be used by guests, have been outsourced to a third party.
- Charging points for electric bikes/scooters are available at bicycle parking locations at various buildings.
- WUR has 20 charging points for electric cars throughout Wageningen Campus (locations are indicated on the [campus map](#)). Owners of electric vehicles used these charging points 4,226 times in 2022, charging 75,598 kWh. Compared to 2021 (during the coronavirus pandemic), the use of

Debate on sustainable mobility

During the Seriously Sustainable Week in 2022, Green Office Wageningen held a debate on the mobility policy at WUR. During the well-attended debate at Impulse, participants asked questions about the policies and plans for mobility on Wageningen Campus but, more importantly, they gave their opinions on this policy. The discussion focused on whether WUR is on the right track when it comes to sustainable mobility. Are we doing enough and are we doing it in the right way? And are our targets in line with the climate goals of the Paris Climate Agreement?



charging points doubled. In addition, employees and visitors on campus can use the charging facilities in the Unilever car park.

Mobility survey

To better understand the travel behaviour of employees and students, a mobility measurement (survey) is carried out once every two years. With this measurement, WUR gauges how people travel to their place of work or study. The survey also asks how satisfied people are with transport options, parking facilities, accessibility and alternatives for business travel. A mobility survey was conducted among employees and students in 2022. A total of 820 employees completed the survey. Unfortunately, few students completed the questionnaire. The survey will be conducted again in 2023 with the focus on students.

For employees, the survey showed a clear decline in physical attendance (more employees were working from home). In the 2019 survey, attendance on working days averaged 84%, while in 2022, it was 56.3%. A sharp decline was seen especially on Mondays. Compared to the 2019 and 2017 surveys, there was a shift in the mode of transport, with respondents being more likely to choose the car. This was mainly at the expense of travelling by bicycle. But the survey did show an increase in the number of respondents using public transport for commuting to work. Regarding commuting WUR-wide, 41% of employees chose cycling as their main means of transport, while 47% travel to work by car (41% drive themselves, 3.3% use carpooling and 2.3% drive electric vehicles). Regarding employees, 9% travel by public transport, of which 8.2% use the train as their main means of transport.

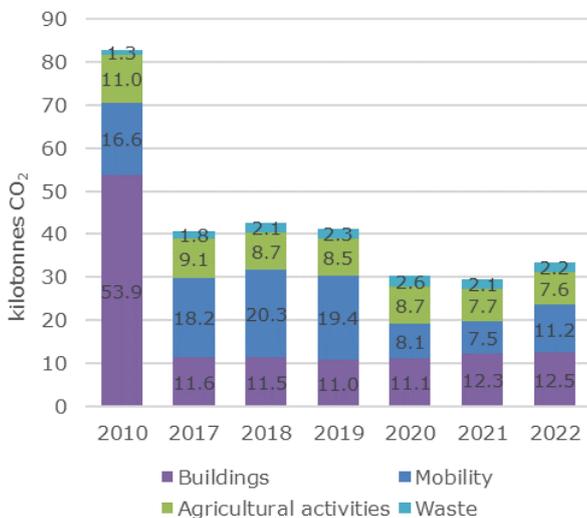


Figure 4-4 Share of mobility in the CO₂ footprint

Tyre pump on Wageningen Campus

In October 2022, a smart tyre pump operated by De Groene Garage was installed on Wageningen Campus. WUR's mobility policy focuses not only on reducing transport movements that involve fossil fuels, but also on making fossil-fuelled transport more sustainable for those times when it is needed. Since not everyone can cycle to campus or has an electric car, we want to offer employees and visitors who come to campus by car an option to make their car use more sustainable by keeping their tyres properly inflated. Use of the smart tyre pump is free of charge. The pump itself is solar-powered. Until the end of December, about 400 people had inflated their car tyres, saving about 4,000 litres of fuel.



Mobility in the CO₂ footprint

The ambition from the mobility vision is to reduce CO₂ emissions from all WUR transport by at least 2% per year. To measure this, commuting and business trips by public transport, car and plane are monitored as much as possible. Emissions are calculated in the annual CO₂ footprint.

Compared to the reference year 2010, transport movements gained an increasing share in the CO₂ footprint. This mainly concerns the CO₂ emissions from air travel and commuting by car. The sharp drop in air travel and less transport by car during the coronavirus pandemic significantly reduced the share of mobility in the CO₂ footprints for 2020 and 2021. This effect was still apparent in 2022, see Figure 4-4. In 2022, the share of mobility in the CO₂ footprint increased from 7.5 ktons CO₂ eq. in 2021 to 11.2 ktons. This

represents a 33% share of the total CO₂ footprint. In 2019 (before the coronavirus pandemic), this share was 47%. See also Section 4.9 CO₂ footprint.

Figure 4-4 shows the share of mobility in CO₂ emissions in 2010 and in 2017-2022. Figure 4-5 shows CO₂ emissions related to mobility, linked to the Mobility Vision reduction target of 2% less CO₂ emissions per year. Again, the effect of the coronavirus pandemic is clearly visible.

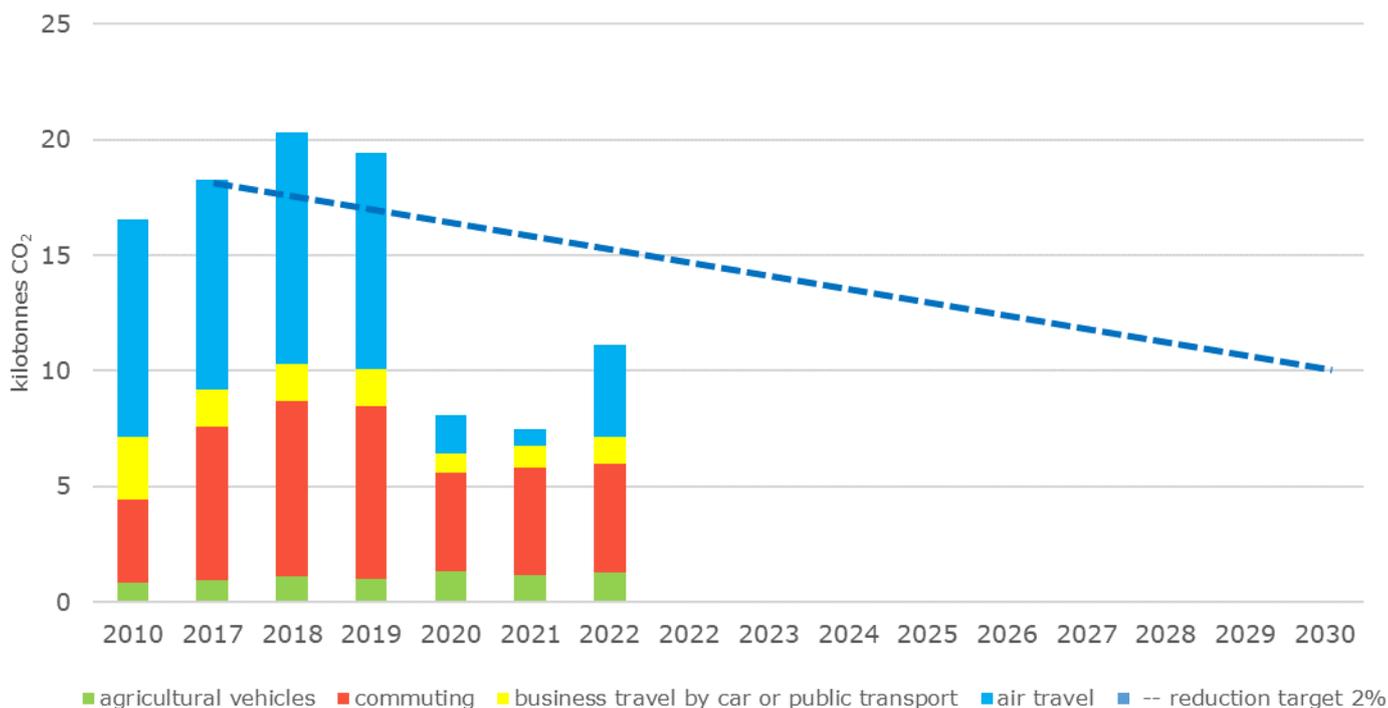


Figure 4-5 CO₂ emissions from mobility; actual emissions and the reduction target (annually in kilotons of CO₂)

4.8 Other themes related to sustainability and environment

Built environment

The Real Estate and Housing Department of Facilities and Services is working on transposing the WUR-wide sustainability ambitions into a concrete and measurable CSR policy specifically for the built environment. The main themes are linked to the Sustainable Development Goals (SDGs).

These themes are the following:

- Health and well-being (SDG 3)
- Affordable and clean energy (SDG 7)
- Sustainable cities and communities (SDG 11)
- Circular economy (SDG 12)
- Climate action (SDG 13)

The following construction-related activities also took place in 2022:

- In 2022, the first buildings were connected to the campus-wide ATES loop. The underground infrastructure for the extension of the loop was completed in 2021. In 2023, many of the other buildings will be connected.
- To investigate an ultra-deep geothermal heat source and the use of residual heat from the paper mill in Renkum, cooperation continued with Liander, Parenco, the Province of Gelderland and the municipalities of Wageningen, Renkum and Ede, among other parties.
- Construction has begun on the first phase of the new greenhouse complex on Wageningen Campus.

A climate building and a greenhouse building for a phenotyping facility were completed in 2022. The new greenhouses and facilities use thermal energy from the ATES. In addition, sustainability measures are being taken such as applying double glazing and limiting light emission.

- The new dialogue centre 'Omnia' opened on Wageningen Campus in May 2022. Omnia is also connected to the new ATES loop, and the building has a sedum roof.
- At Zodiac, a pilot was carried out with innovative control technology using a virtual test environment (twin building) and weather forecasts, resulting in approximately 30% savings in heating costs.
- Planning has continued for Campus East, the expansion of Wageningen Campus on the east side of Mansholtlaan. This part of the campus will accommodate knowledge-intensive businesses.
- Due to the growing numbers of students and staff, a Strategic Housing Plan (SHP) has been prepared. This plan will guide the development of our housing over the next five years. The aim is to create sufficient study, research and workspace while also maximising opportunities for remote collaboration.
- At the Gaia building, roof insulation was improved and solar panels were installed.
- Solar panels were also installed on the roof of Carus.
- The Schoutenhoef is equipped with solar panels and a heat pump for heating and cooling.
- At the Theia data centre, cooling units were replaced for more energy-efficient cooling.
- Various energy-saving measures have been implemented in the buildings on Houtribweg in Lelystad.

Procurement

Wageningen University & Research purchases a wide range of goods, services and works every year. All of these, to varying degrees, have an adverse effect on the environment. With every purchase and every tender, the Facilities and Services department takes relevant sustainability criteria into account. These criteria have an impact in areas such as circularity, limiting emissions or stopping modern slavery and child labour.

In collaboration with other universities, the Facilities and Services department frequently exchanges knowledge and organises expertise sessions with the

aim of jointly enhancing our impact on the above areas and other aspects of sustainability such as inclusivity. Also in 2022, sustainability options were investigated and developed for tenders in areas such as waste collection and catering. Sustainability criteria were also included with a positive impact on the means of transport used, the number of transport movements (e.g. local sourcing), delivery conditions and packaging materials. Finally, the department considered criteria that reduce modern slavery and child labour in the chain, for example in the sourcing of coffee.

In 2022, a study was launched into the possibilities for making our approach to construction and remodelling more sustainable, for making our catering even more sustainable and for reducing waste even further. In 2023, this strategy will be continued and expanded.

Climate-adaptive environment

The ambition for a climate-adaptive environment is described in the CSR agenda as: making our own buildings and surroundings climate adaptive, using our own innovative knowledge on climate and biodiversity. Wageningen Campus serves as a groundwater drainage area. Excess water requires space and the campus provides plenty of that. A total of 73% of the Wageningen Campus surface will be suitable for water absorption by 2022: Of the total area (including the experimental fields), 4% is covered with trees or woody vegetation, 26% is planted vegetation and 43% is water permeable, including ponds, ditches and not planted vegetation.

Water

Total water consumption increased (1.5%) in 2022 compared to 2021. During the coronavirus pandemic, tap water use was less in 2020 and 2021 due to lower occupancy, especially in education buildings and office buildings. In almost all buildings, the cancellation of pandemic-control measures is clearly related to increased water consumption. The water consumption of WUR's buildings and facilities in 2022 is shown in table 4-6 and Appendix B3.5.

Wastewater

At several sites in Wageningen and Lelystad, samples of wastewater are taken and analysed regularly. Exceedances of the discharge standard were observed in some samples taken in 2022. All exceedances have been investigated and measures taken to prevent recurrence. This was reported to the relevant environmental services and water boards.

Table 4-6 WUR water consumption and water performance in the reference year 2005 and in 2019-2022

Year	2022	2021	2020	2019	2005
Mains water (m ³)	139,493	135,523	134,820	156,084	234,503
Well water (m ³)	6,435	8,240	17,584	19,666	139,518
Performance	% 2022 compared to 2005	% 2021 compared to 2005	% 2020 compared to 2005	% 2019 compared to 2005	
Mains water (%)	-41%	-42%	-43%	-33%	
Well (%)	-95%	-94%	-87%	-86%	

4.9 CO₂ footprint

The annual calculated CO₂ footprint of WUR shows direct and indirect emissions from energy consumption, transport, livestock, refrigerant leakage and waste disposal. It also provides insight into what WUR is doing to reduce CO₂ emissions. Reported at the corporate WUR level. It also provides insight into the CO₂ emissions of the organisational components, allowing them to identify priority areas and take measures to reduce these emissions as much as possible.

The total CO₂ footprint in 2022 was 33.5 ktons of CO₂. Compared to the reference year 2010, the CO₂ footprint was reduced by 60%. Relative to the "pre-pandemic" year 2019, CO₂ emissions were 28% lower. In comparison to 2021, CO₂ emissions increased by 13%. This increase was due to the resumption of transport during 2022, after measures due to the coronavirus pandemic were phased out.

The sources that contributed most to greenhouse gas emissions in 2022 were buildings (especially natural gas use) and agricultural land, with 37% and 15% of total emissions, respectively. Commuting (14%) and air travel (12%) also contributed significantly. The share of emissions from air travel increased again as international travel became easier in 2022. In 2020 and 2021, the share was 5% and 2% respectively, while in 2019, air travel was the second largest source of emissions, at 23%. Figure 4-6 shows the differences in the distribution of CO₂ emission sources between 2019 and 2022.

The biggest factors in the changes in CO₂ emissions compared to the previous year were increases in air travel (4.5-fold increase) and business travel by car (+21%). Business use of public transport also increased again (4-fold increase). Remarkably, commuting emissions remained almost the same despite the increase in business travel. Although on-

site work did increase in 2022, a large proportion of employees choose to work from home during part of the week.

Despite the decreased energy consumption in 2022, CO₂ emissions from heating increased (see 4.5 Energy). This was due to an increase in the CO₂ emissions factor for gas use. This was raised from 1.884 kg of CO₂ per m³ of natural gas in the previous years to 2.085 in 2022. Because WUR purchases renewable electricity, the emissions for the use of electricity are zero. WUR offsets its CO₂ emissions by generating its own wind energy (over 58 million kWh in 2022), the ATES installations for heating and cooling buildings on Wageningen Campus (7.2 kWh), generating solar energy (4.5 million kWh) and separating the various waste streams as much as possible. The CO₂ compensation footprint in 2022 was 37.7 ktons of CO₂. This is a 45% increase in compensation as compared to the figures for the reference year 2010.

The development of the CO₂ footprint and CO₂ compensation footprint in 2018-2022 and the figures in the reference year 2010 are shown in Table 4-7. The CO₂ footprint is explained in more detail in Appendix B3.3.

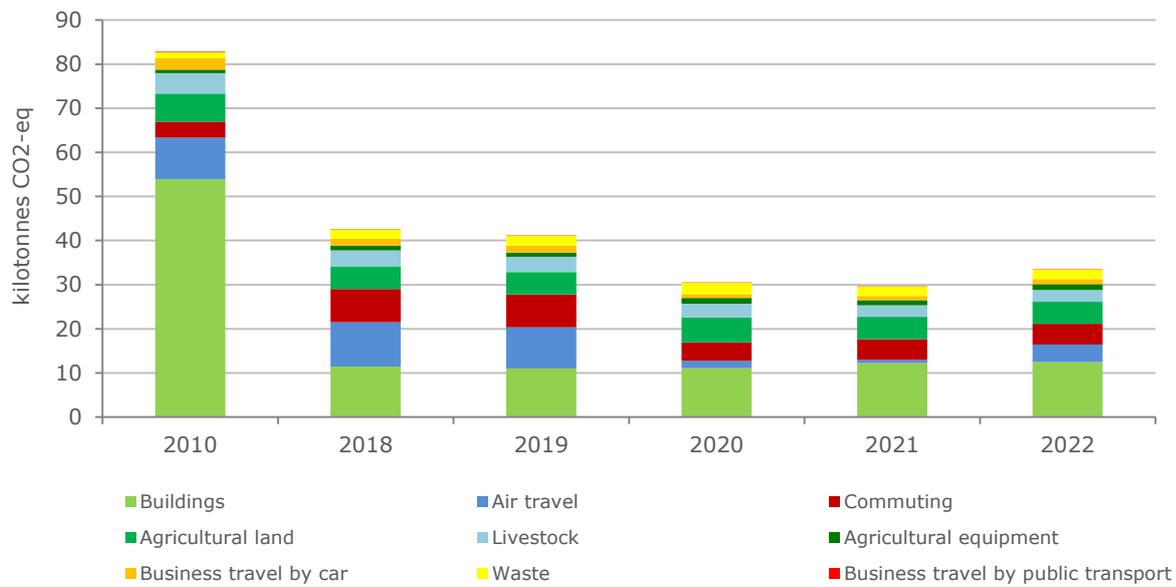


Figure 4-6 Distribution of CO₂ emissions in 2018-2022

Table 4-7 CO₂ emissions and CO₂ offsets of WUR in 2017-2022 and in the reference year 2010

Year	2010	2018	2019	2020	2021	2022
CO ₂ emissions in kilotonnes	82.9	42.8	41.4	30.6	29.6	33.5
CO ₂ compensation	26	48.3	42.7	45.1	34.3	37.7
Reduction of CO ₂ emissions compared to reference year (%)		48%	50%	63%	64%	60%
Increase in compensation (offsets) compared to reference year (%)		87%	66%	75%	33%	45%



5 Compliance

5.1 Environmental permits

The WUR organisational units are spread across 23 sites and clustered in complexes for which environmental permits have been granted. The permits for the WUR complexes and sites are explained in Appendix 4.

In 2022, the following permit-related activities took place at the complex level:

- *Lelystad WUR complex*: in preparation for the expected entry into force of the Environment Act, in 2022 the umbrella permit was revised and the nitrogen deposition was mapped out. An Activities Decree (*Activiteitenbesluit*) notification has been accepted for the installation of a diesel tank as part of an emergency power supply system. A water permit has been issued for a discharge facility from the transformer substations.
- *Marwijksoord*: following the relocation of a barn from Valthermond, the Activities Decree notification has been renewed.
- *Bleiswijk*: an Activities Decree notification has been accepted for the installation of a portacabin as a temporary office facility.
- *Wageningen Campus*: in 2022, in anticipation of the expected entry into force of the Environment Act, the revision of the environmental permit started.

5.2 Quality assurance systems

All organisational units work according to the statutory guidelines. Tasks which are part of environmental-related processes are established and safeguarded by a certified or accredited quality system. The organisational units are nevertheless free to determine whether and to what extent they work with such a system. The unique culture of the unit and the wishes or expectations of employees or customers can determine the choice for a (certified or accredited) quality assurance system. Table 5-1 gives an overview of the systems used by different WUR organisational units.

5.3 Safeguarding compliance

To remain compliant with legislation and regulations, it is important to keep track of any changes on a structural basis. Changes in legislation and regulations that are relevant to WUR are published monthly in Pharius, an online application provided by Borger & Burghouts. The Compliance project group has developed a method to assess changes in legislation and regulations in the organisation and to implement these changes if necessary. WUR is thus demonstrably compliant in terms of updating the registry of requirements based on health and safety and environmental laws and regulations. Establishing regulatory safeguards for the new ATES facilities continued. Staff from the QHSE column attended Pharius training courses.

Table 5-1 The quality assurance systems in use by the organisational units

Organisational units	Systems	Explanation
AFSG	ISO 17025	Accreditation testing for WFBR testing services
ASG	ISO 9001	For WMR, WBVR and WLR; Statutory research tasks CGN and CVO
	ISO 17025	For WBVR accreditation testing; for WMR accredited laboratory (scope L097)
	ISO 17043	For WBVR, accreditation of round robin tests.
	AAALAC	For WBVR Animal Welfare (DB)
ESG	GMP	For WBVR Batch control
	ISO 9001	For WENR and the statutory research tasks (WOT) of N&M
	ISO 14001	ESG-wide
	ISO 26000	ESG-wide (CSR)
PSG	ISO 31000	ESG-wide
	ISO 17043	WEPAL (WU), accreditation of round robin tests
	ISO 9001	For the experimental farms Unifarm and Bleiswijk and the statutory research tasks of CGN PGR.
	HACCP	For experimental farm at Lelystad
	ISO 17025	For WUR Lightlab
SSG	GLOBAL-GAP	For experimental farms of <i>Open Teelten</i> (field crops)
	SKAL	For Unifarm; organic farming unit
	VVAK	For Unifarm; starch potatoes, sugar beet, and cereals, seeds and pulses
WFSR	ISO 9001	For the units WECR, WCDI and the statutory research tasks of CEI
	ISO 17025	In process
	ISO 17043	Accredited laboratory L014
		Accreditation round robin tests

5.4 Internal and external audits

Organising and conducting internal and external audits provides insight into compliance with legislation and regulations for each organisational unit and for WUR as a whole. In 2022, internal audits were conducted by the Facilities and Services/V&H section Safety & Environment or by the organisational units themselves. These include internal controls permits and certifications (including ISO), but also topics such as energy conservation, biological safety and radiation. Enforcement audits were also carried out by the competent authority, and external audits of the organisational units' quality systems (see table 5-1) by certifying bodies or the Dutch Accreditation Council. Additional reporting included: the sustainability report for the competent authority, reporting under the European Energy Efficiency Directive (EED) and the annual radiation hygiene report. At the end of 2022, the Netherlands Standardisation Institute (NEN) provided training for internal auditing as part of ISO 19011 certification.

The competent authority carried out supervisory and enforcement checks at various locations in Wageningen, Lelystad and at Dairy Campus Leeuwarden in 2022.

No significant fines or penalties were imposed for environmental violations in 2022. [The National Contact Point \(NCP\)](#) did not report that WU or WR violated the OECD guidelines.

5.5 Complaints and incidents

Complaints and incidents are registered centrally, including a problem analysis, follow-up and the measures to reduce and prevent direct consequences. If necessary, complaints and/or incidents are reported to the competent authority.

WUR uses an incident monitor for reporting incidents. Four environmental incidents were reported in the monitor in 2022. In addition, two complaints were received. Environmental incidents and complaints are explained in Appendix 5.

5.6 Compliance with environmental legislation and regulations

Nature

To comply with nature-related legislation and regulations, a quick scan of flora and fauna is carried out in case of planned demolition of buildings or major renovations. A habitat suitability assessment is carried out in the immediate vicinity. Based on this, an exemption procedure combined with mitigation measures will follow if necessary. A tree survey is also carried out in advance (year-round) of proposed tree felling to avoid disturbing protected nests of birds, bats and squirrels. For solitary trees, WUR considers whether there are suitable cavities for protected species of animals or birds. If this is the case, the necessary measures will follow.

In Lelystad, an external consultancy bureau was commissioned to investigate the consequences of the work on the main building at Edelhertweg 1. They concluded that the site does not have any suitable habitats or hibernation/breeding areas for protected species. To avoid negative effects on bat flight paths during construction, no light should shine on the watercourse.

Due to renovation, demolition, new construction and other changes to infrastructure a great deal has

changed on the WUR grounds. These changes sometimes make it necessary to fell trees. Diseased trees and/or trees that may pose a hazard to their surroundings, for example during storms, are also felled. Felling permits applied for in 2022 are included in the overview of permit processes (Table B4-3 in Appendix 4).

The planning for Campus-East has specified the desired future image for the green structure, in relation to the campus and its surroundings. The plans no longer provide space for the current dawn redwoods. In anticipation of the green structure and to avoid creating a hazardous situation, a felling permit has been requested for 11 dawn redwoods (*Metasequoia glyptostroboides*).

Due to damage from a severe spring storm it was necessary to cut down five poplars (*Populus canadensis*) near Leeuwenborch on Hollandseweg in Wageningen. At the Sinderhoeve on Telefoonweg 77 in Renkum, 15 trees had started to die in 2020 due to the extreme drought in 2018 and 2019. This posed a danger to traffic and local residents during storms. Restoration measures were no longer possible, so the following trees had to be felled: 4 beeches (*Fagus sylvatica*) and 11 Italian poplars (*Populus nigra var. Italica*).

Asbestos

The use of asbestos in buildings has been banned since 1994. WUR still has some older buildings in use that may contain asbestos. Such locations have been mapped out in recent years. In many of the buildings, the asbestos has now been remediated and management plans have been drawn up to minimise health risks. For each location, an ecological survey in compliance with the Dutch Nature Conservation Act is part of the remediation process.

WUR has described its approach to asbestos in an asbestos policy. Key points from this policy are:

- *Buildings with asbestos roofs:* although the law banning asbestos-containing roofs was rejected in the Senate on 4 June 2019, WUR will continue with the remediation of such roofs. Most asbestos-containing roofs have now been remediated and replaced. For buildings that may be adapted or redeveloped, remediation will take place at that time.
In 2022, as part of planned renovation and renewal, asbestos was removed at the Hengelo (Gelderland) site and in buildings on Haarwal in Wageningen.
- *Buildings with asbestos (other than roofs) currently in use:* management plans have been drawn up for these buildings and there are currently no plans or intentions to convert, renovate or demolish them on a large scale. Management plans are monitored once every three years and amended if necessary.
- *Buildings with asbestos that are surplus and/or scheduled for demolition:* no remediation work took place on these buildings in 2022.

Soil

In 2022, two soil tests were carried out, one near Runderweg 6-8 in Lelystad following the leakage of manure from a manure bag and one near the transformer station at Runderweg 5 in Lelystad following diesel leakage. The site at Runderweg 5 is now available for use with a clean soil statement.

Noise

In 2014 the municipality of Wageningen drew up a noise vision and the zoning plan *Geluidruimteverdeling Wageningen Campus e.o.* (noise allowance distribution for Wageningen Campus and environs). This offers local residents the security that noise pollution will not increase above current levels, while also creating flexibility and clarity as regards the distribution of noise allowance for businesses and organisations

within this area, including Wageningen University & Research. In 2022, the municipality published an update of the 'noise vision' and the zoning plan, which are expected to be adopted by the municipal council in 2023. Both documents are used as a framework in the development of Wageningen Campus, including the recent changes to building options at Wageningen Campus East.

WUR systematically assesses the acoustic consequences of planned or implemented changes in the operations (including buildings and activities) of Wageningen Campus and De Dreijen. In addition to checking if projects adhere to noise levels as stipulated in license regulations, since 2014, projects are also checked for compliance with plot values as stipulated in the "Geluidruimteverdeling Wageningen Campus e.o." zoning plan.

In 2022, no noise reports were made for Wageningen Campus or the De Dreijen complex. However, a survey of the acoustic situation of WUR complex at Lelystad began as part of the revision of the Wabo environmental permit.

Air

Regarding atmospheric emissions, regular activities have been performed.

Nitrogen deposition

Since the PAS rulings by the Council of State on 29 May 2019, nitrogen issues are also more emphatically a concern in WUR's operations. For the purpose of the intended revisions of environmental permits, AERIUS calculations were also used to map out the nitrogen deposition of existing sites (e.g. the WUR Lelystad complex and Wageningen Campus).

5.7 Research in accordance with legislation

Biosafety

The 2013 GMO Decree and Regulations came into force on 1 March 2015. For Level I and II-k 'contained use', the permit requirement has been replaced by a notification requirement. Users conduct their own risk assessment and determine which additional regulations apply when working with genetically modified organisms (GMOs). For the other containment levels, permits are required for risk level IIIv and above. At level III, all activities specified in permits (or extended permits) are included in the GMO database (GRiMaS).

About 20 extensions of activities involving Level I GMOs were provided with a risk assessment in GRiMaS by the Biological Safety Officer. Responsible Employees and Research Leaders have been involved in internal audits for working with GMOs and updating notifications. The Level II organisms of all Plant Sciences Group (PSG) licences under the GMO Regulation 2003 have been classified into groups of equal risk, and 'framework' applications have been submitted to Bureau GMO for the corresponding level II notifications. Together with the Research Leaders and Responsible Employees, it was carefully considered which activities should be included in 'framework' applications. These informative interviews are also GMO audits to check whether all activities and intended activities have been reported to the Biological Safety Officer.

GRiMaS, the web-based database for risk management systems, has replaced the MS Access stand alone GMO database. Bureau GMO and the Human Environment and Transport Inspectorate (Inspectie Leefomgeving en Transport) approved the integral risk assessment as a replacement for the standard forms of Bureau GMO. As a result, administrative operations have been simplified, reduced and partly automated.

Animal Experiments

WUR recognises that animal experiments are scientifically and societally relevant in specific cases. We endorse the Code for Transparency in Animal Testing of the Universities of the Netherlands (formerly VSNU). The WUR is therefore committed to transparency regarding its animal experiments and supports ongoing dialogue about animal testing. WUR reports annually on [animal testing](#).

Genetic resources (Nagoya Protocol)

Working with genetic material is subject to legislation and regulations, and specific documents are required. The Nagoya Protocol deals with access to genetic resources and sharing the benefits arising from their use. The Netherlands Food and Consumer Product Safety Authority (NVWA) has been designated as the monitoring authority in the Netherlands for compliance with the Nagoya Protocol.

In 2021, the Nagoya policy plan was adopted by the Executive Board, and implementation started with the corresponding multi-year plan. A WUR Nagoya Coordinator project group, consisting of legal experts and staff from the QHSE column, started working on the roll-out of the policy plan. As a result, topics such as roles and responsibilities, due diligence, risk assessment and registration have been addressed and implemented.

The project group has developed a decision tree that enables users to consider the obligations within the Nagoya legislation and regulations. In addition, a comprehensive intranet page makes all relevant information available WUR-wide. Within each sciences group dealing with Nagoya, an implementation process is now ongoing. A verification according to the PDCA cycle will be carried out in the coming year.

Quarantine materials

For being allowed to work with quarantine classified materials, the Netherlands Food and Consumer Product Safety Authority (NVWA) R&D Phyto granted permits to the Sciences Groups ESG and PSG (Wageningen and Bleiswijk locations). The requirements from these permits have been coordinated with Unifarm's Quarantine Responsible Officers, Biological Safety Officers and Managers, such as:

- Procedures according to the NVWA Phyto requirement table version 4.1 and above are in place.
- All staff appointments and experimental plans are up to date.
- Employees working with quarantine materials have been educated about the requirements.
- Regular inspections of quarantine laboratories and greenhouse compartments are carried out by managers, the head of Unifarm and the Biological Safety Officers.

Working safely (regarding the environment and human health) with GMOs and quarantine materials – and importing and exporting them – requires good communication about the complex regulations. An e-learning module 'Working safely with biological agents' is therefore being developed as one of the basic safety modules of the WUR programme for information, training & assessment. At PSG, since 2018 compliance with safety regulations by researchers and students has been part of the management assessment by the management board using a dashboard. At ESG, this assessment follows the ISO 9001 quality management and ISO 14001 environmental management standards. These tools allow the management boards of PSG and ESG to quickly see whether environmental and biosafety regulations are being closely followed.

Radiation hygiene

WUR has a complex licence under the Nuclear Energy Act (KEW) for the organisational units that use radioactive substances and devices. The general coordinating radiation officer reports annually on the implementation of the radiation hygiene policy to the WUR Executive Board and to the government bodies in charge of supervising radiation safety. As part of the Kew complex licence, inspections were carried out at all sites to check compliance with the limits for discharges to the environment (water and atmosphere).

6 Results WUR organisational units

Within the various WUR-wide frameworks for making operational management more sustainable, all units are working to improve sustainability at their sites, focusing on their role and influence as users. For example, E-teams are active at all organisational units, usually consisting of the site manager, the technical building managers and sometimes the head of QHSE or the director of operations. Energy-saving measures are aligned as much as possible with the actions from strategic housing plans and all other smaller renovations and renovations.

WUR reports on psychosocial work pressure (PSA) primarily in the Annual Report. But PSA is also related to the CSR topic of vitality. Work pressure is one of the main occupational risks at WUR. For the health, safety and environmental coordinators, PSA is an important issue and therefore an important part of the Risk Inventories and Evaluation (RI&E) process. This is why this issue is also addressed in this chapter, as part of the activities on work pressure and vitality.

Social responsibility has many facets. One is the equitable use of genetic resources, in accordance with the Nagoya Protocol. This complements the Convention on Biological Diversity and creates rights and obligations for the more than 60 countries that agreed in Nagoya in 2010 on access to genetic resources and the fair and equitable sharing of benefits arising from the use of genetic resources and/or the associated traditional knowledge. A WUR-wide project group is working jointly on the implementation of this complex protocol. In 2022, roles and responsibilities were defined and an intranet website was created. Within the Sciences Group ESG, new studies were reviewed for the first time regarding possible Nagoya obligations.

6.1 Agrotechnology & Food Sciences Group (AFSG)

Energy

AFSG works with an energy savings plan that is based on the 2020 EED audit; most of the measures in the plan were prepared in 2021 and implemented in 2022. The key measures in this respect are the following:

- After taking stock in 2021, AFSG replaced all eligible old refrigerators and -20 freezers with energy-efficient ones in 2022.
- The replacement of conventional lighting by LED lighting takes place at logical times, such as when rooms are being renovated or converted.
- We currently use heat recovery in a number of buildings. At other locations, this measure is implemented at logical times, such during renovation or when an installation is being replaced.
- In Phenomea, significant energy savings have been achieved by recovering heat from the climate chambers, which is then used to heat the building. As a result, gas consumption has been reduced by more than half.
- A number of buildings, such as Impulse and Innovatron, are suitable for installing PV panels. Panels are expected to be installed here in 2023.
- For the other buildings, work has started on the further implementation of the solar panels plan.
- In Helix and Phenomea, gas boilers have been replaced by electric boilers or electric instantaneous water heaters.
- AFSG has been actively raising awareness and providing information on the benefits of keeping fume hoods closed when not in use. Fire Safety Office reports of fume hoods being unnecessarily left open after working hours were down by 90% in 2022 compared to previous years. By keeping the fume hoods closed, we structurally limit heat loss and reduce energy consumption.
- During the Christmas period, building occupancy is low, so it has been decided to close the AFSG office buildings Impulse, Axis T and Axis-Y completely during this period. The other AFSG buildings were open on the weekend during over the Christmas period.
- Comfort hours of all AFSG buildings were modified again in 2022. The buildings are now heated only between 8 AM and 5 PM.
- We insulate the façades and roofs of various buildings if a renovation or large-scale conversion

is planned **and** if measures are necessary to connect to the ATES.

- The 'freezer challenge' was completed in 2022. Where possible, -80 freezers were set to -70.

Waste and circularity

AFSG is committed to improving the separation of waste streams and aims to increase the waste separation rate of 65% through various pil/ots. For example, in 2022 a pilot project was launched to separate plastic laboratory waste into sub-streams. A container is now available for the collection of white styrofoam.

Mobility

AFSG wants to facilitate hybrid working as much as possible and has therefore invested in facilities to make hybrid working easier. AFSG actively encourages travelling by train rather than by car or plane. Employees can use the NS Business Card when travelling in the Netherlands and surrounding countries. AFSG aims to increase train travel by 5% and reduce air travel by 5% in the coming years.

New construction and renovation

Despite the increase in hybrid working, there is still a lack of space due to expansion of staff. Also, the current Tech and Food halls do not meet – or barely meet – the requirements (statutory and otherwise) for Food & BioBased research in Wageningen. Several renovations and the construction of two new buildings are planned in the coming years. The new building consists of Tech-N and the Microbiome Centre, where all research related to microbiology will be concentrated. The renovation of Axis Z is planned first. During renovation and new construction, sustainability is an important theme.

Water

Periodic sampling of wastewater in 2022 revealed exceedances of heavy metals, which was probably caused by reflux due to subsidence in the sampling pit. The sampling pit was drained and remedial work started. In 2023, it will become clear whether the subsidence indeed caused the exceedances. In addition, the procedure for proper disposal of solid and liquid chemical laboratory waste has been improved and widely communicated.

Vitality

- In 2022 extra attention was also paid to work pressure. Employees were offered work pressure consultations with the in-house medical officer and/or occupational social worker. In addition,

workshops on work stress and staying balanced were provided through Vital@Work.

- In cooperation with PauseXpress, posters with exercises were hung on the energy-saving airlock doors of Axis, Helix and Impulse during the winter period to encourage employees and visitors to keep moving even while waiting.
- P&D interview The 'good interview' was introduced by HR AFSG in all groups, with vitality as a standard part of this interview cycle. Feed-forward training sessions for managers were facilitated in this regard.

Quality

Quality assurance (QA) was transferred to the HSE department in October 2021, which was renamed as the department of Quality, Health, Safety & Environment (QHSE). In the coming years, the QA manager will focus on implementing the ISO 9001 quality system for WFBR, ISO 17025 accreditation and coordinating the data stewards. Further implementation of the Nagoya Protocol is scheduled for 2023.

RI&E

The RI&Es are carried out WUR-wide with the RIE manager. However, this programme is no longer satisfactory. In 2022, QHSE AFSG reviewed various RI&E tools and launched a pilot with the MakeOnline programme. After completion of the pilot project, it was decided not to continue with MakeOnline. The QHSE department is currently considering the plan of requirements for a new RIE tool.

Instructions and training

During the coronavirus pandemic, the mandatory security briefing was made available digitally via Brightspace. This security briefing needs to be updated. There also appears to be a need for in-depth safety training in several groups. QHSE has therefore drawn up a training and information matrix of quality and safety training courses. The aim is to structure the training and information process so that new employees receive the necessary training and information during their introductory phase. We have also improved the provision of information on the QHSE intranet page.

6.2 Animal Sciences Group (ASG)

Energy

On Wageningen Campus:

- Solar panels have been installed on the roofs of Zodiac and Carus (construction 2020-2021).
- Fume hood ventilation now has a high-low control. The replacement of fans is included in lab renovations under the Strategic Housing Plan.
- Conversion to LED lighting will be included in the specifications of the Strategic Housing Plan.
- A start has been made on replacing high-power equipment with more energy-efficient variants.
- Together with WFSR, Wageningen Livestock Research uses a central cold storage/deep freeze facility (including -80°C storage).
- The connection of building Zodiac to the ATES loop (only to the cold loop for now) has been approved.

At Wageningen Bioveterinary Research in Lelystad:

A Sustainable Long-Term Maintenance Plan has been drawn up, incorporating the planned and additional investments for energy-saving measures. With the right investments over the next six to seven years, significant savings in operating costs can be achieved fifteen years from now. Key points are the implementation of measures that save energy directly (such as heat extraction from local processes) or are aimed at local generation (with a solar panel array and solar boilers) and measures during planned renovation (e.g. abiotic humidification). Concrete actions:

- Realisation of solar boiler at the Houtribweg site (for showers).
- Investment in Nordic (cooling/freezing island).
- Conversion of site lighting to LED at the Houtribweg site.

At Wageningen Marine Research at the Yerseke, IJmuiden and Den Helder sites:

- A survey was conducted about energy-saving measures for all sites.
- Wageningen Marine Research participates in the central Energy team and the ASG energy team.

- Regarding sustainability, a project group has been appointed and various measures have been introduced.
- A housing plan has been approved by the Executive Board.
- Together with WUR real estate, a plan is being prepared to implement energy-saving measures at the building in IJmuiden.

Leeuwarden site, Dairy Campus:

Based on the EED audit report, follow-up research will take place on planning and implementing the indicated measures. Cost-benefit analysis is under way for some of the measures. Capacity (project management) and resources (investment budget) need to be arranged before implementing the measures.

Location De Marke:

The mandatory report on the certified list of measures for the agricultural sector has been submitted to the competent authority.

Biodiversity

Leeuwarden site, Dairy Campus:

- Participation in greening of farmyards: planting native species of fruit/deciduous trees and thickets.
- Restoration of marsh grassland for meadow bird management (since 2019).
- Bird-friendly mowing with delayed mowing date for 7 ha of pasture.

Other

To encourage environmental awareness among employees, environmental performance was communicated both at Wageningen Campus and Wageningen Marine Research sites. At the Leeuwarden site, Dairy Campus, promising ideas for sustainability have been defined and sustainability criteria are being applied in arranging contract work.

6.3 Environmental Sciences Group (ESG)

Green Impact

In 2022, ESG staff from the GREEN-ESG Green Impact team and ESG management worked hard to make sustainable environmental changes and improvements in the workplace. All environmental and sustainability topics were covered. Many ideas were submitted to the team from the entire ESG.

One example: A no-tobacco day was held with the theme: cigarette butts pollute the environment. The

team visited locations where people still smoke despite the campus-wide smoking ban. Discussions were held with smokers about the no-smoking policy at WUR. While the no-smoking policy on the campus is clear, it has not helped reduce cigarette butt pollution. Despite the coronavirus pandemic, thousands of cigarette butts continue to litter the campus. Therefore, the team handed out free cigarette butt bags and asked people to use them. Follow-up projects such as mapping the

environmental impact of cigarette butts and education have started.

Energy

Remarkably, no energy was saved in ESG buildings in 2022. Indeed, the corona measures, especially the extra ventilation that was required in buildings, resulted in higher gas and electricity consumption. Various actions were continued, such as purchasing energy-efficient equipment and implementing a 100% LED lighting plan. Based on data from NEN 3140 inspections, we made a list of refrigerators/freezers to be replaced. Based on this list, we aim to take action by 2023 to replace these refrigerators or freezers with energy-efficient ones, or, if possible, to do away with them altogether.

Waste

Waste separation has improved due to the separate collection of plastic. Interestingly, the increase in remote working resulted in 50% less paper waste. This again demonstrates the impact – both positive and negative – of the corona crisis. Waste separation within ESG lags behind the WUR-wide average.

Mobility

Business air travel has the most environmental impact. Partly due to actions by the GREEN-ESG team to make employees more aware of their travel behaviour, there was a downward trend in air travel in 2019. Due to coronavirus measures, air travel was almost non-existent in 2020 and 2021. In 2022, air travel increased again but has remained well below the pre-pandemic levels. The awareness campaign and the increase in digital meetings have therefore had a clear impact. In addition, online meeting facilities have been greatly improved. As for commuting, the environmental impact decreased due to the lower office occupancy rate of 30-50% as a result of the corona pandemic. The pandemic measures also resulted in a decline in the use of private cars for business travel. The environmental impact of transport is expected to decrease further in the future due to the WUR-wide mobility plan combined with the remote working policy.

6.4 Plant Sciences Group (PSG)

Energy

At PSG's Wageningen locations (on Campus North), the ATES system with its the associated energy centre was installed in 2020, and a number of Unifarm buildings (Insect Greenhouse, Klima, Nova, Agros and Greenhouse Red) were connected to the system in 2021. Preparations for connecting Radix West to the ATES system began in 2022 with completion expected in 2023. The new insect greenhouse was commissioned in 2022 and fully equipped with energy-efficient LED lighting, as was the Greenhouse Red, completed in 2021. The new PSG buildings Nova, Greenhouse Red and Plant Eco-phenotyping Centre (NPEC) comply with the BENG standard.

The solar panels on roofs of PSG buildings generate about 1,500 MWh of electricity annually. The wind turbines in Lelystad produce about 65,000 MWh of electricity annually.

Water and wastewater

In the [KAS2030](#) in Bleiswijk (an advanced experimental greenhouse), all drain and condensate water is recirculated. This means that no nutrients are lost and no residues of plant protection agents enter the sewer.

Flora and Fauna/Biodiversity

The various measures on experimental farms to support biodiversity, insects and birds were continued. On almost all experimental farms, green spaces have been created for insects and birds. This involves collaboration with nature organisations and environmental organisations.



Innovative and challenging research and education

Innovation is needed to find solutions and make systemic transitions. To create knowledge about sustainable plant resources for a healthy world, our research and education focus on innovating and integrating knowledge in agrosystems and plants

(including smart plants). A systems approach is central to the research at all levels, from the genetic or cellular level to farming and global food systems. Our approach is strongly focused on linking the understanding of basic processes and how this is used in a real-world setting.

6.5 Social Sciences Group (SSG)

SSG is main tenant of the Leeuwenborch building and subtenant of one floor in Radix, one floor in Atlas, office space in Lelystad and small office spaces in Forum. SSG Wageningen Economic Research (WEcR) also rents two floors in the WTC in The Hague and small office spaces off-campus in seven business centres across the Netherlands. In this environmental report SSG focuses mainly on the Leeuwenborch building where SSG is the main tenant. When it comes to encouraging sustainability behaviour, SSG addresses all its employees.

Waste and circularity

Waste collection has remained unchanged from the previous year. Waste is separated. SSG will cooperate with the WUR goal of reducing waste (50% by 2030) and enhance circularity where possible. Site management in particular plays a major role as part of procurement and contracts, especially for sizeable purchases, such as multifunctionals (large printers). WUR's goal is to reduce the number of machines and the number of prints. New multifunctionals were ordered in 2022, but could not be delivered due to the shortage of chips. With the new multifunctionals (to be delivered in February 2023), a substantial reduction will be achieved; in the Leeuwenborch, the number of printers will be reduced from 27 to 16. In total, six tabletop printers and five multifunctionals will be eliminated. A raw materials analysis of residual waste was also carried out to identify opportunities for reducing the flow of residual waste.

Catering

Sustainability requirements are being included in the specifications for a new tender for catering in the Leeuwenborch building. Talks have been held with the current caterer to improve waste separation in the kitchen.

Building and renovating

Development of plans for the Leeuwenborch building continued in 2022, including investments and renovation. The Management Board will also include sustainability aspects in the requirements package.

Energy

The E-team, which consists of the site manager, technical building manager and the health and safety adviser, also met four times this year, with the director of operations attending once at the beginning of the year. The aim is to discuss priorities and progress on the planned actions.

Leeuwenborch now has energy label B and must achieve energy label A by 2030. A study has shown that installing a heat pump will be sufficient to meet this obligation. This work is planned for the second half of 2023. The installation of energy-saving LED lighting in the traffic areas of the Leeuwenborch was delayed due to staffing problems at the supplier. The LED lighting is expected to be delivered in early 2023.

WUR measures in 2022 to reduce energy use and help reduce CO₂ emissions consisted of the following:

- set the heating temperature no higher than 19 degrees. This nationwide measure, adopted by WUR, started in the summer but only took effect from November 2022.
- Closing the Leeuwenborch building during the two-week Christmas period. SSG has saved about €19,000.

In 2022, the E-team developed ideas to save energy, for example by changing the opening hours and the times the building is heated. We will continue to develop these ideas in 2023.

Green Impact Team

The aim of the SSG Green Impact Team is to help make the working environment more sustainable. They do this by advising the SSG Management Board, generating ideas, implementing actions and influencing behaviour of individual users (staff and students). The basic team consists of the site manager, the policy officer and the health and safety adviser. Until the summer holiday the team included two international students – the Green Impact Project Assistants (GIPAs). Due specifically to the students' efforts, the team was able to contribute to the sustainability actions.

At the request of the director of operations, the team's focus is on actions that can reduce CO₂ emissions, in combination with mobility. This covers commuting and travel for work, especially air travel. We work closely with the CSR policy officer (Facilities and Services), we comply with WUR's travel policy, and we involve the users in these activities.

We have also focused on buying rechargeable batteries for computer peripherals such as keyboards and have enabled charging at the office. After the audit at the end of May, our efforts were rewarded with the silver certificate, as part of the WUR-wide competition of the Green Impact Programme.

6.6 Wageningen Food & Safety Research (WFSR)

Waste

Within WFSR, we are constantly looking at how to improve waste separation. Peanut slurry, which remains after analysing samples, is a large residual stream that is currently dumped into the slurry pit. Together with PreZero and Witteveen+Bos, in 2022 we launched a study on how this waste can be reused. We are also looking at whether less rinse water can be used so that less waste is generated and at the possibilities of improving the separation of hospital waste. For example, the new work instruction (SOP) for waste disposal specifies that animal sample material and animal feed that contains animal by-products can be disposed of as animal by-products (Cat. 1). Fruit and vegetable samples can be disposed of as organic waste.

Water and wastewater

Some laboratory equipment in Vitae is water-cooled. Reuse of cooling water has improved in recent years and has cut water consumption by about half. When purchasing new equipment, options for reusing cooling water are considered.

As in 2021, excessive copper contamination was detected in wastewater in 2022. It was investigated whether there had been any changes in procedure or incidents. The cause of the exceedance appears to have been identified. Measures have been taken so that this discharge no longer occurs. However, further investigation will be needed to ensure that copper discharges (deliberate or otherwise) no longer take place.

Energy-saving measures

The indoor climate of Vitae building was fine-tuned. During the corona pandemic, ventilation in the building was closely examined in relation to the required measures. This showed that the ventilation rate in many laboratories was higher than the prescribed 5 to 8 times. A study showed that in some cases the ventilation rate can be set lower at night. This will therefore be done wherever possible.

Furthermore, a project will start in 2023 to see where energy can be saved within a laboratory. This involves looking at laboratory equipment as well as building-related installations. All plug-in devices used in laboratories will be examined in this project.

CSR project group

A CSR project group is active within WFSR, consisting of employees from various business units, the building manager, head of QHSE and an Safety, Health & Environment coordinator. One of the activities of this project group is to raise awareness about energy and chemical consumption within the organisation. An annual clean-up campaign has been organised to clear out freezers and refrigerators, among other things. This ensures that the refrigerated/freezer storage capacity can be reduced, which has a positive effect on energy consumption.

The merger and restructuring of the teams in WFSR prompted a change in the composition of the CSR project group so that all teams and units are equally represented. We also made sure that employees from both former institutes are participating. The CSR project group actively seeks input from the organisation, including ideas for reducing energy consumption, by placing a suggestions board in the building. A number of ideas have already been submitted from within the organisation.

Vitality

- Extra attention was paid to work pressure. In the past, training was offered to all employees on how to recognise and influence stress due to work pressure. This point is also included in the introduction for new employees.
- Information on setting up the home or office workplace to prevent arm, neck and/or shoulder complaints was provided to all employees via the intranet. This is also part of the introduction for new employees.

6.7 Facilities and Services (FB)

Facilities and Services has integrated CSR and sustainability into all its processes. Making our services more sustainable is therefore a key objective. Themes in this area include inclusiveness, sustainable employability and vitality, safety, energy, sustainable mobility, catering, waste management (including food waste) and procurement. Efforts are being made to strengthen links with research and education: WUR knowledge can be better utilised to make CSR more visible and tangible on campus.

Facilities and Services facilitates many issues related to WUR's operations, and thus contributes to all the environmental themes and sustainability ambitions, obviously in consultation with the organisational units. Together with students and staff, creative solutions are being sought to make all visitors to the campus perceive that we work in a sustainable and socially responsible way.

Facilities and Services supported Green Office Wageningen initiatives and sustainability projects in 2022. It also facilitated the Green Impact programme. In 2022, Facilities and Services continued to participate with its own team.

Energy

Development of WUR-wide vision on energy transition has continued. The rough outline of the energy transition (approved by the Executive Board in December 2021) was developed into an implementation agenda in 2022.

Projects on renewable energy and energy conservation were accelerated due to the energy crisis triggered by the war in Ukraine. This was done in part by connecting buildings to the ATES loop on Wageningen Campus earlier than planned and by taking additional energy-saving measures. The closure of the buildings during the two weeks around the holidays in December/January had a large impact.

Food & Beverage

The new strategy on healthy and sustainable food and drink, the Vision for Food & Beverage, was launched in 2022. The vision, with much attention to sustainability themes such as the protein transition, and reducing food waste and packaging, is the starting point for tenders for restaurant facilities and catering.

Biodiversity

Park management involves close cooperation with researchers and students. Ecologists and landscape architects provide advice on topics such as landscaping and green space management. This included advice about the construction of Landscape Garden 2120 and the connection of the green area around Omnia to the wet nature garden.

Inclusion and diversity

When possible, employees are hired through Jops, the programme within WUR that facilitates the employment of people who are disadvantaged in the labour market.

Vitality

We contributed to programmes promoting the vitality and health and safety of employees and students through initiatives such as Vital@Work (in cooperation with Sports Centre de Bongerd) and the e-learning series Safety@WUR.

Sustainable mobility

Mobility services through Mobility as a Service were operational in 2022. Shared electric cars were commissioned. The introduction of shared bikes was planned but unfortunately has not yet materialised due to supply problems. Where possible, electric vehicles have been purchased for support services.

Building and renovating

As part of the approval process, projects of the Real Estate and Housing department were assessed for environmental aspects and sustainability. Preparations began on a vision/policy on sustainability for the built environment.

In May 2022, the new conference centre *Omnia* opened its doors on Wageningen Campus. *Omnia* is intended for meeting and dialogue



Appendix 1: CSR Agenda

A. The themes of WUR's CSR Agenda

Table B1-1: Themes and goals of the CSR Agenda

Nr.	CSR theme	Ambition
1.	Research and education designed to make a contribution to societal challenges	To make a contribution to global social challenges (e.g. themes such as food security, safety, health and liveable cities).
2.	Sharing and disseminating knowledge	To increase the social impact of research by transferring acquired knowledge internally and externally, for example by engaging in public debate.
3.	Innovative and challenging research and education	To stimulate research projects and education by tapping into new themes with a view to creating a positive social and/or environmental impact. By investigating new themes, we create additional impact.
4.	Vitality	To guarantee optimal working conditions. The mental and physical health of employees and students is protected and we as much as possible promote the wellbeing of our employees and students.
5.	Ethically responsible research	To communicate transparently and with integrity about research processes and findings. Responsible use of research resources (such as test animals, pesticides and GMOs).
6.	Climate-adaptive environment	To make our own buildings and environment climate-adaptive, for example by rolling out our own innovations (such as sound buildings, green roofs, rainwater buffers, biodiversity retention).
7.	Entrepreneurship and applied Research	To convert knowledge into innovations and to quickly translate scientific breakthroughs into actual practice and education. Stimulate students to display entrepreneurship and, for example, translate in-house and other research into actual practice (for instance through means of spinoffs).
8.	Waste and circularity	To minimise the use of new raw materials and reduce residual waste. By optimising reuse and opting for recyclable products, the separated collection of waste flows and countering food waste.
9.	Responsible collaboration	To collaborate with national and international partners in achieving our goals (research for and towards society). To pursue a cohesive policy relating to the political establishment (local, national and EU), society, the business community and NGOs.
10.	High-impact partnerships	Partnerships with, for example, the business community and government bodies to increase the positive impact of research and education.
11.	Responsible economic policy	To make responsible use of public funds and to communicate transparently about this. Sustainable income from research and education to be able to achieve (new) strategic goals.
12.	Sustainable energy	To contribute to the energy transition through the in-house generation of energy and by making energy more sustainable, and by reducing energy consumption in our buildings and on our grounds.
13.	Chain responsibility	To stimulate sustainability in the chain by maximising local procurement and requiring suppliers to comply with social and environmental criteria (in terms of their business operations, as well as in their products and services).
14.	Development and training	To invest in the development of employees by actively offering professional training and study programmes. To facilitate an enjoyable work environment in which everyone's talents are optimally used and developed.
15.	Diversity in staff and students	To realise an inclusive work environment with equal opportunities for every employee and student. Focus on talent and a proper reflection of society.
16.	Sustainable mobility	To make the mobility options for employees and students sustainable as a means of reducing the emission of CO ₂ eq.
17.	Flexible learning paths	To give students the flexibility of creating their own study programme, for instance, by providing sufficient room for optional courses, experience abroad and innovative study materials.

B. Explanation of value chain model

Wageningen University & Research (WUR) wants to ensure that the knowledge and results from education and research benefit society. Besides research and education, value creation is the third pillar in the WUR value chain.

Research is conducted at the graduate schools of Wageningen University and as part of the research programmes of the Wageningen Research Foundation. By means of publications in scientific journals, policy memorandums and patent applications, the knowledge gained in our research is disseminated to government agencies and public bodies, industry, citizens and societal organisations. In this way, the research value chain is intertwined with government, industry and society.

The value chain of education starts with the education of Dutch and international students at Wageningen University. The students take the knowledge they acquire during their bachelor's or master's degree programme with them to their future work environment in the Netherlands and the rest of the world. WUR maintains active contact with its [alumni](#). Some alumni find work at WUR, for example as PhD students, researchers or members of staff.

WUR works actively to involve partners in CSR and sustainability. This explicitly concerns the total value chain, in addition to human capital and suppliers, as well as partners in research and education. This means that sustainability requirements are integrated into contracts with suppliers. WUR's chain partners are mainly active in the Netherlands, where WUR is also located.

WUR pays clear attention to CSR within its processes. This takes into account international guidelines, such as the UN Guiding Principles and the OECD Guidelines, and WUR of course does not do business with companies whose activities/business operations are not socially responsible, unethical or illegal.

C. Materiality analysis

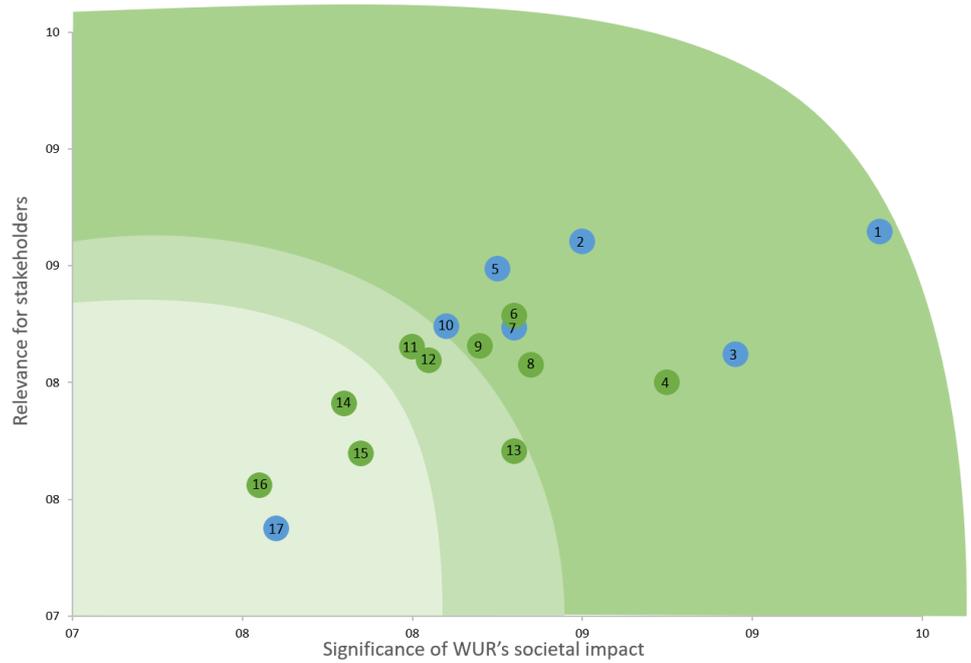
Priorities in WUR's CSR policy are based on materiality. Material topics are topics that are important for our internal and external stakeholders and on which our organisation can have a real impact. Where possible, the material topics were determined in consultation with our stakeholders.

In 2015, the CSR agenda was adopted by the Executive Board. Because it is important to regularly monitor whether the material topics are still the right ones, a new materiality analysis was performed in the first half of 2019. This analysis was based on a *long list* of possible CSR themes from the Strategic Plan 2019-2022 and supplemented with topics from other relevant policy documents. A list was then drawn up of topics that are most frequently referred to, not only in the assessed documents, but also on the internet, intranet, media and social media. Key personnel were asked to rate the subjects for relevance and their impact on our stakeholders. In addition to this internal analysis, we considered the importance of the themes for external stakeholders. The result of this assessment was the materiality matrix (see Figure B1-1), which led to the current selection of 17 themes. Like the original CSR agenda of 2015, the updated CSR agenda, based on the materiality analysis and matrix, was adopted by the Executive Board (in 2019).

A CSR agenda is not complete without KPIs to monitor progress. After all, CSR is about continuous improvement. The CPIs of the Strategic Plan are the starting points for this process. KPIs have been proposed for the priority themes that match the CPIs from the Strategic Plan. Because the CPIs from the Strategic Plan do not overlap 100% with the CSR themes there are some gaps. For these gaps additional KPIs have been defined.

With regard to the accountability about the societal impact of WUR, the delineation and scope of the sustainability report was based on the materiality analysis. The report covers the material topics of the CSR agenda for the 2022 financial year. Because the majority of the activities of Wageningen University and the Wageningen Research Foundation take place in the Netherlands, the sustainability reporting focuses on activities in the Netherlands.

#	Material themes	Average score
1	Research and education designed to make a contribution to societal challenges	9.0
2	Sharing and disseminating knowledge	8.6
3	Innovative and challenging research and education	8.5
4	Vitality	8.4
5	Ethically responsible research	8.4
6	Climate-adaptive environment	8.3
7	Entrepreneurship and applied Research	8.3
8	Waste and circularity	8.2
9	Responsible collaboration	8.2
10	High-impact partnerships	8.2
11	Responsible economic policy	8.1
12	Sustainable energy	8.1
13	Chain responsibility	8.0
14	Development and training	7.9
15	Diversity in staff and students	7.8
16	Sustainable mobility	7.6
17	Flexible learning paths	7.5



■	Research, education and value creation
■	Operations

Figure B1-1 Materiality analysis (the figures refer to the number of the CSR theme, see Table B1-1)

D. Process owners

A staff department has been designated as the process owner for each subject. The process owner will be responsible for continuing to 'roll out' each subject. Virtually all of the subjects involve the primary process. Staff departments work together on some of the subjects. See table B1-2 for an overview of the process owners and the involvement of the various WUR components.

Table B1-2 Process owners and primary process involvement

CSR theme	Staff department responsible						Involvement primary process					
	CC&M	CF&C	CHR	CSA	CVC	ESA	Facilities and Services	Chair groups	Research groups	Line management	Divisional management	QHSE sections
abbreviations: CC&M: Corporate Communications & Marketing CF&C: Corporate Finance & Control CHR: Corporate Human Resource CSA: Corporate Strategy & Accounts CVC: Corporate Value Creation ESA: Education & Student Affairs FB: Facilities and Services												
1				X		X		X	X			
2				X	X	X		X	X			
3				X		X		X	X			
4			X							X	X	X
5				X				X	X	X		
6							X	X	X		X	X
7				X	X			X	X			
8							X			X	X	X
9	X							X	X			
10	X							X	X			
11		X						X	X		X	
12							X			X	X	X
13				X			X			X	X	
14			X							X	X	X
15			X							X	X	
16							X			X	X	X
17						X		X				

X = dept. responsible/process owner; x = involved/in partnership with

E. Theory of Change CSR agenda

The CSR group worked under the guidance of experts in monitoring & evaluation from the Wageningen Centre for Development Innovation (WC DI) on a Theory of Change for the themes of the CSR agenda. The same approach was used for the CPIs from the Strategic Plan to map out the intended impact. Figure B1-2 shows the result of this process.

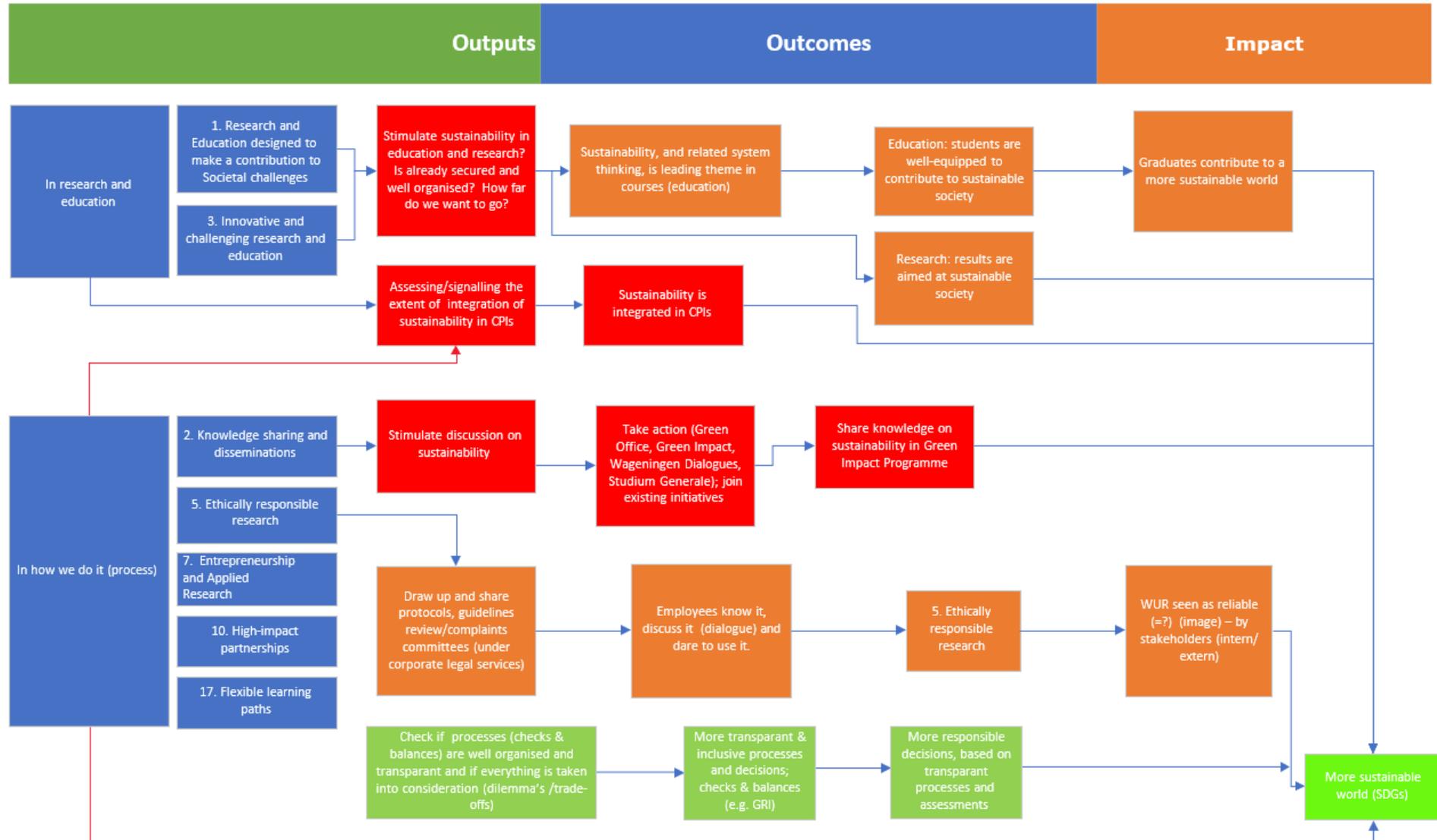


Figure B1-2: Theory of Change of the themes of WUR's CSR agenda

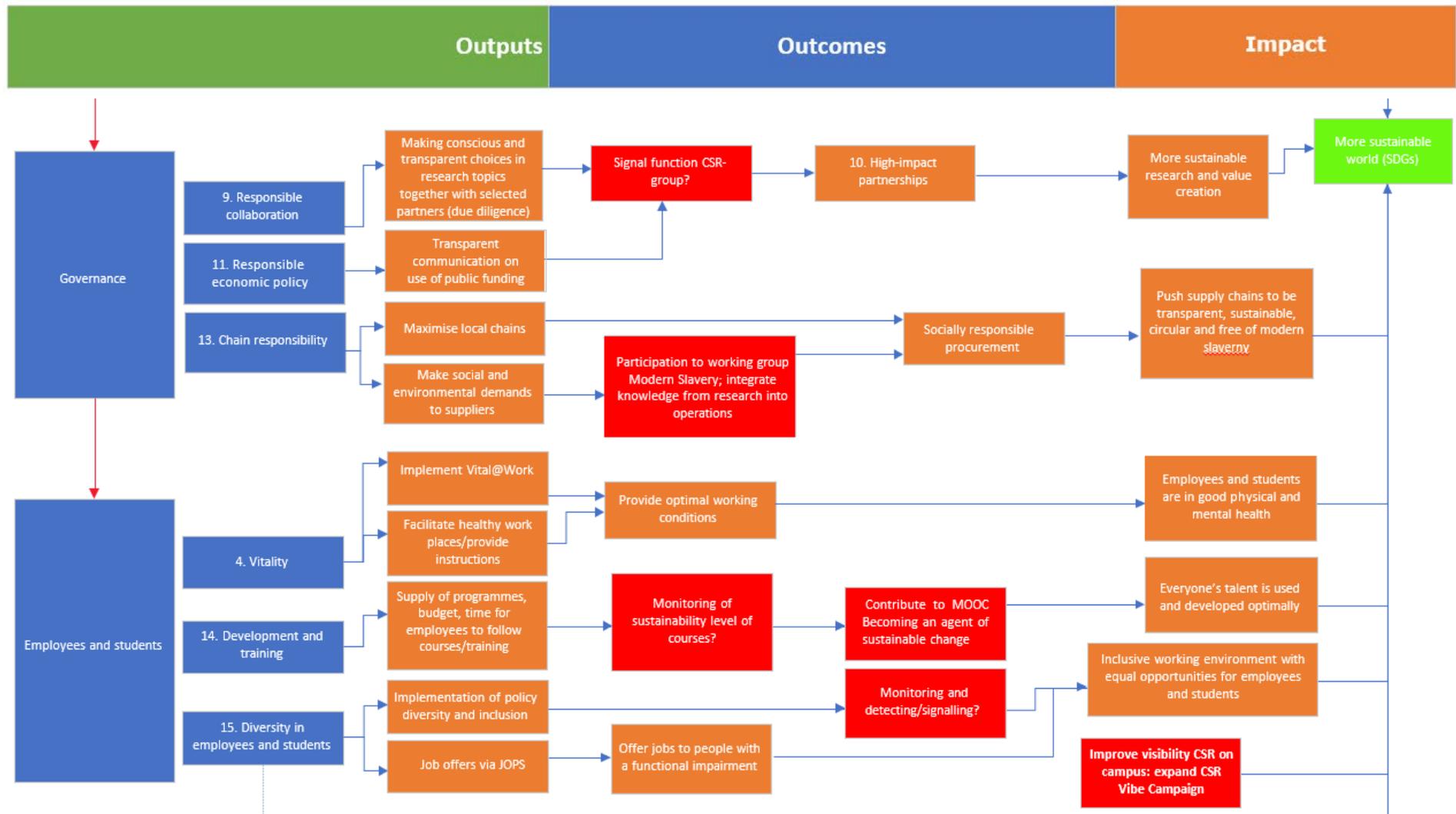


Figure B1-2: Theory of Change of the themes of WUR's CSR agenda

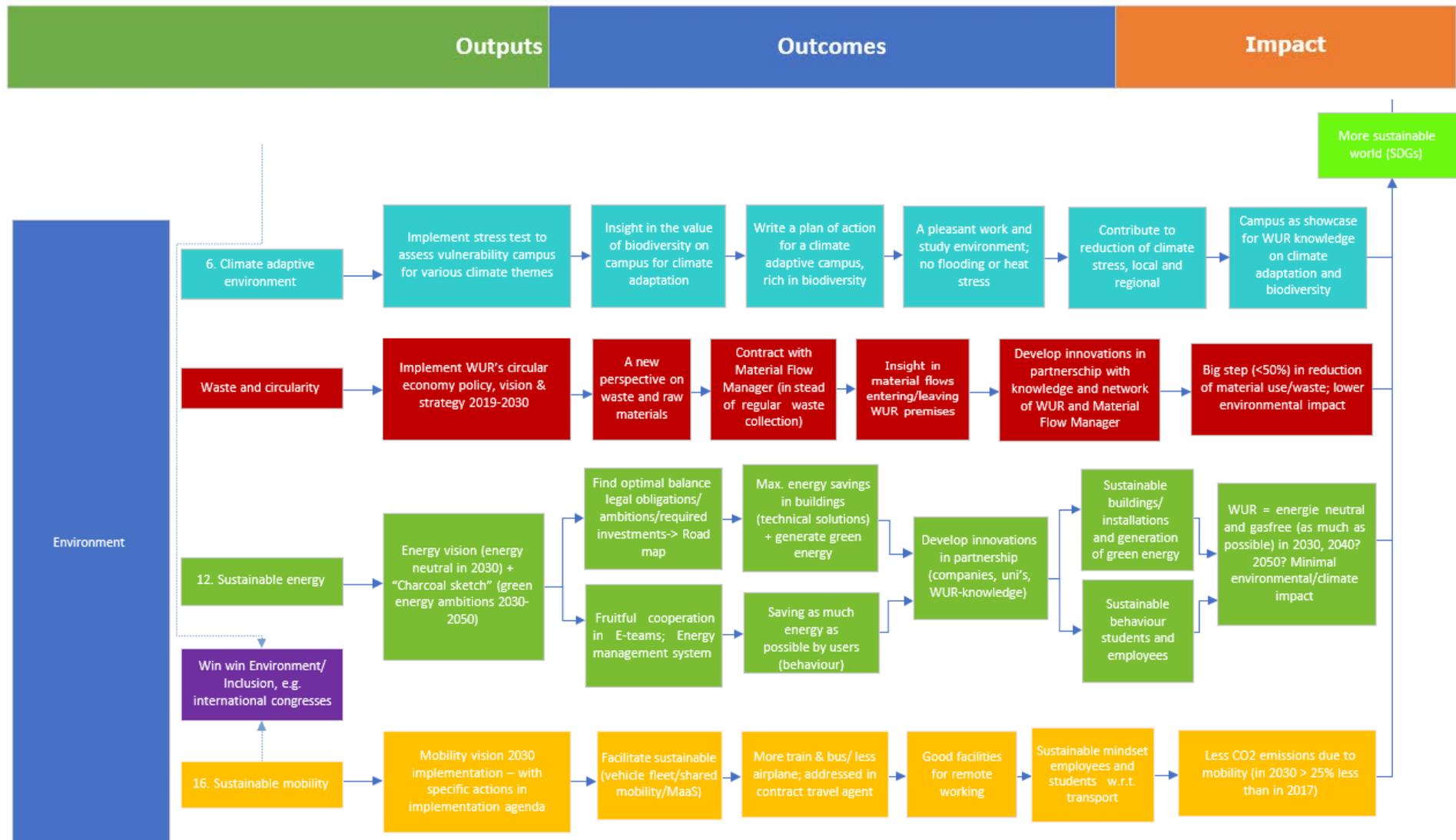


Figure B1-2: Theory of Change of the themes of WUR's CSR agenda

Appendix 2: Organisation

B2.1 Organisational components WUR

WUR consists of a number of organisational components, as shown in the [organigram](#), each of which is housed in one or more of 23 locations. Specific permits and regulations apply to each location.

Abbreviations

AFSG	Agrotechnology & Food Sciences Group
ASG	Animal Sciences Group
CS	Corporate Staff
CS+	Corporate Staff, including Wageningen International and Wageningen Academy
ESG	Environmental Sciences Group
E&EL	Energy & Exploitation Lelystad
FB	Facilities and Services
PSG	Plant Sciences Group
SSG	Social Sciences Group
WBVR	Wageningen Bioveterinary Research (formerly Central Veterinary Institute, CVI)
WEcR	Wageningen Economic Research (formerly LEI)
WEnR	Wageningen Environmental Research (formerly Alterra)
WFSR	Wageningen Food Safety Research (formerly RIKILT)
WMR	Wageningen Marine Research (formerly IMARES)
WR	Wageningen Research
WU	Wageningen University
WUR	Wageningen University & Research

Wageningen University & Research

Wageningen, 1
Wageningen Academy
Wageningen, 1
Agrotechnology &
Food Sciences Group
Wageningen, 1
Animal Sciences Group
Den Helder, 6
IJmuiden, 4
Leeuwarden, 3
Lelystad, 2
Wageningen, 1
Yerseke, 5

Environmental Sciences Group

Renkum, 21
Wageningen, 1
Plant Sciences Group
Bleiswijk, 8
Lelystad, 2
Marwijksoord, 9
Nagele, 10
Randwijk, 11
Valthermond, 12
Vredepeel, 13
Wageningen, 1
Westmaas, 14
Wijnandsrade, 23

Wageningen Food Safety Research

Wageningen, 1
Social Sciences Group
Alkmaar, 15
Drachten, 16
Daifsen, 17
Den Haag, 7
Goes, 18
Haaksbergen, 19
Lelystad, 2
Meijel, 22
Oosterwijk, 20
Wageningen, 1

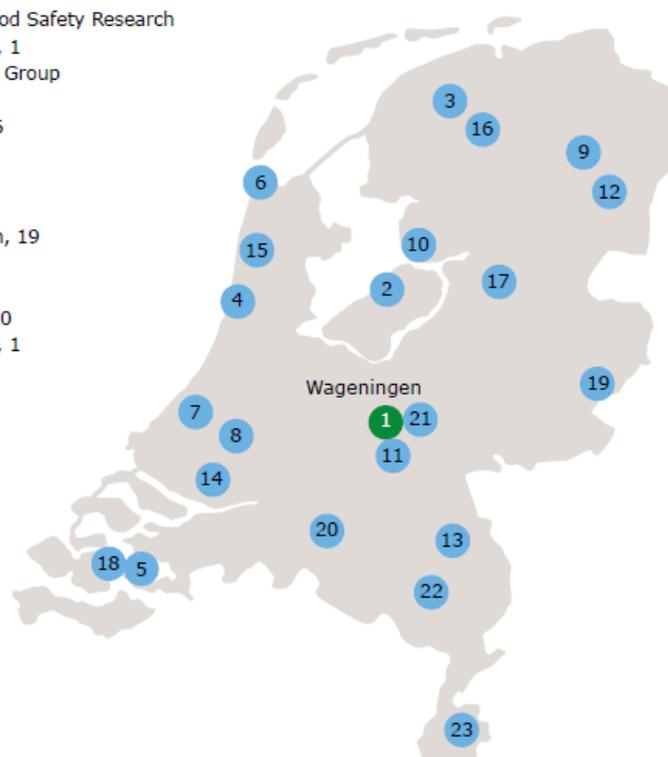


Figure B2-1a: WUR locations in the Netherlands (Source: WUR Corporate Brochure 2022)

B2.2 Organisation QHSE column

The QHSE column consists of a Safety and Environment sub-department positioned within Facility and Services and various decentralised QHSE sub-departments of the organisational components. The responsibilities in the QHSE column are assigned according to the mandates of WUR. The objectives and activities of the separate legal entities in the WUR alliance (Wageningen University and Wageningen Research) are coordinated at strategic and tactical levels. Organisational components work together on operational management.

The head of the Safety & Environment sub-department head is designated to act as the authorised permit holder on behalf of Wageningen University and Wageningen Research and to perform legal and other acts with regard to: Environmental Law (General Provisions) Act (Wabo), Water Act; Chemical Weapons Implementation Act, Nuclear Energy Act, Excise Duty Act, Opium Act, Prevention of Abuse Chemicals Act and GMO Decree.

B2.3 Permits Centre

The Safety & Environment sub-department is responsible for maintaining the legislative framework and making sure that the Permits Centre functions well. The Permits Centre provides a point of contact for all employees and students of WUR with regard to legislation and regulations as well as serving as a point of contact for various competent authorities (municipality, province). The Permits Centre keeps an overview of permits held by WUR, and therefore has insight into the risks and the permit requirements. The QHSE sub-departments are responsible for keeping the permits up to date and complying with the permit regulations.

B2.4 Communication

A Safety & Environment team site has been set up in SharePoint for the experts within Wageningen University & Research (Quality, Health & Safety and Environment column and other involved parties). The most important function of this team site is to provide digital access to all the relevant documents and to inform experts in the relevant fields. The regulation matrix for the Dutch Environmental Management Act permit for Wageningen Campus and WUR complex Lelystad is also on the team site. This matrix describes which level within the organisation is responsible for compliance with each regulation. Employees and students of WUR are informed via the intranet about the CSR agenda and sustainability and environmental issues.

B2.5 Training

Maintaining the level of expertise is a constant point of attention within the QHSE column. In 2022 employees participated in the following training programmes, courses and symposia:

- Prevention officer;
- In-house emergency and first aid service training (refreshment) team leader, In-house emergency and first-aid service training, including basic and refreshment training for emergency and first-aid services, supplementary respiratory protection, and fire-extinguishing drills;
- Radiation hygiene courses;
- Internal auditing: NEN-ISO 19011
- Incident/accident analysis courses S137 or Tripod Beta.

Appendix 3: Sustainability figures

B3.1 Overall overview

Table B3-1 Overview of overall sustainability figures per square metre and per student and employee

Benchmarks	2022	+/-*	2021	2020	2019	2018
m ² of floor surface	480,349	+2.2%	470,001	448,590	455,862	458,097
Number of students (st)	13,678	0%	13,676	13,275	12,847	12,439
Number of employees (em)	7,501	+3.6%	7,238	6,860	6,385	5,809
FTE employees	6,742	+5.0%	6,420	6,072	5,624	5,040
Total number of students and employees (st + em)	21,179	+1.3%	20,914	20,135	19,232	18,248
Total number of students and employees (st + FTE)	20,420	+1.6%	20,096	19,347	18,471	17,479
Energy consumption	2022	+/-*	2021	2020	2019	2018
Electricity (kWh)	52,683,145	-0.5%	52,969,131	46,990,737	49,491,138	50,385,528
with climate correction (kWh)	53,292,589	-5.0%	56,123,986			
Natural gas (Nm ³)	5,421,631	-16%	6,455,218	5,020,796	5,159,885	5,362,499
with climate correction (Nm ³)	5,926,541	-3.5%	6,141,043			
Total energy (MWh) with climate correction	105,387	-4.3%	110,104	103,283	110,644	110,104
Energy (MWh/m ²)	219	-6.3%	234	230	242	234
Energy (MWh/st + em)	5,161	-5.8%	5,479	5,338	6,330	5,479
Total energy (GJ) with climate correction	667,208	-4.6%	699,480	653,046	699,835	699,480
Energy (GJ/m ²)	1.39	-6.7%	1.49	1.46	1.53	1.49
Energy (GJ/st + em)	32.7	-6.1%	34.8	33.8	40.0	34.8
Sustainable energy	2022	+/-*	2021	2020	2019	2018
Wind energy (kWh)	58,472,103	+7.8%	54,228,348	71,175,920	66,338,197	62,427,909
Aquifer Thermal Energy Storage (kWh)	7,212,000	+20.4%	5,992,200	5,581,387	6,157,171	8,846,758
Solar panels (kWh)	4,563,410	+36.6%	3,341,101	1,953,996	1,372,879	570,863
Total energy generation (kWh)	70,247,513	10.5%	63,561,649	78,711,303	73,868,247	71,845,530
Energy generation (kWh/m ²)	146	+8.1%	135	175	162	157
Energy generation (kWh/st + em)	3,440	+8.8%	3,163	4,068	3,999	4,110
Waste	2022	+/-*	2021	2020	2019	2018
Industrial waste (kg)	1,807,511	-2%	1,844,319	2,248,879	1,874,524	1,393,294
of which residual waste	868,200	0%	868,452	792,590	884,876	897,256
Paper waste (kg)	240,304	+45%	165,194	184,986	298,000	300,983
Hazardous waste (kg)	442,888	-9%	486,875	464,293	486,333	492,186
Total waste (kg)	2,490,703	-0.2%	2,496,702	2,898,158	2,555,657	2,186,463
Total waste (kg/st + em)	117.60	-1.5%	102.6	143.9	138.3	119.8
Residual waste (kg/st + em)	40.99	-1.3%	41.5	39.4	46.01	49.2
Separated waste flows (kg/st + em)	94.91	-8.3%	103.55	125.56	107.26	86.83
Hazardous waste (kg/st + em)	20.91	-10.2%	23.28	23.06	25.29	26.97
Separation percentage	65%	-0.1%	65%	73%	67%	59%
Water	2022	+/-*	2021	2020	2019	2018
Mains water (m ³)	139,493	+2.9%	135,523	134,820	156,084	167,062
Well water (m ³)	6,435	-22%	8,240	17,584	19,666	27,711
Total water (m³)	145,928	+1.5%	143,763	152,404	175,750	194,773
Water (m ³ /m ²)	0.3	-0.7%	0.3	0.3	0.4	0.4
Water (m ³ /st + fte)	7.1	-0.1%	7.2	7.9	9.5	11.1
Carbon footprint	2022	+/-*	2021	2020	2019	2018
CO ₂ emissions (kg CO ₂ eq)	33,477	+13.2%	29,572	30,608	41,363	42,777
CO ₂ emissions (kg CO ₂ eq/m ²)	0.07	+10.8%	0.06	0.07	0.09	0.09
CO ₂ emissions (kg CO ₂ eq/st + fte)	1.64	+11.4%	1.47	1.58	2.24	2.45

* Difference in 2022 compared with previous year.

B3.2 Waste

Table B3-2a Quantity and composition of waste 2022 (in kg) for each organisational component

Waste flow	AFSG	ASG	CS+	ESG	FB	PSG	SSG	WFSR	Total WUR	Third parties	Total	Verwerking (GRI)
Residual waste	61,541	209,557	10,051	25,810	87,771	417,987	8,373	47,110	868,200	20,247	888,447	Energy recovery
Organic waste / green waste / swill	19,877	8,823	1,392	5,936	28,965	406,980	3,532	185,774	661,278	-	661,278	Recycling
Construction / demolition / rubble	-	1,480	-	-	15,330	130,480	-	-	147,290	-	147,290	Recycling
Insulation	-	60	-	-	-	-	-	-	60	-	60	Recycling
Foil / plastics	4,980	2,410	833	1,868	10,970	9,473	1,429	2,266	34,229	84	34,313	Recycling
Glass	456	2,633	60	745	1,337	4,524	79	7,800	16,941	381	17,322	Recycling
Soil	-	-	-	-	-	-	-	-	-	-	-	Recycling
Wood	5,247	11,993	407	407	3,278	15,120	-	407	36,858	-	36,858	Recycling
Manure	-	40,950	-	-	-	-	-	-	40,950	-	40,950	Recycling
Metal	-	1,020	-	-	-	-	-	-	1,020	-	1,020	Recycling
Packaged food	82	-	-	-	-	-	-	-	82	-	82	Recycling
Fats	-	-	-	-	603	-	-	-	603	-	603	Recycling
Paper / cardboard	42,187	31,550	8,283	24,641	51,322	46,420	18,070	17,831	240,304	3,528	243,832	Shredding + Recycling
Hazardous waste	44,946	221,064	-	14,141	15,793	47,840	132	98,972	442,888	38	442,926	See table B3-2b
Totaal	179.326	531.540	21,026	73,548	215,369	1,078,824	31,615	360,160	2,490,703	24,278	2,514,981	
Separation %	66%	61%	52%	65%	60%	61%	74%	87%	65%	17%	65%	

Table B3-2b Hazardous waste (in kg) in 2022 (WUR, including third parties), broken down by EWC code

EWC code	EWC name	kg	Processing method (with reference to GRI)
020108*/161001*/200119*/200191	Pesticides solid and liquid / toxic waste water / waste water with pesticides	696	Energy recovery
		21,877	Incineration
060101*	COD/CZV waste	74	Physical chemical treatment
060105*	Dilute nitric acid	8,768	Physical chemical treatment
060103*/060106*/110105*/200114*	Inorganic acids	8,490	Physical chemical treatment
060203*	Ammonia	233	Physical chemical treatment
060205*/200115*	Inorganic alkalis / Kjeldahl waste	7,203	Physical chemical treatment
060399	Silica gel	33	Disposal (long term storage)
080111*	Paint / ink	91	Recycling
080409*	Glues, resins and putties	18	Energy recovery
090101*	Photographic developer	253	Recycling
090104*	Fixative	302	Energy recovery
120109*	Drilling, cutting, grinding, rolling oil and emulsion	80	Recycling
130113*	Waste oil (other hydraulic oil)	225	Recycling
130204*/130205*	Cat II en III waste oil	574	Recycling
130208*	Waste oil	2,607	Energy recovery
130502/130507*/020204	Oil \ water \ silt mixtures	16,122	Recycling
130702	Petrol	54	Energy recovery
140602*	Fluids with high halogenated content	3,915	Recycling
140603*	Solvents low in halogen	9,232	Recycling
		2,620	Energy recovery
150110*	Lab glass, thermal glass, empty packaging (unrinsed)	824	Recycling
		3,727	Energy recovery
		2,783	Incineration
150202*	Lab waste – filters, pipettes, toxic waste	15,977	Incineration
150202*	Solid oily waste / filters	528	Energy recovery
160114*	Coolant	45	Recyclen
160214/200123*/200136	Electronic waste	12,061	Recycling
160305*	Organic materials	1,438	Incineration
160504*	Spray cans	6	Incineration
160505*	Fire extinguishers	6	Recycling
160506*	Various laboratory chemicals (packed)	1,889	Incineration
160508*	Acetic acid, ethidium bromide etc	1,036	Incineration
160508*	Formalin	10	Energy recovery
160601*	Lead batteries	317	Recycling
170503*	Contaminated soil (sediment separator)	184	Recycling
170503*	Contaminated soil	1,231	Incineration
170605*	Waste containing asbestos	420	Disposal (long term storage)
180103*/180202*	Specific hospital waste / infectious waste / biological waste	141,783	Incineration
200121*	Waste containing mercury	40	Incineration
200121/200121*	gas ignition / fluorescent lamps	598	Recycling
200127	Solid / pasty organic residues	72	Energy recovery
200129*	Cleaning agents acid / base	61	Incineration
200133*	Batteries	640	Recycling
200135*	Hazardous office waste	44	Energy recovery
200306*	Sludge (sewage / gully / pumping station)	14,655	Recycling / biological treatment
-	Animal waste	132,472	Other: sterilisation, then processing into meat-and-bone meal for the production of biogas/biodiesel
-	Animal waste (fish)	25,250	Not known
-	Other	1,362	Not known
Total		442,926	

Table B3-2c Quantity of waste 2022 (in kg) per step of the Lansink Ladder (including third parties)

Waste flow	Step of the Lansink Ladder								Total
	Recycling	Energy recovery	Sterilisation, then processing into meat-and-bone meal for the production of biofuel	Physical chemical treatment	Biological treatment	Incineration	Not known	Disposal (long term storage)	
Industrial waste	939,311	868,200							1,807,511
Paper waste	240,304								240,304
Hazardous waste	47,835	10,605	132,472	24,768	12,060	189,445	25,250	453	442,888
Total WUR	1,227,450	878,805	132,472	24,768	12,060	189,445	25,250	453	2,490,703
Third parties	3,993	20,247	-	-	-	38	-	-	24,278
Total	1,231,443	899,052	132,472	24,768	12,060	189,483	25,250	453	2,514,981
Fraction	49%	36%	5%	<1%	<1%	8%	1%	<1%	

Table B3-2d Total quantity of waste (kg) per municipality 2021^{1, 2, 3}

Location - complex	Industrial waste	Hazardous waste	Paper waste	Total
Wageningen Campus	768,582	219,309	183,820	1,171,811
Wageningen De Dreijen	5,856	-	6,080	11,936
Wageningen other	36,226	132	21,135	57,493
Lelystad WUR complex	638,369	29,831	5,325	673,525
Lelystad other	71,365	138,165	10,617	220,147
Bleiswijk	163,022	1,362	4,820	169,204
Dalfsen	-	-	66	66
Den Helder	4,151	726	538	5,415
Drachten	-	-	479	479
Ede	24,546	-	1,414	25,960
Haaksbergen	-	-	220	220
Hengelo	1,380	-	360	1,740
IJmuiden	14,764	29,232	1411	45,407
Leeuwarden	43,760	-	4,241	48,001
Makkum	-	19,220	-	19,220
Marwijksoord	3,220	-	-	3,220
Oisterwijk	-	-	54	54
Randwijk	6,361	38	2,228	8,626
Renkum	1,095	-	-	1,095
Valthermond	19,905	-	-	19,905
Vredepeel	10,009	161	-	10,170
Westmaas	13,640	-	749	14,389
Yerseke	1,973	4,650	275	6,899
Totaal	1,828,223	442,926	243,832	2,514,981

¹ An empty cell indicates that no figures are available.

² The industrial waste from The Hague, Hengelo, Leeuwarden, Lisse, Marwijksoord, Valthermond, Vredepeel, and Westmaas locations is often not weighted. The figures have been calculated on the basis of volumes that have been disposed of and standard weights for that type.

³ The waste from the location in Bleiswijk concerns estimated weights.

Table B3-2e Quantity and composition of waste in 2021-2022 (in kg) for each complex under Dutch Environmental Management Act (Wet milieubeheer)

	Lelystad Complex		Wageningen Campus		Wageningen De Driijen	
	2022	2021	2022	2021	2022	2021
Bedrijfsafval	638,369	612,440	768,582	757,176	5,856	5,948
Residual waste / bulky waste	88,555	46,120	447,774	426,050	5,814	5,948
Organic waste / green waste / swill	384,420	12,840	250,549	222,099	-	-
Construction / demolition / rubble waste	123,540	416,280	-	18,730	-	-
Foil / plastics	904	-	30,257	30,053	42	-
Glass	-	-	14,971	20,805	-	-
Soil	-	14,500	-	-	-	-
Wood	-	-	24,347	38,980	-	-
Manure	40,905	122,700	-	-	-	-
Metals / scrap	-	-	-	460	-	-
Packaged foods	-	-	82	-	-	-
Fats	-	-	603	-	-	-
Other	-	-	-	-	-	-
Paper / cardboard waste	5,325	6,315	183,820	125,824	6,080	6,035
Hazardous waste	29,831	34,738	219,409	234,358	-	-
Hazardous waste	3,652	25,564	91,068	128,374	-	-
Biological waste / specific hospital waste	10,779	9,174	104,088	88,603	-	-
Sewer / purification waste	15,400	-	12,326	11,180	-	-
Electronic waste	-	-	11,927	6,201	-	-
Total	673,525	653,493	1,171,811	965,674	11,936	11,983
Separation %	87%	93%	62%	62%	49%	63%

Table B3-2f Quantity and composition of waste in 2022 (in kg) for each Wageningen Campus location

Waste flow	Actio/ Nexus	Atlas	Aurora	Axis	Carus	Forum	Gaia	Helix	Innova- tron	Leeuwen- borch
Residual waste	4,605	9,048	8,091	43,720	20,860	26,304	21,324	17,665	-	8,373
Paper / cardboard	7,526	8,249	5,375	23,568	2,494	18,542	13,354	17,888	731	17,251
Organic / green waste	4,118	1,392	3,505	6,522	4,380	10,141	1,590	13,355	-	3,532
Foil / plastics	437	833	1,709	2,537	703	4,327	1,389	2,443	-	1,429
Construction / demolition / rubble waste	-	-	-	-	-	-	-	-	-	-
Wood	727	407	407	5,247	407	407	407	-	-	-
Glass	-	-	-	-	-	1,432	330	456	-	79
Packaged foods	-	-	-	82	-	-	-	-	-	-
Fats	-	-	-	-	-	603	-	-	-	-
Hazardous waste	85	871	1,431	17,810	-	1,427	12,066	10,745	-	132
Sewer / purification waste	-	-	45	-	-	-	184	-	-	-
Electronic waste	-	-	-	390	-	841	110	545	-	-
Biological waste / specific hospital waste	-	-	490	8,478	12,795	2,958	21	6,978	-	-
Total	17,498	20,800	21,053	108,354	41,639	66,982	50,775	70,075	731	30,796
Separation %	74%	57%	62%	60%	50%	61%	58%	75%	100%	73%

Waste flow	Lumen	Nergena	Orion	Proefbedrijf Droevendaal	Radix	Radix Serre, Klima, Argos en Nova	Schouten- hoef	Sports Centre de Bongerd	Vitae	Zodiac
Residual waste	1,459	11,960	12,533	2,940	75,265	223,039	20,362	7,029	47,110	14,940
Paper / cardboard	11,287	1,342	7,377	216	27,373	6,495	1,254	3,535	17,831	11,613
Organic / green waste	4,346	-	7221	-	3,180	-	-	937	185,774	4,277
Foil / plastics	479	-	2.969	1,400	-	7,253	157	730	2,266	1,202
Construction / demolition / rubble waste	-	-	-	-	-	-	6,310	-	-	-
Wood	-	-	407	-	-	15,120	675	407	407	407
Glass	415	-	1,439	-	325	320	-	-	7,800	420
Packaged foods	-	-	-	-	-	-	-	-	-	-
Fats	-	-	-	-	-	-	-	-	-	-
Hazardous waste	1,760	-	5,483	-	5,439	-	-	-	26,843	7,030
Sewer / purification waste	-	-	37	-	-	-	-	-	-	-
Electronic waste	-	-	-	-	4,614	-	-	-	4,538	889
Biological waste / specific hospital waste	-	-	2,125	-	1,801	-	-	-	67,591	851
Total	19,746	13,302	39,591	4,556	117,997	242,337	18,758	12,637	360,160	41,629
Separation %	93%	10%	68%	35%	36%	21%	45%	44%	87%	64%

Table B3-2g Quantity and composition of waste in 2022 (in kg) for each Lelystad location

Waste flow	Edelhertweg 1	Houtribweg 39	Runderweg 2	Runderweg 4	Runderweg 6	Runderweg 10
Residual waste	25,955	57,200	3,556	52,988	6,056	-
Paper / cardboard	3,198	10,617	-	-	-	-
Organic / green waste	384,420	-	-	-	-	-
Foil / plastics	820	385	-	-	84	-
Construction / demolition / rubble	110,740	1,480	-	-	-	12,800
Soil	-	-	-	-	-	-
Glass	-	1,420	-	-	-	-
Wood	-	10,880	-	-	-	-
Manure	-	-	-	40,950	-	-
Sewer / purification waste	15,400	3,235	-	-	-	-
Biological waste / specific hospital waste	-	132,564	-	10,741	38	-
Hazardous waste	3,652	2,366	-	-	-	-
Total	544,185	220,147	3,556	104,679	8,305	12,800
Scheidingspercentage	95%	74%	0%	49%	27%	100%

Table B3-2h Quantity and composition of waste in 2022 (in kg) for other locations

Waste flow	ASG (WLR)	ASG (WMR)	ESG	PSG	SSG (WECR)
Residual waste	1,320	1,069	1,095	189,837	8,373
Paper / cardboard	360	31	-	7,796	18,070
Organic / green waste	-	-	-	19,380	3,532
Foil / plastics	-	-	-	-	1,429
Construction / demolition / rubble	-	-	-	6,940	-
Insulation material	60	-	-	-	-
Grond	-	-	-	-	-
Glass	-	498	-	-	79
Wood	-	-	-	-	-
Manure	-	-	-	-	-
Sewer / purification waste	-	-	-	3,235	-
Biological waste / specific hospital waste	-	52,016	-	38	-
Electronic waste	-	59	-	-	-
Hazardous waste	-	-	-	1,523	132
Total	1,740	53,673	1,095	228,749	31,614
Separation %	24%	98%	0%	17%	74%

Table B3-2i Quantity of waste (in kg) in 2022 and 2021, broken down according to organisational component

2022	Industrial waste	Paper waste	Hazardous waste	Total	Separation %
AFSG	92,182	42,187	44,946	179,315	66%
ASG	278,926	31,550	221,064	531,540	61%
CS+	12,743	8,283	-	21,026	52%
ESG	34,766	24,641	14,141	73,548	65%
FB	151,441	51,322	15,793	218,556	60%
PSG	980,685	46,420	47,840	1,074,945	61%
SSG	13,412	18,070	132	31,614	74%
WFSR	243,357	17,831	98,972	360,160	87%
Subtotal for WUR	1,807,511	240,304	442,888	2,490,703	65%
Third parties	20,712	3,528	38	24,278	17%
Total	1,828,223	243,832	442,926	2,514,981	65%
2021	Industrial waste	Paper waste	Hazardous waste	Total	Separation %
AFSG	89,820	30,220	51,061	171,101	61%
ASG	398,574	24,909	253,312	676,795	65%
CS+	9,943	6,835	4,320	21,098	67%
ESG	32,785	13,145	9,741	55,671	49%
FB	111,129	32,485	14,713	158,327	56%
PSG	977,230	34,554	49,749	1,061,533	75%
SSG	10,669	12,210	16	22,895	74%
WFSR	214,168	11,150	103,963	329,281	90%
Subtotal for WUR	1,844,319	165,508	486,875	2,496,702	65%
Third parties	16,101	2,796	0	18,897	17%
Total	1,860,420	168,304	486,875	2,515,599	65%

Comments on table B3.2i:

- In the case of multi-tenant buildings, the waste is assigned to the main tenant.
- Each year, PSG composts 600 tonnes of green waste from the greenhouses and garden waste on Wageningen Campus. Every year, Applied Plant Research in Lelystad co-ferments approximately 80 tonnes of green waste in its own co-fermenter. Because this creates a closed waste cycle, it is not counted as waste.

Table B3-2j Hazardous waste (in kg) in 2015-2022, broken down according to organisational component

Organisational component	2015	2016	2017	2018	2019	2020	2021	2022
AFSG	45,222	51,820	60,504	48,674	49,937	47,560	51,061	44,946
ASG	154,690	201,792	203,189	299,770	285,323	249,275	253,312	221,064
CS+					8,920	8,240	4,320	-
FB	11,280	10,901	16,000	12,024	5,433	5,731	14,713	14,141
ESG	13,876	15,425	17,083	18,011	14,655	13,239	9,741	15,793
PSG	49,132	31,184	16,093	64,649	46,844	54,442	49,749	47,840
SSG	58	186	89	44	40	154	16	132
WFSR	35,706	40,817	49,672	49,014	67,878	85,652	103,963	98,972
Subtotal for WUR	309,964	352,125	362,630	492,186	479,030	464,293	486,875	442,888
Third parties	47,390	50,622	59,525	65,559	20,428	142	0	38
Total	357,354	402,747	422,155	557,745	499,458	464,435	48,875	442,926

Comment on table B3.2j:

- As of 2019 RIKILT and the Netherlands Food and Consumer Product Safety Authority (NVWA) do form Wageningen Food & Safety Research (WFSR). Before the formation of WFSR hazardous waste of the NVWA was disposed of independently and listed under 'Third parties'

B3.3 Explanatory notes to the CO₂ footprint

CO₂ inventory in 2022

The inventories of the CO₂ footprint and CO₂ compensation were carried out in conformity with ISO 14064-1:2006 (E), which was based on the Greenhouse Gas Protocol. The CO₂ performance ladder, version 3.1, was used as a starting point.

The following aspects have been included in the calculation of the carbon footprint:

Scope 1: (direct emissions)	<ul style="list-style-type: none"> ▪ Fuel consumption from heating offices, greenhouses and laboratories (natural gas); ▪ Emissions resulting from the leakage of refrigerants (F-gases); ▪ Fuel consumption of lease vehicles (diesel, petrol, LPG); ▪ Fuel consumption of WUR's own vehicle fleet (diesel, petrol, LPG); ▪ Fuel consumption of agricultural vehicles (diesel); ▪ Fuel consumption of rental cars and rented coaches (petrol); ▪ Emissions from agricultural parcels owned by WUR (nitrous oxide); ▪ Emissions from livestock (methane).
Scope 2: (indirect emissions)	<ul style="list-style-type: none"> ▪ Emissions from electricity purchased for offices, greenhouses and laboratories; ▪ Electricity use of electric lease vehicles; ▪ Emissions from business mileage, private vehicles; ▪ Emissions from business mileage, air travel; ▪ Emissions from business travel using public transport (domestic and internationally).
Scope 3: (other indirect emissions)	<ul style="list-style-type: none"> ▪ Emissions caused by processing of hazardous and animal waste; ▪ Emissions caused by processing of residual waste; ▪ Emissions from commuting by bus, train and public transport; ▪ Emissions from air travel by students and course participants.

The data collected over 2021 is comparable with the data collected from previous years. Nearly all energy, transport and waste data from all 23 locations in the Netherlands have been included. Supplementary notes:

- 2010 was taken as a reference year for our CO₂ footprint. This has been recalculated for revision in 2016 according to the CO₂ performance ladder system.
- From 2015 onwards, calculations are performed with the CO₂ emission factors specific for the Netherlands that were actualised in 2014. These calculations factors are updated annually (see www.co2emissiefactoren.nl).
- Residual waste is defined as 'the total amount of waste minus animal and hazardous waste and minus paper and cardboard waste'. Emissions from the processing of old paper and cardboard waste are allocated to the purchaser of recycled paper and cardboard, which means that WUR has a score of zero for these emissions.
- WUR rents locations and buildings to third parties. This means that third parties are engaged in their individual activities and have their individual carbon footprints. For this reason, they have not been included in the WUR CO₂ footprint and CO₂ compensation footprint.

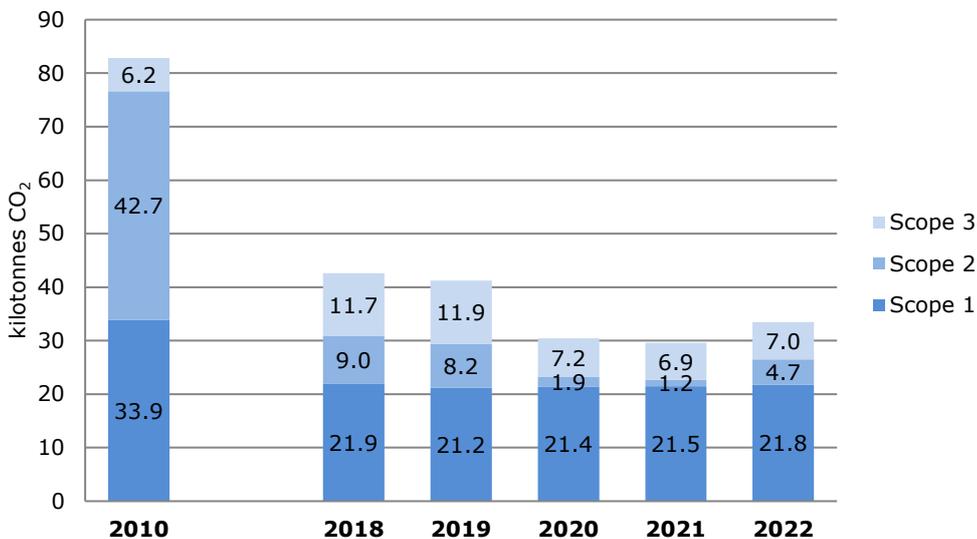


Figure B3-3a CO₂ emissions (in kilotonnes) per scope in 2018-2022 and reference year 2010

Table B3-3a Breakdown of greenhouse gas emissions by scope (in tonnes of CO₂) in 2018-2022 and reference year 2010

Scope	Component	Emission in CO ₂ -eq (in tonnes)					
		2010	2018	2019	2020	2021	2022
Scope 1	Buildings - natural gas	20,325	11,250	10,912	10,970	12,162	12,357
	Buildings - coolant	527	207	89	104	103	120
	Organisation's vehicle fleet	513	113	165	187	138	53
	Leased vehicles	511	302	323	35	124	146
	Rented cars	84	45	47	13	49	37
	Rented coaches	114	153	161	36	104	130
	Agricultural vehicles	817	1,115	982	1,337	1,142	1,300
	Agricultural land	6,355	5,100	5,100	5,602	5,110	5,038
	Livestock	4,649	3,635	3,421	3,122	2,575	2,629
Total of scope 1	33,894	21,921	21,199	21,406	21,508	21,810	
Scope 2	Buildings - electricity	33,058	0	0	0	0	0
	Vehicles - electricity	0	10	7	2	34	61
	Business travel in private cars	1,354	946	891	595	517	745
	Business air travel	8,156	7,977	7,218	1,247	636	3,857
	Business travel by public transport	147	32	39	8	2	13
	Total of scope 2	42,714	8,966	8,156	1,852	1,190	4,676
Scope 3	Waste processing	1,317	2,323	2,323	2,558	2,129	2,235
	Air travel students	1,269	2,102	2,102	411	78	109
	Commuting	3,623	7,466	7,466	4,226	4,668	4,669
	Total of scope 3	6,209	11,700	11,891	7,196	6,875	7,013
Total	82,818	42,587	41,245	30,454	29,572	33,499	

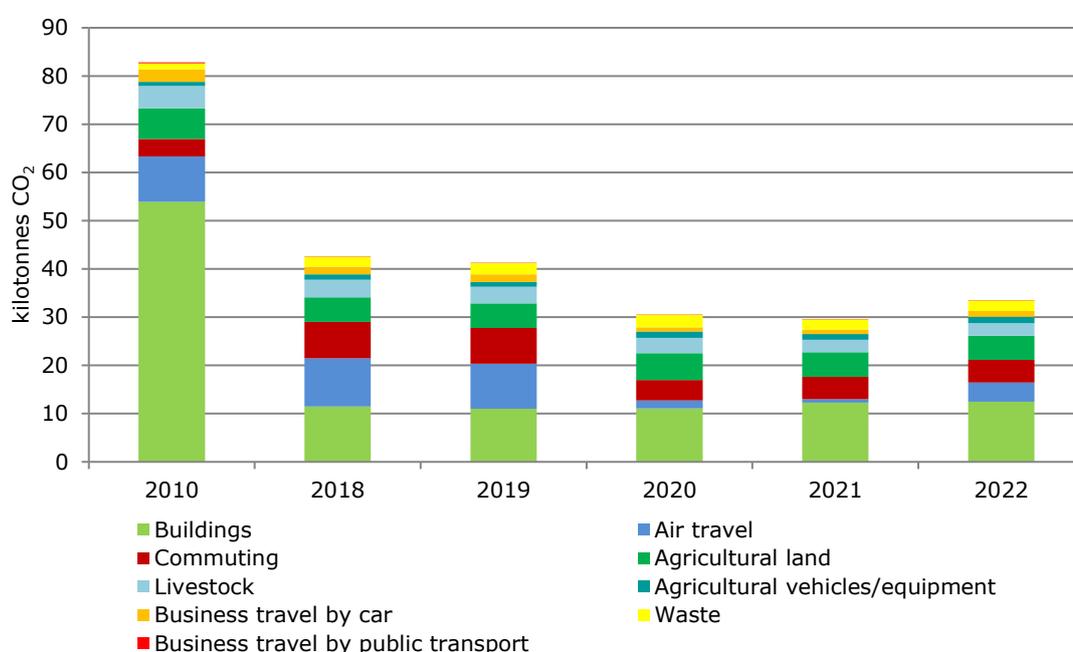


Figure B3-3b WUR's CO₂ footprint in 2018-2022 and reference year 2010

B3.4 Energy consumption

Energy consumption	Electricity (kWh)	Gas (Nm ³)	Energy (MWh)	Tonnes CO ₂
2022	53,292,589	5,926,541	105,387	10,617
2021	56,123,986	6,141,043	110,104	11,001
2020	52,072,490	5,826,025	103,283	10,437
2019	55,486,852	5,979,539	108,047	10,712
2018	55,829,556	6,235,989	110,644	11,171
2017	57,219,786	6,369,621	113,209	11,410
2015	61,674,576	7,562,462	128,149	13,547
2010	66,040,004	11,384,103	166,106	64,733
2005	66,019,426	12,828,768	178,784	67,307
Energy consumption compared to 2005	Electricity (kWh)	Gas (Nm ³)	Energy (MWh)	Ton CO ₂
2022	81%	46%	59%	16%
2021	85%	48%	61%	16%
2020	79%	45%	58%	16%
2019	84%	47%	60%	16%
2018	85%	49%	62%	17%
2017	87%	50%	63%	17%
2015	93%	59%	72%	20%
2010	100%	89%	93%	96%
2005	100%	100%	100%	100%

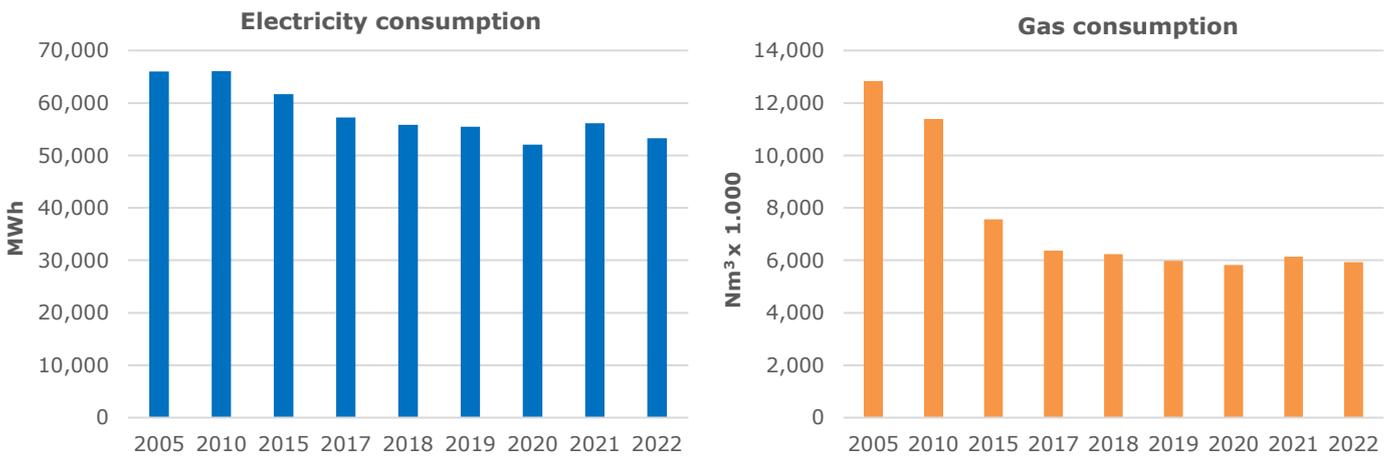


Figure B3-4a. Electricity consumption (MWh) and gas consumption (Nm³) in 2005, 2010, 2015 and 2017-2022

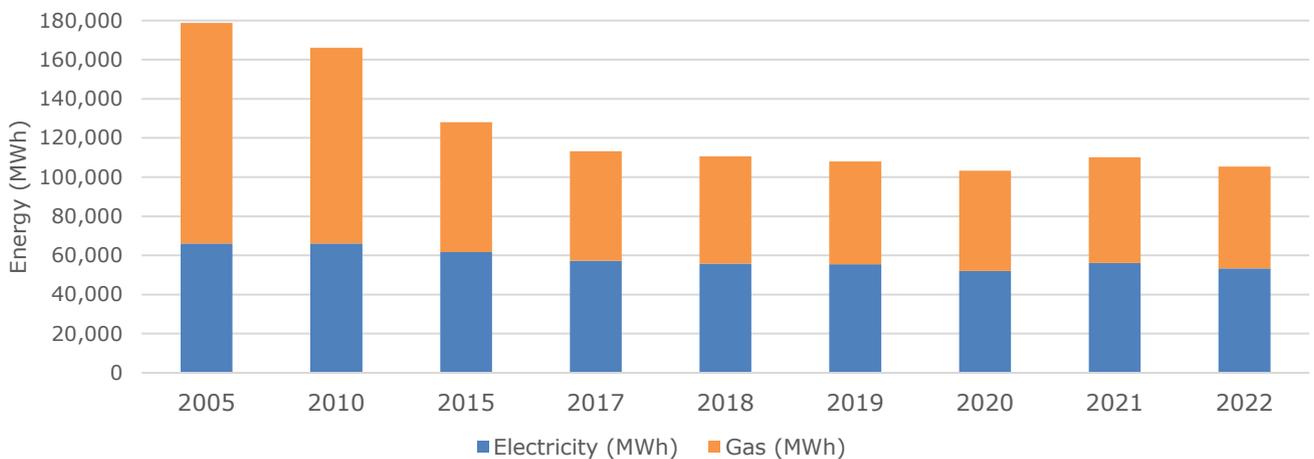


Figure B3-4b. Energy consumption converted to MWh in 2005, 2010, 2015 and 2017-2022

B3.5 Water consumption

Water consumption	Mains water (m ³)	Well water (m ³)
2022	139,493	6,435
2021	135,523	8,240
2020	134,820	17,584
2019	156,084	19,666
2018	167,062	27,711
2017	186,372	30,638
2015	213,986	52,434
2010	248,477	50,595
2005	234,503	139,518
Water consumption compared to 2005	Mains water (m ³)	Well water (m ³)
2022	59%	5%
2021	58%	6%
2020	57%	13%
2019	67%	14%
2018	71%	20%
2017	79%	22%
2015	91%	38%
2010	106%	36%
2005	100%	100%

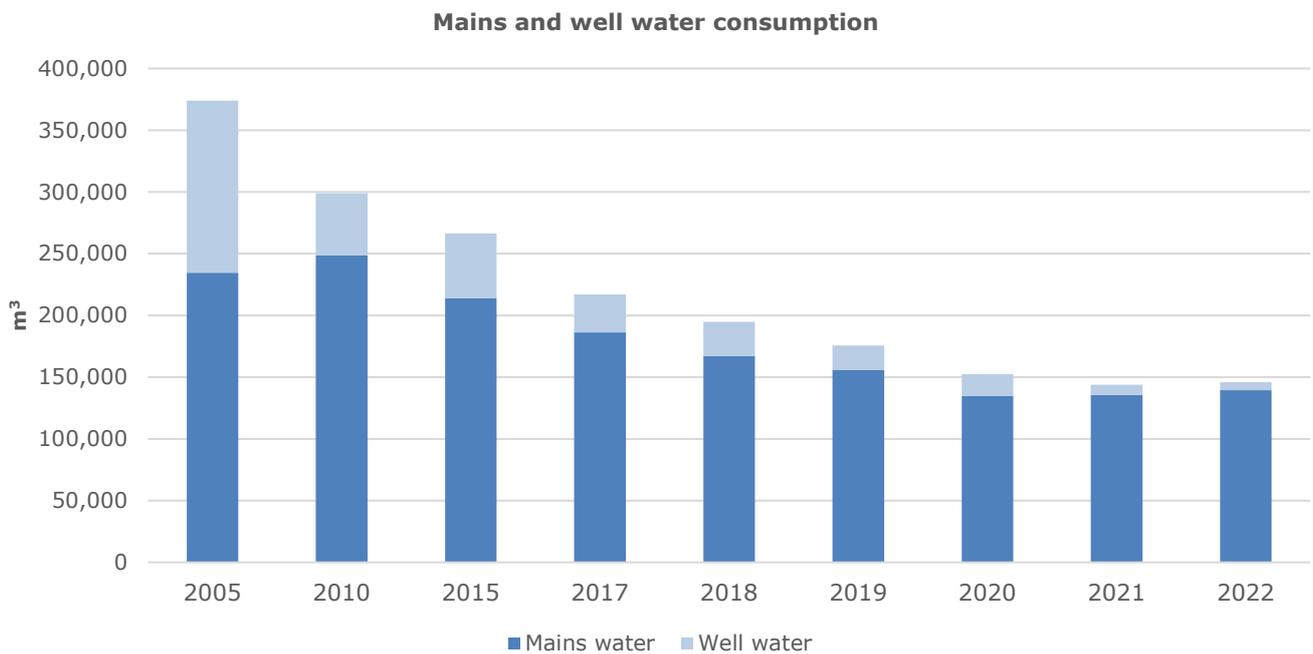


Figure B3-5a. Mains water and well water consumption (m³) in 2005, 2010, 2015 and 2017-2022

Appendix 4: Permits

B4.1 Environmental permits

WUR consists of various organisational components at 23 locations. These components are clustered in building complexes for which environmental permits have been issued. The environmental permits for WUR are issued per complex by the competent authorities (including provinces and municipalities).

Table B4-1 Overview environmental permits regulations per organisational component in 2022

Organisational component	Wageningen Campus	De Dreijen Wageningen	WUR complex Lelystad	WBVR Houtribweg Lelystad	Wageningen overig	Other locations
Agrotechnology & Food Sciences Group (AFSG)	X					
Animal Sciences Group (ASG)	X		X	X		X ^{1,2}
Environmental Sciences Groep (ESG)	X					X ³
Plant Sciences Group (PSG)	X		X			X ⁴
Social Sciences Group (SSG)					X ⁵	X ⁶
Wageningen Food Safety Research (WFSR)	X ⁷					
Facilities and Services (FB)	X	X	X		X ⁸	X ⁹
Concernstaf+ (CS+) ¹⁰	X				X ¹¹	

1. Dairy Campus (Leeuwarden), De Marke
2. Wageningen Marine Research: IJmuiden, Yerseke, Den Helder (2 locations)
3. Sinderhoeve (Renkum)
4. Wageningen Plant Research Field Crops (several locations)
5. De Leeuwenborch
6. Wageningen Economic Research: Den Haag and other locations
7. Since 1 June 2019, RIKILT-WUR and the Food Safety Laboratory of the NVWA have formed a new institute: Wageningen Food Safety Research (WFSR)
8. Sports Centre De Bongerd
9. Schoutenhoef (Bennekom)
10. The Corporate Staff (CS), Wageningen International (WI) and Wageningen Academy (WA) together make up CS+
11. Student accommodation in Wageningen (Haarweg and Stadsbrink)

Table B4-2 gives an overview of the environmental permit regulations for the activities of the organisational components.

Table B4-2 Environmental regulations per organisational component

Organisational component	Environmental logboek ¹	Registration of chemicals ²	Registration of energy and water ³	Emergency plan ⁴	Maintenance, inspections, checks ⁵
AFSG	X	X	X	X	X
ASG	X	X	X	X	X
ESG	X	X	X	X	X
PSG	X	X	X	X	X
SSG			X	X	X
WFSR	X	X	X	X	X
FB	X	X	X	X	X
CS+	X		X	X	X

Explanatory notes to Table B4-2:

- The environmental logbook contains information about maintenance, measurements, tests, inspections and environmental studies. In recording this information, existing information sources are used as much as possible, such as the hazardous substances registration and investigation system (GROS = Gevaarlijke stoffen Registratie- en Opsporingssysteem), the energy registration, control and information system (Erbis = Energie, registratie, beheer en informatiesysteem) and the building information system (Planon). Wageningen Marine Research (WMR, part of ASG) uses an own registration system. It is not legally required for WMR to keep an environmental logbook, because the activities of WMR do not fall under a complex permit.
- Registration of hazardous substances must take place at all locations where hazardous substances are used. At most locations GROS is used for this registration.
- All electricity, gas/warmth and water consumption is registered in Erbis.
- Each year, the emergency plans of the buildings are assessed and adapted to the current situation where required. The emergency management team is involved in the on-site exercises.
- Periodic checks and tests of systems and installations are carried out in order to guarantee safe operation and to limit environmental emissions. Examples include waste water checks, checks for odour emissions, air emissions checks (formerly: Dutch Emission Guidelines for Air, NeR). Inspection reports are recorded in the environmental logbook.

B4.2 Permit procedures in 2022

In the past year, the Permits Centre supervised 26 permit procedures, see Table B4-3.

Table B4-3 Overview of WUR permit procedures in 2022

Location ¹	Project	Permits ²
Bleiswijk	Realisation temporary portacabins as a changing room and office	Construction permit under Wabo and notification Activities Decree environmental management
Lelystad, Edelhertweg 1	Realisation canopy roof	Construction permit under Wabo
Lelystad, Runderweg 2	Installation emergency power generator	Notification Activities Decree environmental management
Lelystad, Runderweg 4	Drilling 3 wells for drainage	Notification water discharge into surface water
Lelystad, formerly Runderweg 5	Discharge of wastewater into surface water	Permit under Water Act
Lelystad, Wisentweg 53	Extension temporary environmental permit portacabin	Construction permit under Wabo
Marwijksoord, WPR Field crops	Relocating shed	Construction permit under Wabo
Renkum, Telefoonweg 77	Felling of trees	Felling under Wabo
Wageningen, Hollandseweg 1	Felling of trees	Felling under Wabo
Wageningen, Houtwal	Felling of trees	Felling under Wabo
Wageningen	General Introduction Days (AID)	APV, camping, alcohol act
Wageningen	We Day 2022 (event)	APV
Wageningen Campus	Storing materials construction projects	Construction permit under Wabo, deviation zoning plan
Wageningen Campus	Extension temporary environmental permit portacabin	Construction permit under Wabo
Wageningen Campus - Omnia	Commissioning building	Construction under Wabo: usage notification
Wageningen Campus - Omnia	Serving alcohol	APV
WMR IJmuiden	Setting temporary traps North Sea Canal	Permit under Water Act
Working with chemicals	Working with chemicals	7 permits / exemptions / notifications / registrations

¹ WPR = Wageningen Plant Research / WMR = Wageningen Marine Research

² Wabo = Environmental Permitting (General Provisions) Act / APV = General Municipal by-law

Appendix 5: Compliance

B5.1 Incidents and complaints in 2022

WUR uses an incident monitor for reporting incidents. Incident notifications are reported in the Occupational Health and Safety Annual Report 2022. The environment-related notifications are explained below. A total of four environment-related notifications were registered in 2022. Two complaints or reports of nuisance were also dealt with.

Incidents

Incident 1

Location: Unintentional discharge in Oostervaart, Lelystad

Cause: Leakage of wastewater from pressurised pipe.

Consequences: Wastewater from the WUR Lelystad complex entered public surface water due to damage after work was carried out by a third party.

Action: Incident has been reported to the competent authority.

Follow-up action: Temporary pipe installed in consultation with competent authority.

Environmental damage: None

Status: A new pressurised pipeline will be drilled. WUR will make arrangements with the competent authority when the drilling will take place.

Incident 2

Location: Runderweg 5, Lelystad

Cause: Fuel hose from emergency generator came loose.

Consequence: Diesel from the emergency generator entered the catch basin. In total 650 litres of diesel leaked into the catch basin, of which about 450 litres were recovered. The remaining 200 litres spread over the stelcon plates, the gravel cover and partly in the soil.

Action: Incident has been reported to the competent authority and an internal incident handling procedure has been initiated.

Follow-up action: Remediation plan prepared and soil remediated with the approval of the competent authority.

Environmental damage: Minor. Soil contaminated with mineral oil was excavated and removed under environmental supervision. This soil was disposed of by a certified processor. The analytical result showed that the control sample taken from the bottom of the excavation did not show any elevated levels of mineral oil. No mineral oil was detected in the groundwater samples.

Status: Closed. The soil has been remediated.

Incident 3

Location: Runderweg 6-8, Lelystad

Incident: On the site at Runderweg 6-8 there are a number of manure silos and a manure bag that was used during a test for a biogas plant. One of the manure silos, a demountable gas silo, was relocated to Edelhertweg 1 in Lelystad on 1 July 2022. Before relocation, the remaining manure from this silo was pumped into the adjacent manure bag. While filling the manure bag, the mixture of rainwater and manure spilled over the 'dike' onto the adjacent path and verge.

Consequence: As far as can be ascertained, the mixture of rainwater and manure ended up on the path and verge.

Action: Incident reported to competent authority. Based on the soil survey, the competent authority ordered soil remediation, following the submission of a remediation plan.

Follow-up action: Soil remediation is required

Environmental damage: Minor.

Status: Contracting party is writing remediation plan

Incident 4

Location: Haarwal 3, Wageningen

Cause: In the autumn of 2022, stormy weather cause pieces of roof plate to come loose.

Consequence: A few pieces of the asbestos-containing roof plate ended up both inside the barn and on the ground outside.

Action: The competent authority was informed, additional asbestos inventory was requested

Follow-up action: Due to previously planned remediation work, an asbestos inventory company conducted an additional asbestos inventory. Following this, the asbestos in question was remediated and removed.

Prevention: Access to the building is restricted and can be entered only with preventive measures.

Environmental damage: None

Status: The damaged roof has been removed, the asbestos scattered in the area has been removed.

Complaints

Complaint 1 Whistling noise (tone) from Wageningen Campus.

Nature: A resident of Bennekom reports noise nuisance in the form of a low-to-high rising tone in the morning.

Follow-up action: Agreement made with resident to report immediately when the noise occurs again so that it can be linked to an activity.

Environmental damage None

Complaint 2 Noise nuisance Valthermond

Nature: Resident reports noise nuisance from activities at the Valthermond site.

Follow-up action: The regional enforcement agency is investigating the origin of the noise. The noise nuisance cannot be traced to the Valthermond site.

Environmental damage None

Colophon

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