Sustainability report 2021

Results of the corporate social responsibility (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 in 2021. The sustainability ambition of WUR is formulated in general terms in the Strategic Plan 2019-2022. This general ambition has been developed into a more specific CSR agenda that identifies the CSR themes that WUR's stakeholders consider important. The CSR strategy revolves around trade-offs that strike a balance between scientific, societal and economic interests. Sustainability in the broadest sense is integrated where possible into all our activities: education, research, value creation and operational management. We consider the full impact of everything that we do, whereby our responsibility extends beyond our own activities.

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. Additional KPIs have been established for CSR themes that have little or no overlap with the Strategic Plan. By working on the themes of the CSR agenda, WUR contributes to the United Nations Sustainable Development Goals.

Environment
For each environmental policy theme, the progress, results and relevant details for the year under review (2021) are explained. 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.

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 (QHSE) sections of the organisational units specify the environmental and sustainability policy at this level.

Results
In 2021, much has been achieved in the area of sustainability. Below we mention some of the high-impact results.

Socially responsible operational management
This included the installation of the ATES loop, which will provide substantial energy savings in the coming years. The Rough Outline of the energy transition, published in late 2021, portrays WUR's future energy system, which aims to drastically reduce our CO_2 emissions. The successful Material Flow Management tender marked an important step in reducing our consumption of raw materials. Also in 2021, the Mobility as a Service (MaaS) scheme was officially launched and resulted in shared electric cars appearing on campus. In addition, 2021 saw the launch of DARE, a three-year project aimed at minimising racism and discrimination at WUR.

Activities involving staff and students
The Green Impact Programme, in which staff and students make a commitment to sustainability, supported various schemes including the Plastic Pilot Project, which aims to reduce the substantial plastic consumption in labs. The Green Office created a Sustainability Guide to support students in leading a sustainable life in Wageningen.

Transparency and communication
The WUR Upto campaign was launched in 2021 with the aim of making the many sustainable projects more visible and tangible on campus. In collaboration with staff and students, the Green Office developed dozens of Instagram posts on sustainability. For anyone who wants to find out more about animal testing at WUR, and the careful considerations that are involved in such testing, the podcast series *Op de proef gesteld* (Put to the test) was produced. Recognition for the sustainable performance of the organisation was evident from the good scores achieved on all sustainability benchmarks. As such, WUR was named the world's most sustainable university for the fifth year in a row. On the GreenMetric ranking for 2021, WUR achieved a score of nine out of ten for sustainability (9,300 out of 10,000 points).

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 that a decision has 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 from the 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 operational management and is keen to maintain and build on this position.

2.1 Ambition for CSR and sustainability

The starting point for our CSR and sustainability policy is articulated in the Strategic Plan 2019-2022 (see box). This general ambition has been developed into a more specific CSR agenda that identifies the CSR themes that WUR's stakeholders consider important. The coherence of the CSR strategy with WUR's mission and strategy and our value chain is shown in Figure 2-1. As much as possible, the themes of the CSR agenda are linked to the Change Performance Indicators (CPIs) from the Strategic Plan 2019-2022.
In 2021, the Executive Board decided to extend the Strategic Plan by two years to 2024 via the Extension & Update. To further strengthen our social impact through education, research and value creation, a number of additional ambitions and strategies have been elaborated to complement the current Strategic Plan.

CSR in the WUR Strategic Plan 2019-2022

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 apply a 'Living Lab' approach that provides opportunities for research and for educational experiments. In our procurement policies and practices, we push supply chains to be transparent, sustainable, circular and free from modern slavery.

2.2 Integrated approach

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.

2.3 The WUR value chain

The main inputs in the WUR's value chain (see Figure 2-1) 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 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.

Our employees are committed and passionate, as evidenced by the results of the employee satisfaction survey that is conducted every two years. A large proportion of WUR employees describe themselves as inspired and/or involved (85.8% in 2021; 82.3% in 2019). On a scale of 10, employees rate their involvement and inspiration with average scores of 7.9 and 7.3, respectively.

Connecting with and development of our employees is very important to us. Through training and development, the knowledge level of our organisation and the capabilities of our employees increase in the short time. Within our frameworks of cooperation we encourage initiatives and have a linking role in public-private partnerships. By engaging with our stakeholders, we enhance public support for our education and research in the short term.

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.

Human capital: As at other universities and research institutes, at WUR there are concerns about excessive workloads, particularly due to high productivity. The corona pandemic also required a lot from our staff. By 2021, working from home had become the norm and education was largely being provided online. However, students and staff reported that they missed face-to-face interaction at the workplace. WUR attaches great importance to good working conditions and to employees being able to work with enthusiasm, motivation and inspiration. We support our employees with customised solutions. In 2021, the Vital@Work programme was continued, with various activities and courses (online and in-person) to help employees become and remain physically and mentally healthy.

During the corona pandemic, absenteeism fell from 4.5% in 2019 to 3.5% in 2020 and 2021. We suspect that the lower absenteeism is related to the increased planning options provided by working from home, with employees experiencing greater flexibility. At the same time, we know that the workload, especially in certain groups, is perceived as high (Annual Report 2021, p. 58).

Natural capital: All our activities result in greenhouse gas emissions. Despite all efforts to conserve energy and shift to renewable sources, in 2021 our energy consumption rose for the first time in years. This was due to the relatively cold spring, the opening of Aurora (a large new building on campus) and more ventilation as a control measure for the pandemic. To give the energy transition additional momentum, in 2021 WUR drew up the 'Rough Outline of the WUR Energy Transition 2050'. It clearly shows the contours for a carbon neutral energy supply. Transport is another major source of greenhouse gas emissions. We often work internationally and fly many kilometres to do so. Commuting by car and public transport also generates emissions. Our mobility vision sets out how we intend to minimise emissions from transport. We aim to comply with the Paris Climate Agreement.

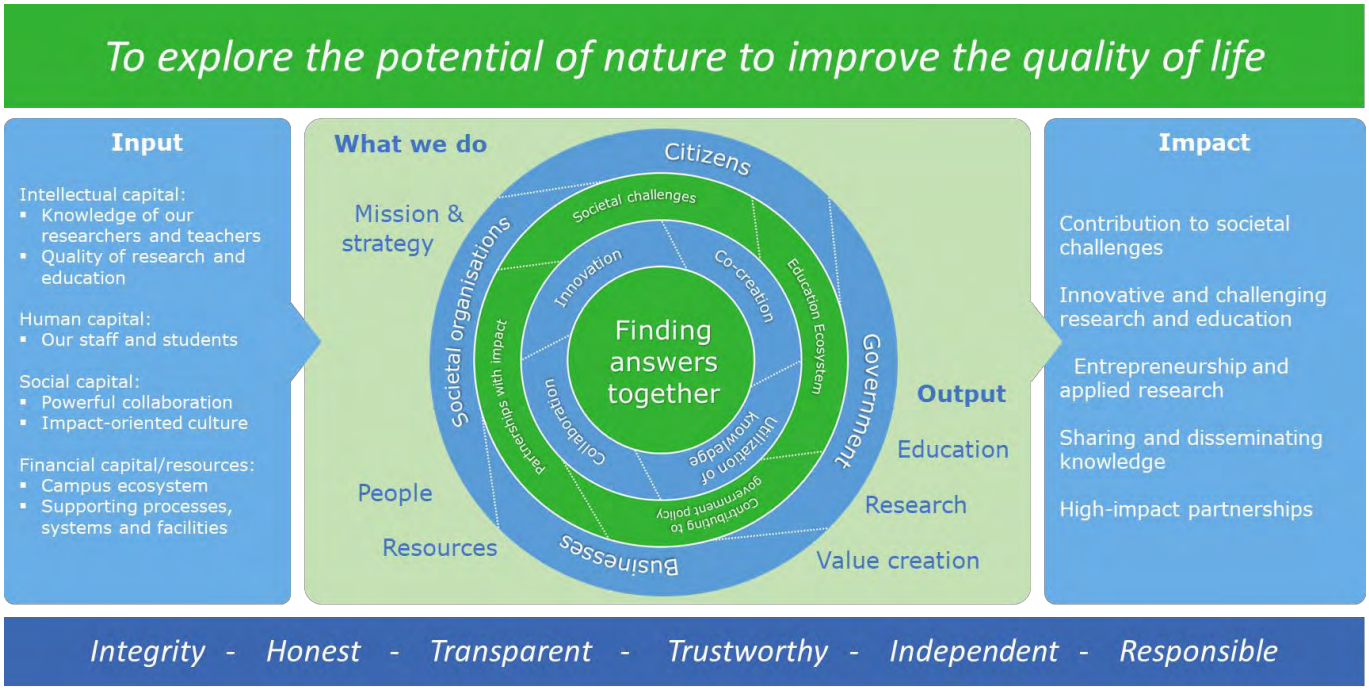

Figure 2-1 – CSR strategy and the WUR value chain

2.4 CSR agenda

With the CSR agenda, WUR highlights the social themes that will receive extra attention in the coming years: 17 topics were identified that are important inside and outside our organisation. These themes are shown in Table 2-1. In Appendix 1 the CSR agenda is explained in more detail.

Besides environmental sustainability, our CSR policy also includes social and economic sustainability. 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. With the CSR agenda, WUR aims to contribute to the realisation of the societal goals from the Strategic Plan 2019-2022: Finding answers together. The CSR agenda is linked as much as possible to the policy priorities and Change Performance Indicators (CPIs) from the Strategic Plan.

2.5 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.

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

The Sustainable Development Goals to which WUR contributes		
		
Through its research, education, value creation and operational management, Wageningen University & Research contributes to 13 of the 17 UN Sustainable Development Goals.		
CSR agenda themes[1]	**Vision / plan WUR**	**Link with SDGs**
Research and education to contribute to societal challenges (1)	Strategic Plan: Finding answers together	SDG 2 - SDG 3 - SDG 6 - SDG 11 - SDG 12 - SDG 13 - SDG 14 - SDG 15 - SDG 17
Innovative and challenging research and education (3)	Strategic Plan: Finding answers together	SDG 4 - SDG 8
How we perform these activities (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 Sustainable/socially responsible procurement	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 – SDG 14 - SDG 15
Waste and circularity (8)	Vision of the circular economy	SDG 12
Renewable energy (12)	Rough outline of WUR Energy Transition 2050	SDG 7 - SDG 13
Sustainable mobility (16)	Vision on mobility 2030	SDG 12 – SDG 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.

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 2021, 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 civil society and student organisations on issues such as climate and discrimination.

3.2 CSR group

The CSR group assesses the approach and progress on social responsibility and sustainability. The CSR agenda is governed 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 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 AID (annual student introduction day) 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, such as 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 2020 and 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.
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 the alumni and Wageningen World magazine.
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 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 #greenwur posts on Instagram from Green Office Wageningen and the Social Media Team 'Spread the WURd'

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 them via the Green Office website and social media (Instagram, Facebook and LinkedIn). See also Green Office Action Plan.

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 2021, including Regreening weekends in February and August with the primary aim of introducing first-year students to sustainability at WUR and in Wageningen.

Highlights of projects in 2021

In 2021, Green Office explicitly focused on strengthening links with policy makers within WUR, especially at Facilities and Services. This gives the student population a more explicit voice in the organisation's sustainable development. A *Sustainability Guide* was also developed and work continued on introducing the *Billie Cup* on campus.

The aim of the *Sustainability Guide* is to support students (especially first-year students) in living sustainably in Wageningen. The *Guide* includes tips on separating waste, sustainable clothing, saving energy and where to do sustainable shopping. The *Guide* was received very enthusiastically, especially during the Annual Introduction Days (AID). An update of the *Guide* is planned for 2022.

In 2020, the integration of the *Billie Cup* at caterers' coffee locations on Wageningen Campus was completed. At a minimum, all caterers now offer customers the option of a Billie Cup. A user satisfaction survey will be conducted in 2022. Together with policy makers, the Green Office also looked at developments in legislation on disposable cups and how to act on them in the best and most sustainable way.

The #greenwur project aimed to expand the reach of WUR's sustainability story. This was not so much about making WUR more sustainable, but about communicating what WUR is already doing and inspiring the WUR community to join in. Dozens of Instagram posts were developed in collaboration with

staff and students. The posts can be found on the Instagram account of @uniwageningen.

Annual activities

- In the week surrounding Sustainability Day (10 October), the Green Office organised the Seriously Sustainable Week. In collaboration with other GAN organisations, a varied programme was provided, including the Alternative Thesis Market, a sustainability market, a sustainable campus tour, a Clothes Swap and a nature excursion.
- In February, the Warm Sweater Week took place. Due to corona measures, activities in the WUR buildings were not possible. Alternatively, everyone was asked to turn down the heating one degree at home and a warm sweater challenge was held.
- 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. The Student Cooking Corner was cancelled for many weeks due to the pandemic. It continued in September 2021.
- With the Instagram series Sustainable@wur, the Green Office shares tips and information on sustainability. In 2021, the series' main focus was on recycling and waste reduction.
- 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.
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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 2021, there were four Green Impact teams located at Actio (Facilities and Services), Axis & Helix (AFSG), the Leeuwenborch (SSG) and Gaia & Lumen (ESG).

In 2021, the AFSG team worked on the Plastic Pilot Project. Plastic waste from a lab was collected separately and recycled by Uniplastic, which processes the usable plastic into new products. AFSG also took the lead in introducing the LEAF programme (sustainability at labs) at WUR.
The ESG Green team prepared the report "The butt in the drain", on the environmental impact of cigarette butts on campus. An app was used to create a map of all the hotspots. The SSG Green Team organised a sustainability bingo game @work and @home. The Actio team invited colleagues to a pumpkin and tomato challenge.

Several Green Impact workshops were held throughout the year on topics such as litter (with a special focus on plastic and cigarette butts), climate adaptation and modern slavery.

4 Activities and results in 2021

4.1 Progress on CSR agenda themes

As part of *CSR Next level*, development of the action plans linked to the CSR agenda continued in 2021.

The project on biodiversity also continued in 2021. This project aims to compile accessible information on biodiversity on campus and invites staff and students to help map this biodiversity. The topic of climate-adaptive environment also received special attention. The aim is a risk analysis (stress test) carried out by researchers and students to identify the possible effects of climate change on WUR buildings and surroundings.

Under the banner WUR UP TO the *CSR vibe* on campus was enhanced. The aim of this campaign is 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.

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. Investment in the three WUR-wide research themes continued in 2021. These three themes are connected circularity, the protein transition and digital twins. Three new investment themes have also been chosen for 2022-2024. These are: Biodiversity-positive food systems, Transformative bioeconomies and Data-driven discovery in a changing climate. Research programmes are aligned with the UN Sustainable Development Goals.

Research and education content

CSR Agenda

- Research and education to contribute to societal challenges (1)
- Innovative and challenging research and education (3)

CPI Strategic Plan

1: Continuous improvement to maintain excellence in research.
2: Significant scientific and social impact on the three investment themes.
4: Further integration and innovation of the Education Ecosystem.
6: Greater entrepreneurial culture and practice in education, research and value creation

SDGs

Besides the 9 SDGs to which WUR contributes in education and research, these are:

CSR in processes

CSR is also an important factor in how we conduct and design our research and education.

Processes in research and education

CSR Agenda

- Knowledge sharing and dissemination (2)
- Ethically responsible research (5)
- Entrepreneurship and applied research (7)
- High-impact partnerships (10)
- Flexible learning paths (17)

CPI Strategic Plan:

5: Greater flexibility in learning paths and educational spaces
6: More entrepreneurial culture and practice in education, research and value creation
7: Expansion of our campus ecosystem and sharing of research facilities.
10: Increased connection with society and partners
11: Improved culture of trust and taking responsible risks.
12: Higher volume and higher margin of clients and contracts in our applied research

SDGs

Governance

Corporate governance creates the conditions by which an organisation takes responsibility for the impact of its activities and decisions and ensures the integration of CSR policy in the organisation. In other words, without governance, there is no CSR.

Governance

CSR Agenda

- Responsible collaboration (9)
- Responsible economic policy (11)
- Chain responsibility (13)

CPI Strategic Plan

10: Increased connection with society and partners
12: Higher volume and higher margin of clients and contracts in our applied research

SDGs

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.
In 2021, Vital@work and Student Training & Support offered a varied health programme with activities and courses (in-person and on-line) aimed at vitality and stress prevention.

In 2021, we again worked on improving gender balance within WUR through various initiatives. We have addressed diversity and inclusion throughout the organisation by bringing together and centrally coordinating themes such as anti-racism (DARE), neurodiversity, inclusion, LGBTI+ and gender balance. 2021 saw the launch of DARE, a three-year project aimed at minimising racism and discrimination at WUR. DARE stands for: Decolonisation, Anti-Racism, Anti-Discrimination, Equity and Equal Chances.

Staff members and students

CSR Agenda
- Vitality (4)
- Development and training (13)
- Diversity among staff and students (15)

CPI Strategic Plan
2 Significant scientific and societal impact on the three investment themes
6: More entrepreneurial culture and practice in education, research and value creation
8 Greater mobility, diversity and rejuvenation of WUR personnel
9: More harmonisation of the organisation and greater satisfaction

SDGs

Environment

CSR Agenda
- Climate-adaptive surroundings (6)
- Waste and circularity (8)
- Renewable energy (12)
- Sustainable mobility (16)

Environmental aspects of the Strategic Plan: CSR ambition

SDGs

Environment

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.

Indicators

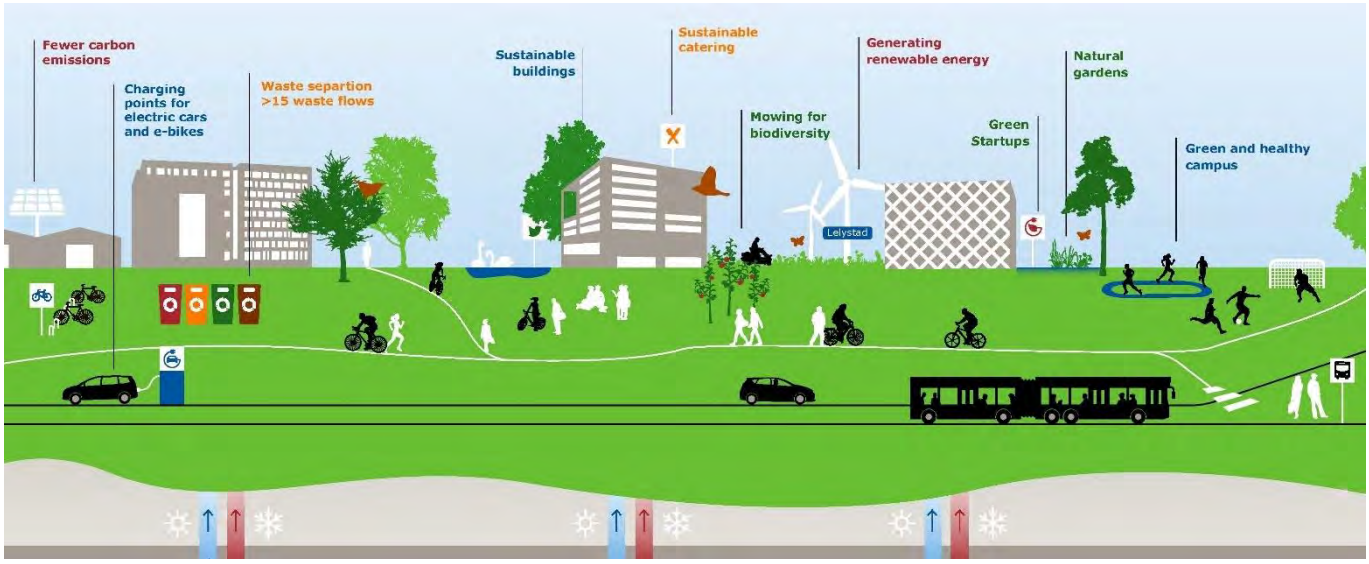
Wherever possible, the themes of the CSR agenda are linked to the Change Performance Indicators (CPI) from the Strategic Plan 2019-2022. For the CSR themes that do not have a direct link to these CPIs, appropriate KPIs have been established. For the CSR themes that can be directly linked to the CPIs, the table below explains the progress on each theme in key words, with reference to the 2021 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, Table 4-1 gives only one explanation for each CPI and indicates in italics where it can be found. In the table, the abbreviation AR is used for the WUR Annual Report 2021.

Table 4-1 CSR agenda themes and CPIs

Theme	CPI	Results and activities in 2021
In our research and education activities		
1. Research and education designed to make a contribution to societal challenges	CPI Strategic Plan 2: Significant scientific and social impact on the three investment themes. 6: Greater entrepreneurial culture and practice in education, research and value creation	CPI 2: Additional investments will be made in the three WUR-wide research themes (connected circularity, the protein transition, digital twins). See Annual Report, 2.5.8 Outlook p. 43 CPI 6: Annual Report, 2.6 Value creation p. 43-55; Annual Report, Appendix 2 Valorisation Indicators, p. 146-148
3. Innovative and challenging research and education	CPI Strategic Plan 1: Continuous improvement to maintain excellence in research. 4: Further integration and innovation of the Education Ecosystem. *5: Greater flexibility in learning paths and educational spaces*	CPI 1: Continually improving research excellence is paramount. Each research programme has a programme leader who is responsible for vision and strategy development, content programming, external and internal positioning, profiling and directing implementation. Additional investments were made in the three WUR-wide investment themes. See Annual Report, 2.5.8 Outlook p. 42-43; three new research themes will start in 2022. See Annual Report, 2.3.2 Strategic Plan 2019-2022 (and *Extension & Update*), p. 19-20 CPI 4: Annual Report, 2.4.8 Outlook, p. 34; 2.6.4 Wageningen Campus, Ecosystem & Facilities, p. 51-54

Theme	CPI	Results and activities in 2021
		(CPI 5: see 17. Flexible learning paths)
In how we do it (process)		
2. Sharing and disseminating knowledge	CPI Strategic Plan *6: Greater entrepreneurial culture and practice in education, research and value creation* 7: Expansion of our campus ecosystem and sharing of research facilities. *10: Increased connection with society and partners* 12: Higher volume and higher margin of clients and contracts in our applied research	CPI 7: Campus ecosystem, see Annual Report, 2.6.4 Wageningen Campus, Ecosystem & Facilities, p. 51-54 CPI 12: The turnover of bilateral research with industry increased for both WU and WR (after a decline in 2020). See Annual Report, 2.6.1.2 Knowledge transfer and innovative capacity, p. 45; Annual Report Appendix 2, Table B2.14, p. 150 *(CPI 6: see 7. Entrepreneurship and applied research, CPI 10: see 10. High-impact partnerships)*
5. Ethically responsible research	CPI Strategic Plan 11: Improved culture of trust and taking responsible risks.	In 2021 much attention was given to internal dialogue, including as part of the initiative called 'Let's Talk Together' (Result & Development talks new style). See Annual Report 2.7.3, p.57. Managers are encouraged in developing confidence and risk-taking in their teams, including through the leadership development programme. See Annual Report 2.73, p.57. Governance and scientific integrity is laid down in codes, regulations and rules. See Annual Report, 2.7.10 Integrity, p. 60, 2.9.1 Governance, p. 71-83 For responsible risk-taking, see Annual Report, 2.9.3.1 Risk profile and risk appetite p. 73-74
7. Entrepreneurship and Applied Research	CPI Strategic Plan 6: Greater entrepreneurial culture and practice in education, research and value creation *10: Increased connection with society and partners*	CPI 6: Entrepreneurship education, Starthub, Startlife and spin-offs, see Annual Report, 2.6.2 The entrepreneurial use of knowledge p. 46-49; 2.4.6.4 Student facilities, p. 31 *(CPI 10: see 10. High-impact partnerships)*
10. High-impact partnerships	CPI Strategic Plan *7: Expansion of our campus ecosystem and sharing of research facilities* 10: Increased connection with society and partners	CPI 10: Collaboration with partners in education and research. For education: see Annual Report, 2.4.1 Profile and policy, p. 21-23; for research: see Annual Report, 2.5.2 Policy and organisation, p. 35-36; For value creation: see Annual Report, 2.6.1 Collaboration, tech transfer and co-creation with partners (value creation), p. 44-46 *(CPI 7: see 2. Sharing and disseminating knowledge)*
17. Flexible learning paths	CPI Strategic Plan 5: Greater flexibility in learning paths and educational spaces	Flexible and personalised learning paths is one of the three pillars for education development as part of the implementation of the Vision for Education. See Annual Report, Section 2.4.2 Highlights, under "Educational reform", p. 24
Governance		
9. Responsible collaboration	CPI Strategic Plan *10: Increased connection with society and partners*	*See 10. High-impact partnerships.*
11. Responsible economic policy	CPI Strategic Plan *12: Higher volume and higher margin of clients and contracts in our applied research*	*See 2. Sharing and disseminating knowledge.*
13. Chain responsibility	CPI Strategic Plan *10: Increased connection with society and partners*	Specifically for Procurement, chain responsibility is an important theme within SRP. See Annual Report, 2.8.5 Procurement policy and chain responsibilities, p. 70-71 *(See also 10. High-impact partnerships.)*
Staff members and students		
4. Vitality	CPI Strategic Plan 8. Greater mobility, diversity and rejuvenation of WUR personnel 9. More harmonisation of the organisation and greater satisfaction	For employees: Theme Vitality & Health, including Vital@work (with chair massages, fruit@work, sports activities, PauseXPress, also focused on healthy working at home in connection with the corona pandemic), Vitality Pact (from the collective labour agreements), healthy and safe working environment, tackling high work pressure. See also Annual Report, 2.7.5, p. 58-59 For students: Study and student counselling: including Student Training & Support and the Surf Your Stress campaign. See Annual Report, Section 2.4.6.1 Study, student counselling, and student wellbeing, p. 28-29; 2.4.6.2 Student services and study climate, p. 29-30; 2.4.6.4 Student facilities, p. 31; 3.1.2.2 More and better study guidance, 94-95

Theme	CPI	Results and activities in 2021
		Key Figures Sick leave, Annual Report, p. 58 and Appendix 3 Corporate Social Responsibility Report, p. 157-158
14. Development and training	CPI Strategic Plan 2: Significant scientific and societal impact on the three investment themes *6: More entrepreneurial culture and practice in* *education, research and value creation* 8 Greater mobility, diversity and rejuvenation of WUR personnel	CPI 2: Regarding research: Annual Report, 2.5.2 Policy and organisation, p. 35-36; regarding employees: Annual Report, 2.7.1 One Wageningen, p. 55-56; 2.7.3 Leadership & Talent Development theme, p. 57-58 CPI 8: See Annual Report, 2.7.2 Recruitment, Onboarding & Inclusion theme, p. 56-57; 2.7.3 Leadership & Talent Development theme, p. 57-58 *(CPI 6: see 7. Entrepreneurship and Applied Research)*
15. Diversity in staff and students	CPI Strategic Plan 8 Greater mobility, diversity and rejuvenation of WUR personnel	Recruitment, Onboarding & Inclusion theme, including recruitment team, dual career centre, Job Participation Support (under the Participation Act), diversity and inclusion (gender balance, LGBTI+, anti-racism). See Annual Report, 2.7.2, p. 56-57 Key Figures Annual Report, Appendix 3 Corporate Social Responsibility Report: ▪ Age distribution: growth in employee category <35 years. See Annual Report, Appendix 3 Corporate Social Responsibility Report, Figure B3.8, p. 156 ▪ Man/woman ratio, including growth in share of women in managerial positions, Figure B3.6, p. 154; 21.9% women professors by 2021 (ambition agreed with the minister is 25%), Figure B3.7, p. 155 ▪ Internationalisation: recruitment of international staff. Figure B3.10, p. 157
Environment		
6. Climate-adaptive environment	Key figures from the GreenMetric ranking: ▪ 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 69% of the Wageningen Campus area is suitable for water absorption. See Annual Report, 2.8.4.2 Environment, p. 66 and this report p. 27
8. Waste and Circularity	▪ 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 2021, the amount of waste (in kg) decreased by 25% compared to 2020 (after a sharp increase in 2020). The separation rate was 68% in 2021. In 2020, this was 73%. See Annual Report, 2.8.4.2 Environment, p. 67-68 and this report p. 22-23
12. Sustainable energy	▪ annual reduction in %, annual reduction target of 2%, reduction in gas consumption ▪ Generating renewable energy ▪ CO_2 footprint, annual reduction of at least 2%.	Energy consumption increased in 2021: compared to 2020, 6.6% more energy was consumed (with climate correction). The 2% annual target has thus not been met. See Annual Report, 2.8.4.2 Environment, *Energy* p. 68-69 and this report p. 24-26. Compared to 2020, total CO_2 emissions fell by 3% in 2021. See Annual Report, 2.8.4.2 Environment, *CO_2 footprint* p. 70 and this report p. 23-24
16. Sustainable mobility	▪ CO_2 related to mobility ▪ 2% reduction per year	In 2021, transport emissions in CO_2 equivalents amounted to 7.5 ktons. This is 25% of the total calculated CO_2 emissions. CO_2 emissions for mobility were 7% lower than in 2020. Compared to 2019, there was a 61% reduction (average for 2020 and 2021). This sharp decline is linked to the corona pandemic. See Annual Report, 2.8.4.2 Environment, *Sustainable mobility* p. 69-70 and this report p. 27-29



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 (WUR). In Table 4-2 the 2021 targets and results are summarised.

Table 4-2 Sustainability targets and realisation

Theme	Target for 2021	Achieved in 2021
Climate adaptive environment	Making our buildings and environment climate-adaptive: percentage of area suitable for water absorption	Wageningen Campus: 69%
Waste and Circularity	Reduction in waste produced compared to 2020	-25%
	Reduction in waste produced compared to 2014	+8%
	Percentage waste separation	68%
Energy	Compared to reference year 2005:	
	- 2.0% reduction per year	compared to 2020: +6.6% (including climate correction)
	- Purchase of sustainable energy	100% wind energy (Certiq)
	- Production of sustainable energy	63,562 MWh
		of which 54,228 MWh from wind energy
Mobility	2.0% reduction in transport-related CO2 emissions per year	-7%
	Share of transport in CO_2 footprint	25%
CO_2 footprint	Compared to reference year 2010:	
	- reduction of the CO_2 footprint	-64%
	- growth of the CO_2-compensation footprint	+33%
Purchasing	Socially responsible procurement	SRP criteria have been used in tenders
Water	Reduction in water use compared to 2020	-6%

Benchmarks and rankings

WUR leads in sustainability rankings. In December 2021, Wageningen University was once again named the world's most sustainable university in the UI GreenMetric ranking. In the biennial Transparency benchmark of the Ministry of Economic Affairs and Climate (EZK), WUR rose ten places in 2021 to position 36, the highest of all Dutch universities and thus the most transparent in CSR reporting. SustainaBul, the annual student-organised ranking of Dutch educational institutions, ranked Wageningen University first in 2021.

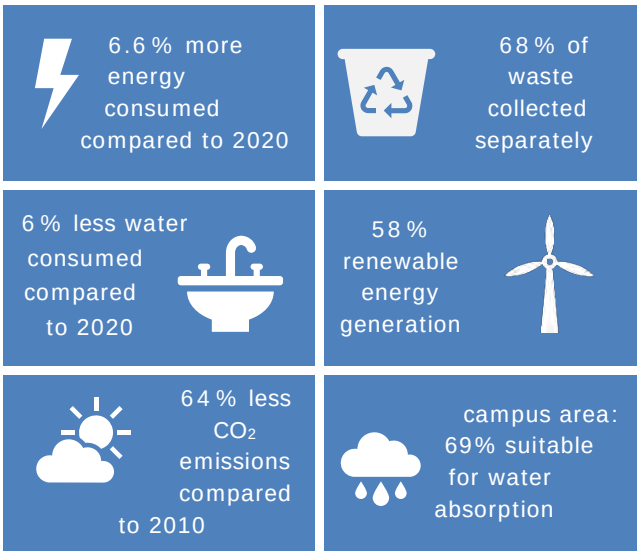


Figure 4-1 Key figures for sustainability in 2021

4.3 Policy priorities for sustainability and environment

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

In 2019, the Green vision for Wageningen Campus was established. WUR aims to make Wageningen Campus a showcase of resilient, climate-resilient, 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 development and management of the greenery is established in consultation with 'residents' and other stakeholders of the campus ecosystem and with input from WUR experts from education, research and operational management.

Quick scan of flora and fauna

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.

Felling permits

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 2021 are included in the overview of permit processes (Table B4-3 in Appendix 4).

At the Hoge Steeg location, two trees were found to be in poor condition and had to be felled: one beech (*Fagus sylvatica*) and one Japanese Crabapple (*Malus tschonoskii*). In addition, at the de Dreijen site, one tree was found to be in an area where Japanese knotweed was prevalent. Japanese knotweed is a highly invasive exotic species. Once established, the plant is very difficult to eliminate. Due to its vigorous growth, it displaces native plant species. The soil into which the tree was rooted had to be excavated. As a

result, this tree – a wild black cherry (*Prunus serotina*) – had to be felled.

Felling notice
A felling notification was submitted to the Province of Gelderland for the purpose of creating a cycle path next to the bus lane on Akkermaalsbos. According to this felling notification, 14 trees are felled south of the Dassenbos. During the six-week decision period, no objections were indicated by the province and WUR therefore received approval for the felling. The 14 trees were mainly oaks, alders and birches.

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, CO_2 sequestration and particulate matter capture. We are taking these approaches step-by-step.

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.

State of affairs for 2021
Three *Prunus avium* trees and flower bulbs were planted along Bornsesteeg in 2021. Following the construction of the ATES loop, several hedges of field maple (including those behind Gaia and near Carus) were replaced by mixed hedges. Furthermore, the main focus in 2021 was on preparing comprehensive new plantings:

- Preparing the green infill along the new cycle path between Aurora and Impulse (realisation spring 2022):
  - Greenery around Aurora
  - Varied planting in the strip between the bus lane and the new cycle path near the amphitheatre
  - Varied flower borders in the new terrace in front of Impulse
- Preparing Landscape Garden NL2120 (realisation autumn 2022).
- Preparing expansion of natural bog garden around Omnia (realisation spring 2022).

Built environment

In 2021, the Real Estate and Housing Department of Facilities and Services worked on transposing the WUR-wide sustainability ambitions into a concrete and measurable CSR policy specifically for the built environment. In two workshops, the main themes were determined based on 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)

In addition, the following construction-related activities took place in 2021:

- Construction of the underground infrastructure for the expansion of the campus-wide ATES loop was completed in 2021, and the first buildings were connected. Over the next few years, the remaining buildings will be connected in phases.
- 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 2021. 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 Aurora education building on Wageningen Campus has been completed in 2021. The building is connected to the ATES loop and heat pumps are being used. As a result, the building meets the requirements for "nearly zero-energy buildings" (NZEB).
- During 2021, the Dialogue Centre called 'Omnia' was built on Wageningen Campus. The building will be completed in 2022. Omnia will also be

connected to the new ATES loop and has a sedum roof.
- The Campus-Oost development (the expansion of Wageningen Campus on the east side of Mansholtlaan, formerly called Born-Oost) continued with the aim of preparing for the arrival of knowledge-intensive enterprises.
- 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 work space while also maximising opportunities for remote collaboration.

Catering

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.

Vision on food and beverage

In 2021, work continued on the vision for Food & Beverage. The vision will be launched in March 2022, but the draft version has already been used in the tendering processes for restaurant facilities in the new Aurora and Omnia buildings. When Aurora was completed (in September 2021), the restaurants and kiosks were opened.
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. 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) will be closely examined. We at WUR also actively participate with our caterers in initiatives such as the national Week without Meat.

The pandemic-related measures had far-reaching consequences for caterers. All restaurants closed in March 2020. From June, cafés tentatively opened for takeaway coffee and pre-packed lunches. Because it all had to be pre-packaged, more plastic was used. Within the restrictions of the measures, the caterers sought as much as possible to offer healthy and sustainable products.

Meatless Mondays

Since 2015, the caterers have collaborated on Meatless Mondays, an initiative of Green Office Wageningen. On Mondays, the hot meals and soup are meatless and there is a wide choice of vegetarian snacks. Efforts are also being made to increase vegetarian and vegan offerings and prevent food waste.

Vision on Food & Beverage

In the vision on Food & Beverage at WUR, we focus on eight themes: healthy and vital, protein transition, food waste, seasonal fresh and regional, sustainable operations, packaging-conscious, innovative and inclusion as a core value. These themes are in line with the ambition of the WUR Strategic Plan.

Fundamental to the vision is that all catering facilities and activities within WUR are healthy, sustainable and inclusive. 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, and reducing waste and packaging.

At the same time, we want to develop continuously. We do this by exploring new, sustainable approaches in collaboration with our caterers, researchers and other parties (external and internal).

Single use plastic

Reducing single use plastic in canteens a recurring theme. In collaboration with the student initiative Reuse Revolution reusable cups are encouraged. At several locations, you can get discounts on coffee and tea at the canteen or the coffee vending machine if you bring your own cup. In 2020, the Billie Cup was introduced on Wageningen Campus. A pilot started at student bar The Spot in Orion and at the pick-up point in Impulse.

Circularity and waste

By implementing Material Flow Management, WUR works on resource and waste management. This policy is set out in the circular economy policy[2]. This vision marks the transition from a waste management policy to a circular economy policy. In line with the Dutch government's circular economy policy, WUR's ambition is a 50% reduction in the use of (abiotic) raw materials by 2030 compared to 2014.

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 the existing waste monitoring, this includes intensive monitoring of raw material use. By gaining more control on the influx of raw materials into the organisation through procurement, the outflow (waste) can be made more sustainable through increased reuse, refurbishment or recycling.

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.

In 2021, an innovative tender for Material Flow Management was launched (see box). The aim was to replace the current waste contracts with a raw materials contract. During the tendering process, potential contractors, as experts in circularity, were asked to propose solutions for concretely implementing circularity strategies at WUR. The new contract will take effect from 1 January 2022.

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.

Within WUR, waste is divided into three primary streams: industrial waste, paper waste and hazardous waste. Table 4-3 and Appendix B3. Waste assessment provides insight into the waste streams in 2021. By 2021, 97% of waste was subjected to a processing method classified as recovery: 48% recycling, 41% energy recovery and 8% other recovery (see Table B3-2c in Appendix 3).

Also in 2021, there was less waste at most locations than before the corona pandemic due to working at home and digital education. Substantial fluctuations can be seen in the quantities of waste disposed of between 2018 and 2021. In part, these differences are related to waste streams from specific research (agricultural or otherwise).
Compared to 2020, the amount of waste fell sharply in 2021 (-752 tonnes; -25.9%), returning to 2018 levels. Paper waste continued to decrease (-20 tonnes; -10.7%). However, the quantity of hazardous waste increased (+8 tonnes; +1.8%). Although the share of residual waste, i.e. the waste stream remaining after separate collection of the three primary streams, continued to decrease, the waste separation rate decreased compared to 2020. In 2021, the waste separation rate was 68% compared to 73% in the previous year. This can be explained in part by the decrease in research-related waste. In 2020, much of this waste was disposed of in separated waste streams as industrial waste.

[2] Agreed in January 2020.

Table 4-3 Quantity of waste WUR 2017 to 2021 compared to 2014 (in kg; excluding third parties)

	2021	2020	2019	2018	2017	2014
Industrial waste	1,508,859	2,248,879	1,874,524	1,393,294	1,538,927	1,361,400
Paper waste	165,194	184,986	298,000	300,983	289,117	329,447
Hazardous waste	472,513	464,293	486,333	492,186	362,670	305,932
Total WUR (excluding third parties)	2,146,566	2,898,158	2,659,657	2,186,463	2,190,716	1,996,779
Waste produced by each employee	Deposits	422	416	376	395	394
Waste produced by each student	157	218	207	176	183	209
Waste produced by each employee and student	103	144	138	120	125	136

CO_2 footprint

The annual calculated CO_2 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 CO_2 emissions. Reported at corporate WUR level, there is also insight into the CO_2 emissions of the organisational units. In this way, the organisational units, coordinated by the QHSE sections, can identify policy priorities and take measures to control and, where possible, reduce CO_2 emissions as much as possible.

The total CO_2 footprint in 2021 was 29.6 ktons of CO_2.. Compared to the reference year 2010, the CO_2 footprint was reduced by 64%. Compared to the last "pre-corona" year 2019, CO_2 emissions were 28% lower, and compared to 2020, they fell by another 3%. The decrease was mainly due to fewer transport movements as a result of the corona pandemic. In 2021, CO_2 offsets exceeded CO_2 emissions. The CO_2 compensation footprint was 33% higher relative to the reference year 2010. The development of the CO_2 footprint and CO2 compensation footprint in 2017-2021 and the figures in the reference year 2010 are shown in Table 4-.

The sources that contributed most to greenhouse gas emissions in 2021 were buildings (especially natural gas use) and agricultural land, with 42% and 17% of total emissions, respectively. Commuting (16%) and livestock (9%) also contributed significantly. In 2021, the share of emissions from air travel decreased even further. Due to the corona pandemic, international air travel was hardly possible. In 2021, this share was 2%, compared to 6% in 2020. In 2019, air travel was the second largest source of emissions (23%). Other sources also show a 'pandemic effect' in the distribution. Figure 4-2 shows the difference between the distribution of CO_2 emission sources in the period from 2019 to 2021.

The biggest factors in changes in CO_2 emissions compared to the previous year were a further decrease in both air travel (-57%) and business use of public transport (-69%). Emissions from waste disposal and treatment (-17%) and agriculture-related activities also decreased (livestock, -18%; agricultural vehicles, -15%; and agricultural land, -9%). Commuting increased by 10%, which corresponds with the growth in the number of employees. In addition, emissions from business car traffic (12%) and building use (11%) were higher. The increase in 'buildings' was linked to higher energy consumption (see Energy). WUR offsets its CO_2 emissions by generating its own wind energy (about 54.2 million kWh in 2021), the ATES installations for heating and cooling various buildings on Wageningen Campus (6 million kWh in 2021), generating solar energy (3.3 million kWh in 2021) and separating the various waste streams as much as possible. The CO_2 compensation footprint in 2021 was 34.3 ktons of CO_2. This is a 33% increase in compensation as compared to the figures for the reference year 2010.

Table 4-4 CO_2 emissions and CO_2 offsets of WUR in 2017-2021 and in the reference year 2010

Year	2010	2017	2018	2019	2020	2021
CO_2 emissions in kilotonnes	82.9	40.7	42.8	41.4	30.6	29.6
CO_2 compensation	26	45.6	48.3	42.7	45.1	34.3
Reduction of CO_2 emissions compared to reference year (%)		51%	48%	50%	63%	64%
Increase in compensation (offsets) compared to reference year (%)		77%	87%	66%	75%	33%

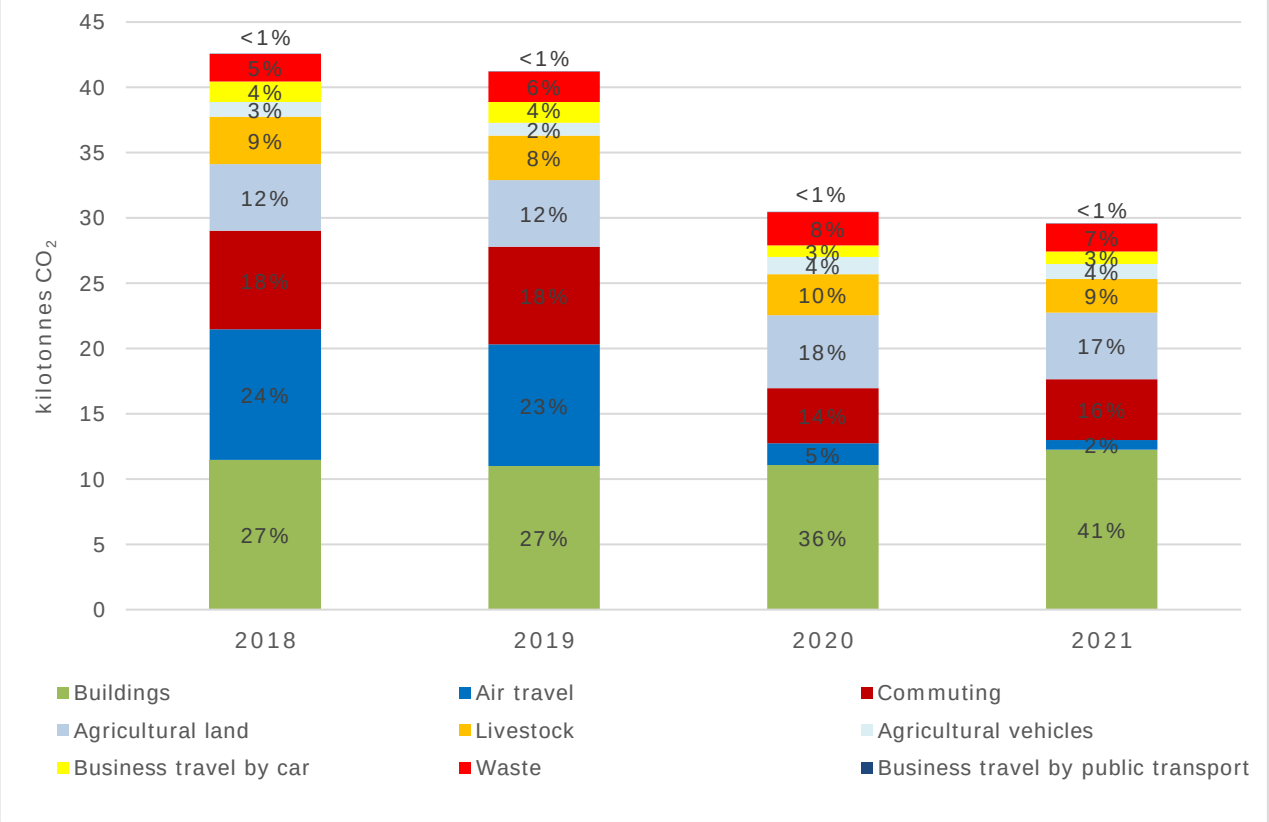


Figure 4-2 Distribution of CO_2 emissions (%) in 2018-2021

Energy

Regarding energy, the most notable events in 2021 included drawing up the Rough outline of WUR Energy Transition 2050 and appointing the central energy team (E-team) and the energy teams in the organisational units. The rough outline describes the guiding framework of our energy transition ambitions and how we will shape them. We will achieve the set targets in 3-5-year steps by, among other things, phasing out natural gas, conserving energy, generating our own renewable energy and/or buying renewable energy generated elsewhere. With all the developments in energy transition, attention to a reliable and affordable energy supply remains important.

Energy transition

Energy transition requires a major overhaul of Europe's energy system. This has implications for WUR. The rapid development in energy policy and energy technology presents opportunities, but also uncertainties. To respond to this and to realise the energy transition at WUR, an implementation agenda for energy transition will be drawn up in the coming year in which the framework set out in the rough outline will be elaborated into concrete measures for the next 3-5 years.

An important element in the energy transition at WUR is the aquifer thermal energy loop (ATES) (construction began in 2020) as an extension of the existing thermal energy storage network on Wageningen Campus. The underground infrastructure was completed in 2021 and the first buildings have been connected. In the coming years, the other campus buildings will also be connected and it will become clear how much natural gas WUR has saved with the construction of the loop.

Meanwhile, WUR uses renewable electricity from about 16,000 solar panels that generated 3.3 million kWh in 2021.

There is cooperation with the Energy Alliance, a network of WUR staff working on the theme of energy. The Alliance aims at comprehensive collaboration among its members and with local stakeholders.

As a member of the Association of Dutch Universities[3] and through the municipality of Wageningen (see Wageningen Climate Neutral), WUR is involved in the national and regional climate agreements (Regional Energy Strategy Foodvalley), such as phasing out the use of natural gas, CO_2 reduction and more renewable energy generation at our various locations.

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 efficiency and conservation plans for the organisational units.
- Energy conservation measures from the EED energy audit. This audit identified energy conservation measures in areas such as ventilation, heating, insulation and usage. Implementation of the measures began in early 2021.
- As a result of the construction of the ATES loop, the energy incentive will be 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. A new reference year can then be chosen in a few years' time.
- In addition to the legal requirements, ambitions for energy and sustainability are set out in the General Technical Programme of Requirements (ATPvE) for new construction and renovation projects. The aim is to include energy performance improvement in all construction projects.
- Procurement of 100% green wind energy (Certiq registered).

Energy consumption in 2021

Due to a cold spring and extra ventilation in the buildings (required by measures associated with the corona pandemic), 2021 was a costly year in terms of energy. In addition, with the opening of Aurora, electricity consumption increased, leading to a nearly 2% increase in total energy consumption.

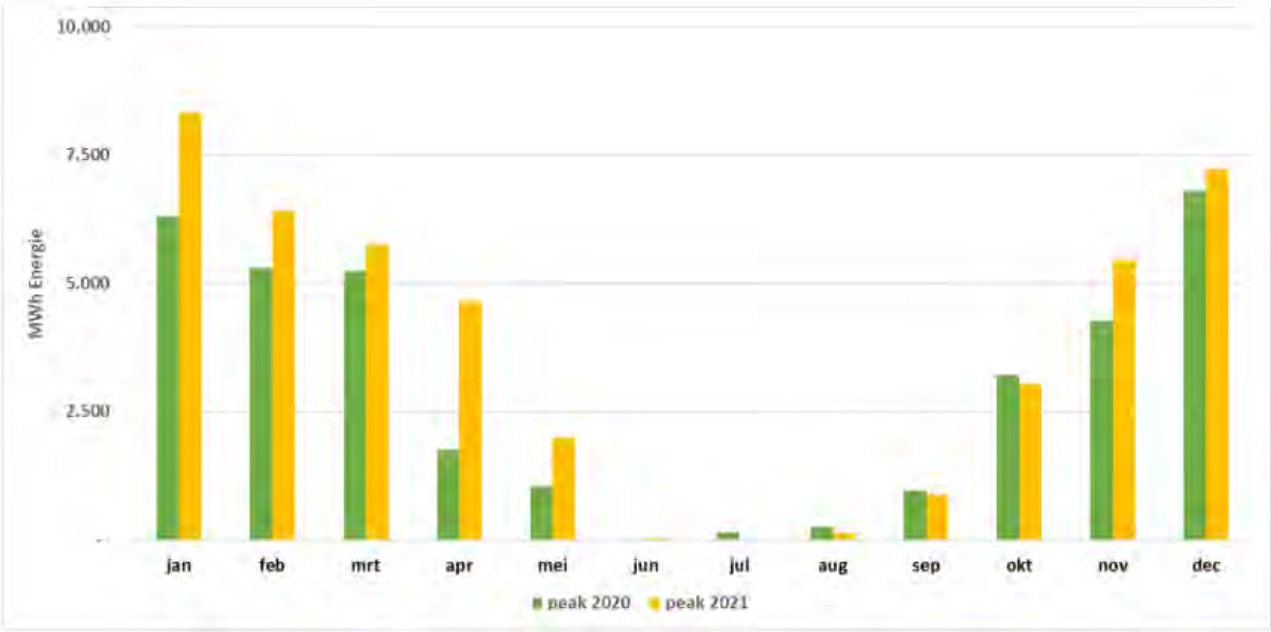


Figure 4-3 Difference in peak gas and electricity consumption per month for 2020 and 2021

[3] Since November 2021, the Association of Dutch Universities (VSNU) has a new name: Universities of the Netherlands (UNL).

Figure 4-3 shows the peak consumption of the sum of electricity and gas consumption for 2021 compared to that of 2020. This clearly shows that significantly more energy was consumed in January, April and May in particular. These months were relatively cold compared to the same months in 2020.

Another consideration is that 2021 was the first year after the Multi-Year Agreement for Energy (MYA-3) ended and the first year of reporting on the energy consumption of all WUR premises. For this new scope, 6.6% more energy was used in 2021 compared to 2020. This includes corrections for climatic influences. Energy consumption is shown in Table 4-5. A more comprehensive overview is provided in Appendix B3.4.

Production of sustainable energy

In 2021, 58% of WUR's total energy consumption was generated sustainably (see Table 4-6). As for electricity, 20% more renewable electricity was generated than consumed. The wind turbines in Lelystad generated over 54 million kWh of wind energy in 2021. Due to unfavourable wind conditions, this was less than in previous years. The number of solar panels, including those on roofs at Wageningen Campus, continued to grow in 2021.Compared to 2020, almost twice as much solar energy was generated in 2021.

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, we use our own additional meters. 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 (m^2) from the accommodation account.

*Table 4-5 Energy consumption and energy performance at WUR for the reference year 2005 and for 2018-2021**

Year	2021	2020	2019	2018	2005
Electricity (kWh)	56,123,986	52,072,490	55,486,852	55,829,556	66,019,426
Natural gas (Nm^3)	6,141,043	5,826,025	5,979,539	6,235,989	12,828,768
Total Energy (MWh)	110,104	103,283	108,047	110,644	178,784
Primary energy (GJ)	699,480	653,046	688,634	699,835	1,000,205
CO_2 (tonnes)	11.001	10.437	10.712	11.171	67,307

Energy performance	% 2021 compared to 2020	% 2021 compared to 2005
Electricity (kWh)	+7.8	-15
Natural gas (Nm^3)	+5.8	-52
Total Energy (MWh)	+6.6	-39
Primary energy (GJ)	+7.1	-39
CO_2 (tonnes)	+5.4	-84

* Excluding third-party consumption and student accommodation. To improve the comparison of consumption in 2021 with previous years, adjustments have been made for climate influences. For cooling and heating corrections, the figures provided annually by the Rijksdienst voor Ondernemend Nederland (RVO.nl) have been used.

Table 4-6 Renewable energy generation by WUR in 2019-2021 (in MWh)

Source	2021	2020	2019	Unit
Wind turbines Lelystad*	54,228	71,176	66,338	MWh
Wageningen Campus ATES	5,992	5,581	6,157	MWh
Solar panels	3,341	1,954	1,373	MWh
Total	63,562	78,711	73,868	MWh
Energy consumption	110,104	103,283	108,047	MWh
% sustainable generation compared to total energy consumption	58%	76%	68%	
Electricity consumption	56,124	52,072	55,487	MWh
% sustainable generation compared to total electricity consumption	120%	151%	133%	

* Concerns the three wind farms in Lelystad owned by WUR. Test site for wind turbines, also in Lelystad on WUR land, is not included.

Procurement

In relation to tendering, WUR follows the applicable legislation and regulations in the procurement field, as well as the principles of proportionality, objectivity, non-discrimination and transparency. In addition to the applicable legislation and regulations, WUR has its own purchasing policy. The sustainability criteria of the Dutch government, as published on mvicriteria.nl, are applied as much as possible.

Additional criteria, such as the social conditions in other countries, are used in every tender if possible. WUR buyers draw internal clients' attention to the various options that can be deployed during the procurement process and in the contract period. The Sustainability Panel, consisting of about 60 staff and students, can also be consulted. In 2020, SRP was given an extra boost by assigning the task "knowledge acquisition and development of SRP" as a specialism to one of the buyers.

If a supplier does not comply with the sustainability and CSR agreements made, WUR will address the supplier and takes appropriate measures. WUR works completely digitally in the procurement and ordering process. Suppliers are encouraged to send their invoices digitally. Because Wageningen deals in large numbers of orders and invoices, the use of paper, toner cartridges and postal services has been drastically reduced.

Climate adaptive environment

The topic of Climate Adaptive Environment came in at the top of the CSR agenda: students in particular consider this a very important topic. A design for a stress test of Wageningen Campus was created in collaboration with several scientists from WUR. This will also involve students who are participating in an ACT project.

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.

The implementation of Mobility as a Service (MaaS for short) was a priority project in 2021. As a result of the corona pandemic, the remote working policy continued to develop. Streamlining the reimbursement of travel/commuting expenses (necessary due to changes in tax regulations) was part of the implementation.

Mobility as a Service

Mobility as a Service (MaaS) was launched in 2020 to replace company cars and rental car contracts. Shared electric cars were introduced in 2021 (see box). Employees could reserve a shared electric car via a platform or an app. These shared cars are replacing the pool of fossil-fuelled official cars. The MaaS concept will be expanded in the coming years to include shared bicycles, access to public transport and participation of local businesses and organisations. Ultimately, the private use of the shared cars and bikes will also become possible.
The corona pandemic delayed the expansion of MaaS. As a result, bike sharing could not yet be implemented and was postponed to 2022.

Shared mobility with Mobility as a Service

On 30 March 2021, Mobility as a Service, in short MaaS, was officially launched during an informative webinar. 'Bicycle professor' Marco te Brömmelstroet gave a lecture on mobility and the initiators of MaaS were interviewed. You can replay this lecture here.

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, this change in travel policy and the launch of the WUR travel check coincided with the onset of the corona pandemic. This has made it difficult to indicate the impact in 2021. As in 2020, the number of international missions was very limited.

Online and remote 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 really necessary to travel? This is the first question on the WUR travel check: 'Are there any options other than being physically present?' WUR offers several online options, such as video conferencing, webinars and Microsoft Teams. A remote working policy was introduced in 2021. Facilities and arrangements are explained in the Guidelines on Hybrid Working@WUR.

Public transport (OV)

The corona pandemic measures had a major impact on public transport travel. Because they mostly worked from home, employees rarely used public transport for commuting and business trips. Due to online education, students also travelled significantly less by public transport. However, the use of public transport did increase during 2021.

WUR urged the carriers and the province to maintain bus connections on campus. Due to the corona pandemic, there were fewer buses operating across the campus in 2020. By 2021, the bus frequency had improved, but was not yet at the same level as 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 (as soon as this is possible), including the direct bus connection from the ICE station Arnhem Centraal to Wageningen Campus (Rijnlijn).

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%. WUR was an active participant in *Fietsvalley*, the employer approach to promote bike commuting within the Foodvalley region. The expansion of the MaaS concept with shared bikes was prepared in 2021, but was delayed due to delivery problems. WUR was involved in the development of an express cycle route, on the much-used route from Ede, Ede-Wageningen Station and Bennekom, to Wageningen Campus.

Electric transport

- In 2021, the IT department, the Construction and Installation Service and the Education Laboratory Service of the Facilities and Services had several fully electric vans operating on Wageningen Campus. The landscaping company also uses electric vehicles as much as possible.
- Shared electric cars from Amber (part of the MaaS concept) were used in 2021. Two charging bays have been taken into use in Wageningen (at Impulse and the Leeuwenborch) for the shared electric cars in MaaS. These charging facilities, some of which can be used by guests, have been outsourced to a third party.
- WUR has 20 charging points for electric cars throughout Wageningen Campus (locations are indicated on the campus map). Compared to the corona pandemic period, charging facilities were used less often in 2021. Electric car owners used the charging points 2,072 times (in 2020: 2,392 times, in 2019: 4,817 times), total charging in 2021 was 33,447 kWh (29,362 kWh in 2020).

- Charging points for electric bikes/scooters are available at bicycle parking locations at various buildings.

Mobility in the CO_2 footprint

The aim of the mobility vision is to reduce the CO_2 emissions of all WUR transport by an annual minimum of 2%. 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 CO_2 footprint. Compared to the reference year 2010, transport movements gained an increasing share in the footprint, see Figure 4-4. This mainly concerns the CO_2 emissions from air travel and commuting by car. The corona pandemic had a major effect on the share of mobility in the 2020 and 2021 CO_2 footprint. With the elimination of most air travel and fewer car movements, mobility accounted for only 25% of the footprint; in 2019, it was 47%. Emissions from mobility were on average 61% lower in 2020 and 2021 than in 2019. See also the section 'CO_2 footprint'.

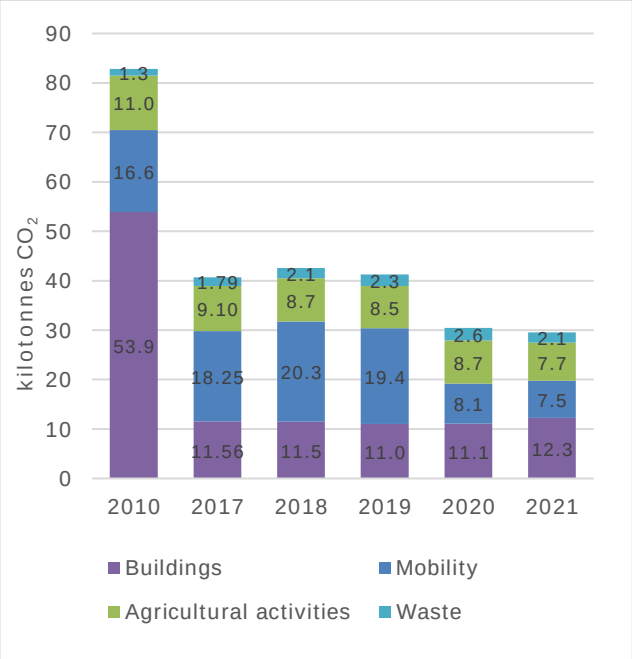


Figure 4-4 Share of CO_2 emissions from mobility in the CO_2 footprint, for 2017-2021 and the reference year 2010

Modal split and travel behaviour

Outcomes of the 2019 mobility survey: for commuting, 49.5% of employees choose cycling as their main means of transport. 40% travel to work by car (36% drive themselves, 3% drive together and 1% drive electric). Of the employees, 6% go by train and/or bus. Of the students, 59% cycle to the study location, 27.2% go by public transport and 7.7% by car.

About half of employees say they do not go on business trips. Of the employees who do, 19% make business trips 2 to 4 times per month. About 15% say they go on business trips once per year. Public transport was used for 49% of business trips in the Netherlands. A car is used for 48% of such trips. Regarding air travel, 29% of employees go on one or more business trips by plane, which is an average of 2.7 air trips per year.

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. It also asks how satisfied people are with transport options, parking facilities, accessibility and business travel alternatives. The most recent survey (2-measurement) was conducted in 2019. A third survey was planned in 2021, but was postponed to the spring 2022 due to the corona pandemic.

Water

In 2021 total water consumption was down by 6% compared to 2020. As a result of the corona pandemic, the use of mains water decreased in 2020 due to the lower occupancy of educational and office buildings in particular. In 2021, consumption remained low due to various lockdowns and working from home. However, there was a small increase in the use of mains water. In particular, more water was consumed in the Axis and Radix buildings. In Radix, the higher consumption was caused by leakage. There may also be a pandemic effect. Consumption also increased due to the opening of Aurora (completion in September 2021). The water consumption of WUR's buildings and installations in 2021 is shown in Table 4-7 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 2021. All exceedances have been investigated and measures taken to prevent recurrence. This was reported to the relevant environmental services and water boards.

Table 4-7 Water consumption and performance WUR for the reference year 2005 and 2018-2021

Year	2021	2020	2019	2018	2005
Mains water (m^3)	135,523	134,820	156,084	167,062	234,503
Well water (m^3)	8,240	17,584	19,666	27,711	139,518
Performance	% 2021 % 2015 as compared to 2005	% 2020 % 2015 as compared to 2005	% 2019 % 2015 as compared to 2005	% 2018 % 2015 as compared to 2005	
Mains water (%)	-42%	-43%	-33%	-29%	
Well (%)	-94%	-87%	-86%	-80%	

5 Compliance

5.1 Environmental permits

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

In 2021, the following permit-related activities took place at the complex level:

- *Lelystad, WUR complex:* The Edelhertweg 15 site was demolished in 2020-2021. In preparation for the expected entry into force of the Environment Act, revision of the umbrella permit started in the autumn of 2021. Due to WUR's contribution to research into the storage of generated energy, procedures have been initiated and completed for the installation of an electrolyser, a hydrogen refuelling station and a Li-ion storage facility at the WUR complex.
- *Lelystad (other):* At the Houtribweg 39 site, the bulk gas facilities were renewed in 2021. The existing permit was amended for this purpose.
- *Wageningen Campus:* In 2021, permits were applied for to replace the Insect Greenhouse and replace bulk gas facilities such as nitrogen and carbon dioxide tanks.

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 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 quality assurance system. Table 5-1 lists the systems in use at various parts of WUR.

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 Working Group has developed a method to assess changes in laws 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.
By 2021, the safeguarding of compliance with legislation and regulations for substances of very high concern (SVHC) was included in Pharius. Work has also begun on safeguarding compliance with legislation and regulations for the new ATES facilities. Staff from the QHSE column attended Pharius training courses.

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

Organisational units Department	Systems	Explanation
AFSG	ISO 17025	In progress (accreditation testing) for WFBR testing services to be established
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)
	GMP	For WBVR Batch control
ESG	ISO 9001	For WENR and the statutory research tasks (WOT) of N&M
	ISO 14001	ESG-wide
	ISO 26000	ESG-wide (CSR)
	ISO 31000	ESG-wide
	ISO 17043	WEPAL (WU), accreditation of round robin tests
PSG	ISO 9001	For the experimental farms Unifarm and Bleiswijk and the statutory research tasks
	HACCP	of CGN PGR.
	GLOBAL-GAP	For experimental farm at Lelystad
	SKAL	For experimental farms of *Open Teelten* (field crops)
	VVAK	For Unifarm; organic farming unit
		For Unifarm; starch potatoes, sugar beet, and cereals, seeds and pulses
SSG	ISO 9001	For the units WECR, WCDI and the statutory research tasks of CEI
WFSR	ISO 17025	Accreditation testing
	ISO 17043	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 2021, internal audits were conducted by Safety & Environment (Facilities & Services/Real Estate) or the at 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 assurance systems (see Table 5-1) by certifying bodies. Additional reporting included: the sustainability report for the competent authority, reporting under the European Energy Efficiency Directive (EED) and the annual radiation hygiene report.

During 2021 the competent authority carried out monitoring and enforcement checks at various locations in Lelystad and at De Dreijen in Wageningen.

No significant fines or penalties were imposed for environmental violations in 2021. The National Contact Point 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. Seven environmental incidents were reported in the monitor in 2021. In addition, four complaints were received. Environmental incidents and complaints are explained in Appendix 5.

5.6 Compliance with environmental legislation and regulations

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, a survey in compliance with the 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.
- *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:* For buildings to be demolished, additional destructive testing is carried out during the demolition process. In 2021, this concerned:
  - The Mathematics Building and Transitorium at De Dreijen in Wageningen, which have since been demolished.
  - Demolition of buildings at Edelhertweg 13-21 in Lelystad (completion in 2022).

Soil

No soil surveys were carried out in 2021.

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 within this area, including Wageningen University & Research. Both documents are used as a framework for the development of the Business Strip at the southern

edge of Wageningen Campus between Bornsesteeg and Mansholtlaan.

WUR systematically assesses the acoustic consequences of planned or implemented changes in the operations (including buildings and activities) of Wageningen Campus and De Dreijen. The acoustics for the following projects were calculated in 2021:

- Completion inspection of new construction of Conservatory RED, NPEC greenhouse, Radix-Nova and Energia (Campus, plot 21, Unifarm);
- Planning phase for new Insect Greenhouse and NPEC building (Campus, Plot 21, Unifarm);
- Planning phase + completion inspection of additional refrigeration units, additional air handling units and replacement of separate fume cupboard extractors with a single central extractor (Campus, plot 03 Axis);
- Completion inspection of freezer building (Campus, Lot 23, Vitae);
- Update + planning phase of indoor ATES installation (Campus, plot 08, Atlas);
- Completion inspection of new education building (Campus, Lot 27, Aurora);
- Planning phase ATES building for Radix (Campus, plot 22, Radix-West);
- Update + planning phase of ATES building (Campus, plots 05+18; Zodiac+Zodiac OGS);
- Inclusion of 26 ATES pump wells and Omnia in noise model for environmental permit Wageningen Campus.

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 stipluated in the "Geluidsruimteverdeling Wageningen Campus e.o." zoning plan.
The noise reports prepared in 2021 indicate that Wageningen Campus can comply with the applicable noise regulations, provided some additional provisions in the form of source measures or shielding are taken. Such provisions are part of the construction project/activity. Upon completion of new construction, a completion inspection is carried out during which the realised sources are measured. This will assess whether the actual situation meets the assumptions before commencement of construction.

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 determine the nitrogen deposition of existing sites (e.g. WBVR in Lelystad). By 2022, more clarity will be needed on how to deal with existing situations where nitrogen deposition exceeds the 0.005 mol/ha limit

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 PSG licences (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 Careful, 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 approved the built-in 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.

Op de proef gesteld (Put to the test) - podcast

In 2021 work took place on the podcast series *Op de proef gesteld*. The series examines a variety of questions about research involving laboratory animals, such as: what is an animal experiment, what is meant by target animal research, how are animal experiments used for climate issues and what are the rules for conducting animal experiments?

In the three-part podcast series, Rosanne Hertzberger talks to researchers and the 'ambassadors' of the various topics within the animal testing domain at WUR. The three episodes cover: 1. The Target Animal, 2. Ecology, and 3. The Human. The series came online in the spring of 2022 and can be listened to via apps such as Spotify.

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 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 QHSE staff 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 validation 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 allows 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

6.1 Agrotechnology & Food Sciences Group (AFSG)

Energy

As part of the Energy Efficiency Directive (EED), an energy audit was carried out by Royal Haskoning-DHV in 2020. The audit resulted in an energy conservation plan with fixed and conditional measures. Most of the measures were prepared in 2021. The primary measures are:

- Replacement of old refrigerators and -20 freezers. In 2021, refrigerators or -20 freezers were replaced with energy-efficient and CFC-free appliances at a number of groups.
- Replacement of conventional lighting with LED lighting. This replacement is done at logical times, such as when rooms are being renovated or converted.
- Installation of heat recovery. This has been completed in a number of buildings. In other locations, this measure is included with other activities such as renovation or replacement of an installation.
- Connecting the AFSG buildings to the ATES loop. This is a WUR-wide project. It is implemented by Facilities and Services.
- Installation of solar panels. A number of buildings are suitable for installing PV panels. A grant application for this will be submitted in 2022.
- Replacement of gas boilers with electric boilers or electric pass-through boilers in Helix and Phenomea. This measure is scheduled for 2022.
- *Shut the hood*. Fire officers inspections have shown that after working hours, the sash windows of fume hoods are not in the lowest position. As a result, the ventilation of fume hoods is unnecessarily high, consuming more electricity and causing heat loss. To make employees aware of this, the 2022 Shut the Hood competition will be organised through the Safe Science Society (SSS) communication platform.
- Conditional: insulating façades and roofs of various buildings. This is carried out if renovation or large-scale refurbishment takes place *and* if such measures are necessary to connect to the ATES.

AFSG participated in the 2021 freezer challenge. All safety contact persons have been asked to set the -80 freezers to -70 if the stored materials allow. In some labs, -80 freezers have been set to -70.

Waste and Circularity

AFSG aims to improve the separation of waste streams. The target for 2022 is a waste separation rate of 75%. In 2021, work continued to improve waste separation. AFSG's Green Impact team deployed several initiatives aimed at raising employee awareness, such as a "Styrofoam collection day", a pilot to improve separation of plastic waste with participation of a local adult day care centre and a campaign to collect spent flower bulbs for replanting.

Mobility

During the corona pandemic, and especially during lock-downs, the number of travel movements decreased sharply. AFSG wants to facilitate hybrid working as much as possible. AFSG is also leading the way within WUR by implementing the LEAF programme in which overall sustainability at the labs, including waste separation and energy conservation, is encouraged along with travel by train instead of 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

As research groups are growing in size, there is often a lack of space. Also, the current Tech and Food halls do not comply, or scarcely comply, with the legal requirements for WFBR's research. Over the next few years, several buildings will be renovated and two new ones constructed. The new building consists of Tech-N (with a new Tech hall) 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

Wastewater is sampled periodically. No exceedances were detected in 2021. However, the levels of copper, zinc and lead in Helix are high. The cause is probably the copper water pipe combined with soft water and low water consumption, resulting in leaching.

Vitality

- When drawing up Risk Inventories and Evaluations (RI&Es,) there is an explicit focus on psychosocial workload (PSW). Employees of a group for which the RI&E is being conducted receive a digital questionnaire in which they are surveyed on PSW topics such as work pressure, bullying, harassment (sexual or otherwise), aggression and violence. The RI&Es and the latest employee monitor show that work pressure is a major risk. They also showed that inappropriate behaviour still occurs, although to a lesser extent. At AFSG, the latter has led to employees being educated about the role of the confidential counsellor through the SSS communication platform and presentations.
- Every six weeks, the social medical team (SMT) meets where managers can discuss reintegration routes and prevention and receive advice from the in-house medical officer, occupational social worker and HR adviser. To support managers, supplementary prevention SMTs (1-2 times a year) were offered. In 2021, there was extra attention due to the corona situation with a monthly 'SMT light'.
- Regarding long-term sickness absence and the sickness-benefits-proof approach, cooperation with central HR was intensified. Extra attention was paid to work pressure. Employees were offered work pressure consultations with the in-house medical officer and/or occupational social worker. In addition, staff capacity, especially lecturers, was increased and workshops on job stress and staying balanced were organised through Vital@work. Workshops at the chair-group level were also held by Occupational Social Work and HRM upon request. Managers were offered the workshop 'Recognising and influencing stress due to work pressure'.
- Additional support was available for PhD students for remote working and social interaction. Under the guidance of HR and Occupational Social Work, workshops and peer consultation groups were organised. In addition, covid compensation for PhDs was widely used to relieve work pressure due to the pandemic and compensate for delays.
- AFSG endorsed the Vital@work menu and the AFSG team participated in the Ommetjes app.
- 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 has been part of the HSE department since October 2021. For this reason, the HSE department will be called QHSE from October 2021. In the coming years, the Quality Assurance manager will focus on implementing the ISO 9001 quality system for WFBR, coordinating the data stewards and continue implementing the Nagoya Protocol.

Development and training

RI&E

The RI&Es are carried out using the RIE manager, which is no longer adequate. For this reason, the QHSE department investigated which RI&E tool would be better suited for a research environment. Several RI&E tools were reviewed. MAKEonline (from KWA business consultants) seems to be the best fit for AFSG's research work. A pilot for MAKEonline will start in 2022.

Instructions and training

During the corona pandemic, the mandatory security briefing was made available digitally via Brightspace. This security briefing needs to be updated. The need for in-depth safety training has also emerged from various groups. These include working with open radioactive sources and working safely with hydrogen fluoride. A training and information matrix has been prepared by QHSE with training courses for quality assurance and safety. The training and information process will be designed so that employees receive the necessary training and information before starting work.

6.2 Animal Sciences Group (ASG)

Energy

On Wageningen Campus:

- Solar panels have been installed on the roofs of Zodiac.
- Fume hood ventilation with high-low control has been adjusted. The replacement of fans is included in lab renovations under the Strategic Housing Plan (SHP).
- Conversion to LED lighting will be included in the specifications of the SHP.
- A start has been made on replacing high-power equipment with more energy-efficient variants.
- In cooperation with WFSR, a central cold storage/freezer storage facility (including -80°C storage) was realised by Wageningen Livestock Research.
- 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 effective investments over the next 6 to 7 years, significant savings can be made in operating costs over 15 years. Starting points are the implementation of measures that save energy directly (such as heat extraction from local processes) or aimed at local generation (with a solar panel array and solar boilers) and measures in planned renovation (e.g. abiabatic 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 plan has been drawn up for energy-saving measures for the Den Helder location and operations in general.
- An overview of permits has been prepared.
- Knowledge and ideas were exchanged with WUR central and an exploratory study on measures to promote sustainability was carried out.
- A plan is being drawn up for future housing at the IJmuiden location with explicit attention to sustainability. Energy saving is the main focus of this plan.

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.

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 2021, 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. The resulting actions included:

- A campus-wide survey of cigarette butts. In the process, it became clear that despite the corona pandemic, thousands of cigarette butts are still discarded as litter on the WUR campus. Follow-up projects such as mapping the environmental impact of cigarette butts and education have started.
- The VITAL@ESG programme, which is highly appreciated by employees, is continued.
- A sequel to "ESG at Home" with tips to save energy when working at home (due to pandemic measures) and to make home gardens more environmentally friendly.

Energy

Remarkably, no energy was saved in ESG buildings in 2021. Indeed, the corona measures, especially the extra ventilation that was required in buildings, resulted in higher gas and electricity consumption. The colder winter period also led to higher consumption.

Various actions were continued, such as purchasing energy-efficient equipment and implementing a 100% LED lighting plan.

Waste

In 2021, efforts continued to improve the separation of our waste streams. The GREEN-ESG team monitored the effects of the smoking ban on Wageningen Campus and highlighted areas for improvement. 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.

Mobility

Business air travel has the most environmental impact. Thanks in part to actions by the GREEN-ESG team to make employees more aware of their travel behaviour, we saw a downward trend in air travel in 2019. Due to corona measures, there was hardly any air travel in 2020 and 2021, so the impact of the awareness campaign during these years is unclear.

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 WUR's new remote working policy.

Incidents

One environmental incident occurred in 2021. A waste acid facility overflowed. There was no environmental damage.

CO_2 footprint

The main factor in the decline in environmental impact in recent years has been the continuously improved control of buildings. ESG calculates its CO_2 footprint annually using the Stimular Foundation's Environmental Barometer. This provides transparency about data such as energy consumption, waste production and mobility.

6.4 Plant Sciences Group (PSG)

Energy

In Wageningen, the ATES and the corresponding energy centre were constructed at Campus Noord in 2020.

By 2021, a number of Unifarm buildings (Insect Greenhouse, Klima, Nova, Agros, Greenhouse Red) were connected to the system. The connection of Radix West to the ATES is under preparation. The new greenhouse building Serre Red was commissioned in 2021 and equipped entirely with energy-efficient LED lighting. Fluorescent lighting in Unifarm premises has been replaced by LED lighting.

The new PSG buildings Nova, Greenhouse Red and Plant Eco-phenotyping Centre (NPEC) comply with the BENG standard.

Construction of the solar farm on the PSG site on Haarweg has now been completed. Excluding Haarweg[4], PSG now has more than 1.5 megawatts of energy generation with solar panels.

In the Radix building, substantial extra ventilation was provided due to the corona pandemic measures. This did not benefit energy conservation.

Waste

The paper hand towels in Radix are now largely collected separately. As a result, residual waste has been reduced by nearly 25%.

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.

Investigation

Regarding biological safety, compliance with the regulations for working with and importing/exporting quarantine organisms is being monitored more closely.

Sustainable construction

In 2021, the new greenhouse building on Wageningen Campus, Greenhouse Red, was commissioned and construction was underway on the NPEC building. For new buildings, the BENG requirements are in force. The new buildings will also be connected to the ATES loop.

[4] The solar farm will be operated by an external party

Contributing to the CSR agenda

Research and education: PSG creates knowledge and generates impact. The research focuses on sustainable plant resources for a healthy world through knowledge and innovation in agriculture, healthy food and the living environment. The quality of our education has earned high scores in various rankings. For example, the Plant Sciences BSc programme was rated number one in 2020 by the Keuzegids Universiteiten 2020 for the fourth time and has been in the top four BSc programmes in the Netherlands since 2013.

Sharing and disseminating knowledge: our goal is to have a positive impact on society by actively contributing to its needs and demands and creating value by collaborating with industry and other stakeholders. PSG has a wide range of research facilities, both in Wageningen and at its various business unit locations throughout the Netherlands. The greenhouse and experimental farms receive many national and international visitors throughout the year. These sites are therefore not only research facilities, but also knowledge transfer and valorisation centres.

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.

Vitality: PSG works in four areas to promote vitality:

a. Working conditions: to encourage alternation of working positions, standing desks or alternatives such as cardboard table risers are encouraged for the home workplace. At the office workplace, standing desks are encouraged in combination with desk bikes and swoppers (dynamic sitting).
b. Tackling job stress: workshops, webinars and lectures were provided. Time management courses were also offered, such as Manage your Work and Manage your Email. Job stress prevention consultations with Occupational Social Work were continued. In addition, employees@risk are discussed in the social medical consultation with Occupational Social Work and the in-house medical officer.
c. Meetings and workshops on overload are provided, with specific focus on informal care. Meetings and workshops are organised for employees who are also informal carers to regain or maintain their work-life balance.
d. Development: a volleyball court has been built between Unifarm's main building and Nova, as well as a bocce court and table tennis tables. Taking health courses (such as mindfulness) and sports classes at De Bongerd Sports Centre is encouraged.

Ethically responsible research: PSG is on track to full compliance with the international rules for Access and Benefit Sharing of Genetic Resources (Nagoya Protocol).

Entrepreneurship and Applied Research: Cooperation between enterprises and university or research institutes is needed to achieve goals and increase impact. Also, the financial margin gained from partnerships with enterprises is used for investment in fundamental and applied research, again benefiting science, society and industry.

High-impact partnerships: PSG has a strong network and multiple partners inside and outside WUR. To remain visible and strengthen our position as a preferred knowledge provider, we need to share and streamline our networks with both current and new partners. Each researcher should act as a point of contact across WUR, and partners should be referred to the group with the required expertise.

Sustainable energy: The solar panels on roofs of PSG buildings generate about 1.5 MWh of electricity annually. The wind turbines in Lelystad produce about 65 MWh of electricity annually.

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 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. SSG has a two-track policy of making adjustments to its operations and promoting sustainability behaviour among employees.

Waste and Circularity

Waste collection is unchanged from the previous year. Waste is separated in the Leeuwenborch and there are increasing demands on suppliers. Two multifunctional printers were made available to the new education building, as use (even before the corona pandemic) was minimal. Hybrid working is expected to result in even less printing.

Catering

Sustainability requirements were included in the tender for the caterer for the Leeuwenborch. Examples include reducing and/or collecting packaging materials, working with seasonal products and, to avoid food waste, processing residual products.

Asbestos

No specific actions under the asbestos management plan have been taken for the Leeuwenborch building.

Building and renovating

As part of the WUR Strategic Housing Plan, the housing situation of the Sciences Groups was examined, and the Executive Board decided in late 2021 to use the Leeuwenborch as an office and education building for at least another 10 to 15 years. Concrete plans will be developed in 2022, including investments and renovations. The Management Board will also include sustainability aspects in the requirements package.

Energy

The Leeuwenborch remained open during the corona pandemic. The operation of the building management system has been critically reviewed to control installations more efficiently, taking into account corona guidelines for ventilation. This has resulted in lower consumption (unintended or otherwise). Regular rounds were made to close the radiators in rooms that were unused. During the lockdown, equipment was switched off whenever possible.

The door for the basement bicycle parking was replaced in spring 2021 by a door with a sensor, which opens and closes only when someone stands in front of it. This plugged a huge thermal leak and kept the heat in the building.

Research in 2021 showed that the Leeuwenborch, an education and office building, now has energy label D and must achieve energy label C by 2023. A study was started on the measures that would give the building the better energy label C. Improving the roof insulation was shown to be sufficient. This work will start in 2022.

The E-team comprising the site manager, technical building manager and the health and safety adviser met several times in 2021. The following topics were discussed: monitoring energy consumption, energy management and coordination with the central E-team and with departments such as Building and Housing Management, for example in connection with the replacement of boilers and the operation of air handling units.

CO_2 emissions and mobility (business travel)

The WUR travel policy, which has guidelines for choosing to take public transport instead of flying within Europe, has been in force from early 2020. However, due to the corona pandemic, these guidelines have not yet received much attention, mainly as a result of the lack of publicity and low priority. On average, SSG receives more than 250 travel requests annually. In 2020, the first year of the corona pandemic, 130 travel requests were submitted. There were 166 in 2021, including 50 students and 121 staff. An increase in travel requests is expected in 2022.

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, consisting of the site manager, policy officer and health and safety adviser, got off to a flying start in the first half of 2021. They were joined by a student, who takes the role of Green Impact Project Assistant (GIPA). Notably, this effort allowed the team to develop and deploy a 'sustainability bingo' game on the intranet. They were subsequently nominated for the Green Impact International Special Awards, in the "Team Innovation Award" category. They were also awarded the silver certificate for a variety of sustainable actions carried out in 2020-2021. Besides the bingo game, other initiatives included a battery-charging idea for IT peripherals so that rechargeable batteries are purchased for computer mice and keyboards, and for 20 weeks they posted interesting and inspiring sustainability facts on the intranet.

In the second half of 2021, it became clear that the team is limited by its members' available time and energy. Next year, the team's priorities will be reviewed.

CSR

In terms of CSR policy, at present SSG is mainly concerned with gaining insight into the themes of: setting goals and priorities, assessing effectiveness and promoting cooperation between disciplines, such as HR and health and safety.

6.6 Wageningen Food & Safety Research (WFSR)

On 1 June 2019, RIKILT-WUR and the NVWA's Feed and Food Safety Laboratory merged to create a new institute: Wageningen Food Safety Research (WFSR). WFSR has been working on the following themes for making its operations more sustainable.

Waste

Within WFSR, we are constantly looking for ways to optimise waste separation. In 2021, slurry waste, among other things, was assessed. Large starting samples are used when grinding nuts, and this causes a large amount of waste in the slurry pit; we are investigating whether this waste can be reused. We are also looking at using less rinse water so that less wastewater is generated, and we looked at better separation of hospital waste. For example, animal sample material could be disposed of as animal by-products (cat.1). Fruit and vegetable samples can be disposed of as organic waste. In 2022, we will see if this can be implemented within more teams.

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.

Wastewater is sampled periodically. Copper contamination was found in wastewater in 2021. It was investigated whether there had been any changes in procedure or incidents. The cause of the exceedance could not yet be ascertained. Additional measurements are planned to identify the possible source.

Energy-saving measures

Energy-saving measures have been discussed in the Energy Team (E-team). This team consists of the site manager, the technical building manager, the health and safety and environment coordinators and the head of QHSE. Due to the corona pandemic measures and sickness absence, priorities were shifted and the E-team met only once.

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 has therefore been launched to determine whether ventilation in the laboratories can be lowered at night.

CSR project group

A CSR project group is active within WFSR, consisting of employees from various business units, the building manager, the head of QHSE and a Health, Safety and 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 in turn 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 group so that all teams and units are equally represented. We also made sure that employees from both former institutes are participating.

Vitality

- The social medical teams meet every six weeks. At these meetings, managers discuss reintegration routes and prevention options and can get advice from the in-house medical officer, Occupational Social Work and HRM.
- 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.

Ethically responsible research

WFSR is on track towards full compliance with the International Rules for Access and Benefit Sharing of Genetic Resources (Nagoya Protocol).

6.7 Facilities and Services (FB)

Integrating CSR into all processes and making services more sustainable is one of the objectives in Facilities and Services' Business Plan 2019-2022. Facilities and Services is working on making operations more sustainable on the themes of inclusiveness, sustained employability and vitality, safety, energy, sustainable mobility, catering, waste management (also 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 in the Multi-Year Environmental Plan 2020-2022, 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.

Our activities in 2021 included the following:

- Work was done on a new vision on healthy and sustainable food and beverages at restaurant facilities and catering. During the Invention Summer Camp 'The future of Food & Beverage @ WUR', students and staff provided input for this vision.
- Development of WUR-wide vision on energy transition has continued. The rough outline of the energy transition was approved by the Executive Board in December 2021.
- Projects on renewable energy and energy conservation continued. The underground infrastructure of the ATES loop on Wageningen Campus was completed in 2021. Work has started on connecting buildings to the loop.
- The Mobility Vision 2030 introduced the concept of Mobility as a Service. Shared electric cars were taken into use, and the introduction of shared bikes was prepared.
- We contributed to programmes to promote the vitality, health and safety of staff and students, such as Vital@work and the Safety@WUR e-learning series.
- 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.

Facilities and Services supported Green Office Wageningen initiatives and sustainability projects in 2021. It also facilitated the Green Impact programme and participated in 2021 with its own team.

Appendix 1: CSR Agenda

A. The themes of WUR's CSR Agenda

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

Nr.	MVO thema	Ambitie
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 $CO2_{eq}$.
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 2021 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	Averge 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

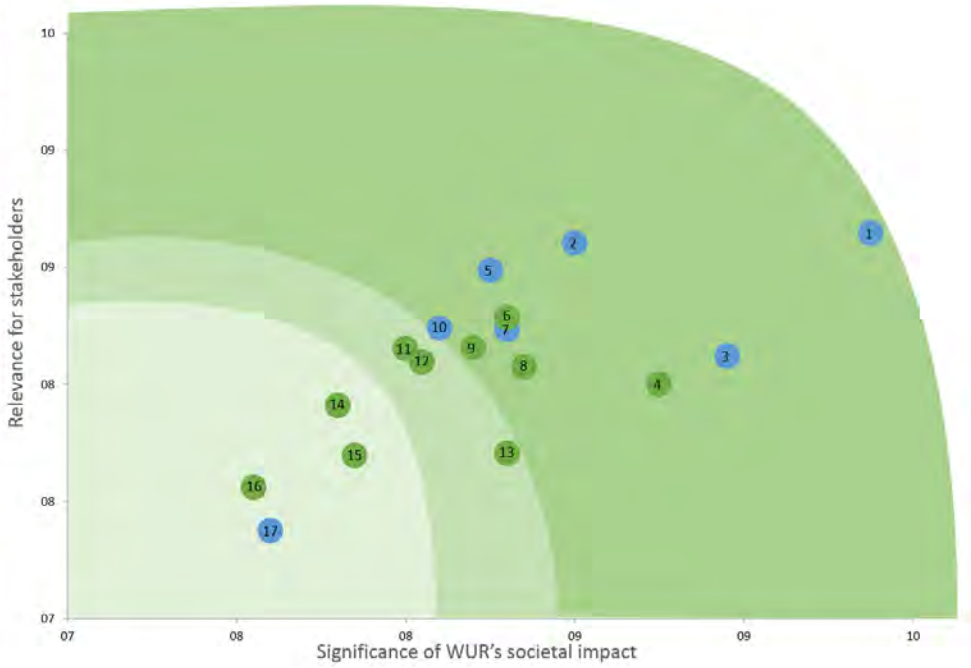


Figure B1-1 Materiality analysis (the figures refer to the number of the CSR theme, see Table B1-1)

C. 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				
X = dept. responsible/process owner x = involved/in partnership with 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		CC&M	CF&C	CHR	CSA	CVC	ESA	Facilities and Services		Chair groups	Research groups	Line management	Divisional management	QHSE sections
1	Research and education designed to make a contribution to societal challenges				X		X			x	x			
2	Sharing and disseminating knowledge				x	X	x			x	x			
3	Innovative and challenging research and education				X		X			x	x			
4	Vitality			X								x	x	x
5	Ethically responsible research				X					x	x	x		
6	Climate-adaptive environment							X		x	x		x	x
7	Entrepreneurship and applied research				x	X				x	x			
8	Waste and circularity							X				x	x	x
9	Responsible collaboration	X								x	x			
10	High-impact partnerships	X								x	x			
11	Responsible economic policy		X							x	x		x	
12	Sustainable energy							X				x	x	x
13	Chain responsibility				X			X				x	x	
14	Development and training			X								x	x	x
15	Diversity in staff and students			X								x	x	
16	Sustainable mobility							X				x	x	x
17	Flexible learning paths						X			x				

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

Figur2 B2-1a: WUR locations in the Netherlands (Source: WUR Corporate Brochure 2021)

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 2021 employees participated in the following training programmes, courses and symposia:

- Prevention officer;
- In-house emergency and first aid service team leader training session and refreshment training;
- In-house emergency and first-aid service training sessions, including basic and refreshment training for emergency and first-aid services, supplementary respiratory protection, and fire-extinguishing drills;
- Radiation hygiene courses;
- 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	2021	+/-*	2020	2019	2018	2017
m^2 of floor surface	470,001	+4.8%	448,590	455,862	458,097	457,043
Number of students (st)	13,676	+3.0%	13,275	12,847	12,439	12,000
Number of employees (em)	7,238	+5.5%	6,860	6,385	5,809	5,545
FTE employees	6,420	+5.7%	6,072	5,624	5,040	4,887
Total number of students and employees (st + em)	20,914	+3.9%	20,135	19,232	18,248	17,545
Total number of students and employees (st + FTE)	20,096	+53.9	19,347	18,471	17,479	16,887
Energy consumption	**2021**	**+/-***	**2020**	**2019**	**2018**	**2017**
Energy (GJ)	681,030	+17.1%	581,825	608,731	623,193	637,391
Electricity (kWh)	52,969,131	-12.7%	46,990,737	49,491,138	50,385,528	51,558,971
Natural gas (Nm^3)	6,455,218	+28.6%	5,020,796	5,159,885	5,362,499	5,477,413
Energy (GJ/m^2)	1.45	+11.7%	1.30	1.34	1.36	1.39
Electricity (kWh/m^2)	112.7	+7.6%	104.8	108.6	110.0	112.8
Natural gas (Nm^3/m^2)	13.7	+22.7%	11.2	11.3	11.7	12.0
Energy (GJ/st + FTE)	33.9	+12.7%	30.1	33.0	35.7	37.7
Electricity (kWh/st + FTE)	2,636	+8.5%	2.428.8	2,679.4	2,882.6	3,053.2
Natural gas (Nm^3/st + FTE)	321	+23.8%	259.5	279.4	306.8	324.4
ICT energy consumption		**+/-***	**2020**	**2019**	**2018**	**2017**
Electricity (kWh)	5,544,616	-3.2%	5,750,000	5,580,000	5,420,000	5,270,000
Electricity (kWh/m^2)	11.8	-7.6%	12.8	12.2	11.8	11.5
Electricity (kWh/st + FTE)	275.9	-6.8%	297.2	302.1	310.1	312.1
Sustainable energy		**+/-***	**2020**	**2019**	**2018**	**2017**
Energy generation (kWh)	63,561,649	-19,2%	78,711,303	73,868,247	71,845,530	67,931,964
Wind Energy (kWh)	*54,228,348*	*-23,8%*	*71,175,920*	*66,338,197*	*62,427,909*	*60,789,192*
Aquifer Thermal Energy Storage (kWh)	*5,992,200*	*+7,4%*	*5,581,387*	*6,157,171*	*8,846,758*	*6,969,333*
Solar panels (kWh)	*3,341,101*	*+71,0%*	*1,953,996*	*1,372,879*	*570,863*	*173,439*
Energy generation (kWh/m^2)	135.24	-22,9%	175.46	162.04	156.83	148.63
Energy generation (kWh/st + FTE)	3162.9	-22,3%	4068.4	3999.1	4110.4	4022.7
Waste		**+/-***	**2019**		**2018**	**2017**
Total waste (kg)	2,146,566	-25.9%	2,898,158	2,555,657	2,186,463	2,190,716
Industrial waste (kg)	1,508,859	-32.9%	2,248,879	1,874,524	1,393,294	1,538,927
of which residual waste	*693,513*	-12.5%	*792,590*	*884,876*	*897,256*	*1,013,504*
Paper waste (kg)	165,194	-10.7%	184,986	302,518	300,983	289,117
Hazardous waste (kg)	472,513	+1.8%	464,293	479,030	492,186	362,670
Total waste (kg/st + em)	102.6	-28.7%	143.9	138.4	125.1	129.7
Industrial waste (kg/st + em)	72.1	-35.4%	111.7	95.9	28.2	21.5
of which residual waste	*33.2*	-15.8%	*39.4*	*46.0*	*49.2*	*57.8*
Paper waste (kg/st + em)	7.9	-14.0%	9.2	16.2	79.7	91.1
Hazardous waste (kg/st + em)	22.6	-2.0%	23.1	25.9	17.2	17.1
Water		**+/-***	**2019**	**2019**	**2018**	**2017**
Total water (m^3)	143,763	-5.7%	152,404	175,750	194,773	217,010
Mains water (m^3)	135,523	+0.5%	134,820	156,084	167,062	186,372
Well water (m^3)	8,240	-53.1%	17,584	19,666	27,711	30,638
Total water (m^3/m^2)	0.31	-10.0%	0.34	0.39	0.43	0.47
Mains water (m^3/m^2)	0.29	-4.1%	0.30	0.34	0.36	0.41
Well water (m^3/m^2)	0.02	-55.3%	0.04	0.04	0.06	0.07
Total water (m^3/st + FTE)	7.2	-9.2%	7.9	9.5	11.1	12.9
Mains water (m^3/st + FTE)	6.7	-3.2%	7.0	8.5	9.6	11.0
Well water (m^3/st + FTE)	0.4	-54.9%	0.9	1.1	1.6	1.8
Carbon footprint		**+/-***	**2020**	**2019**	**2018**	**2017**
CO_2 emissions (kg CO_2 equivalents)	29,572	-3.4%	30,608	41,363	42,777	40,706
CO_2 compensation (kg CO_2 eq)	34,273	-24.0%	45,116	42,698	48,254	45,646
CO_2 emissions (kg CO_2 eq/m^2)	0.06	-7.8%	0.07	0.09	0.09	0.09
CO_2 compensation (kg CO_2 eq/m^2)	0.07	-27.5%	0.10	0.09	0.11	0.10
CO_2 emissions (kg CO_2 eq/st + FTE)	1.47	-7.04%	1.58	2.24	2.45	2.41
CO_2 compensation (kg CO_2 eq/st + FTE)	1.71	-26.9%	2.33	2.31	2.76	2.70

* Difference in 2021 compared with previous year.

B3.2 Waste

Table B3-2a Quantity and composition of waste 2021 (in kg) for each organisational component

Waste flow	AFSG	ASG	CS+	ESG	FB	PSG	SSG	WFSR	Total WUR	Third parties	Total	Processing (GRI)
Residual waste	67,176	233,404	10,157	28,485	59,917	254,363	5,931	34,080	693,513	20,494	714,007	Energy recovery
Organic waste / green waste / swill	12,769	2,939	3,062	3,345	15,879	34,380	3,725	14,443	90,543		90,543	Recycling
Construction / demolition / rubble		21,150			14,900	445,660			481,710		481,710	Recycling
Foil / plastics	5,580	4,335	845		955	6,909	12,360	886	33,920		33,920	Recycling
Glass	985	1,881		485	641	10,665	127	7,435	21,734	485	22,219	Recycling
Soil						14,500			14,500		14,500	Recycling
Wood	4,380	10,800			2,860	31,740			49,780		49,780	Recycling
Manure		122,700							122,700		122,700	Recycling
Scrap								460	460		460	Recycling
Paper / cardboard	29,125	25,644	6,170	13,145	33,945	33,805	12,210	11,150	165,194	2.001	167,195	Recycling
Hazardous waste	51,061	240,312	5,116	9,741	13,917	48,387	16	103,963	472,513		472,513	See table B3-2b
Total	171,076	663,165	25,350	55,671	148,967	885,860	22,895	173,581	2,146,566	22,980	2,169,547	
Separation %	61%	65%	60%	48%	58%	71%	83%	80%	68%	11%	67%	

Table B3-2b Hazardous waste (in kg) in 2021 (WUR, including third parties), broken down by EWC code

EWC code	EWC name	Kg	Processing method (in accordance with GRI)
060101*/060106*	COD/CZV afval	72	Other: ONO*
060105*	Dilute nitric acid	9,250	Other: ONO
060105*/06*/200114*	Inorganic acids	6,156	Other: ONO
060106	Various laboratory chemicals (packed)	101	Other: ONO
060203*	Ammonia	138	Other: ONO
060204*/05*/200115*	Various inorganic alkalis / Kjeldahl waste	2,321	Other: ONO
060205*	Kjeldahl-afval	4,292	Other: ONO
060311*	Alkalis containing cyanide	12	Other: ONO
070104*/140603*/200113*	Low halogenated solvents	12,028	Energy recovery
070704*	Organic alkalis	22	Other: ONO
090101*	Photographic developer	164	Recycling
090104*	Fixative	136	Recycling
110106*	Organic acids	442	Other: ONO
130113*/130204*/05*/08*/ 200126*	Cat II en III waste oil	1,199	Recycling
130508*/190809	Oil \ water \ silt mixtures	29,498	Recycling
130899*	Waste containing oil	316	Energy recovery
140602*	Fluids with high halogenated content	4,263	Incineration
140603*/150110*/160305*/ 160506*/161001*	Packaged laboratory waste (rotary kiln)	17,310	Incineration
150202*/150110*	Lab glass, empty packaging (with chemical residues, unrinsed)	8,939	Incineration
150202*/160506*	Lab waste with chemical residues	2,404	Energy recovery
160114*	Coolant	182	Distillation
160303*	Inorganic salts, soluble	10	Other: ONO
160305*/200125	Organic materials	4,343	Incineration
160504*	Spray cans	33	Incineration
160506*	Various laboratory chemicals (packed)	551	Incineration
160601*	Lead batteries	16	Recycling
160904*	Organic peroxides	26	Incineration
161001*	Aqueous liquids (low calorific)	2,486	Incineration
170503*	Contaminated soil	1,498	Energy recovery
170605*	Waste containing asbestos	10	Disposal (long term storage)
180103*/180202*	Specific hospital waste / infectious waste / biological waste	170,581	Energy recovery
180109/200132	Medicines and cosmetics	136	Energy recovery
180205*/200119*	Pesticides	20,749	Incineration
200121*	Waste containing mercury	33	Recycling
200121*	Fluorescent lamps	1,263	Recycling
200125	Edible oils and fats	307	Recycling
200127*	Glues, resins and putties	46	Energy recovery
200127*/200136/200199	Hazardous office waste	216	Energy recovery
200129*	Cleaners	32	Other: ONO
200133*	Batteries	446	Recycling
200135*/200136	White & brown goods (refrigerators, freezers)	10,322	Recycling
200135*/200136	Electronic products / computers	5,188	Recycling
200306*	Sludge (sewage / gully / pumping station)	15,811	Wet soil remediation
No code	Animal waste	137,586	Other: sterilisation, then processing into meat-and-bone meal for the production of biogas/biodiesel
Unknown	Other	1,579	Unknown
Total		472,513	

* ONO stands for detoxification, neutralisation, and draining/dewatering (‘ontgiften, neutraliseren en ontwateren’)

Table B3-2c Quantity of waste 2021 (in kg) per step of the Lansink Ladder (including third parties)

Waste flow	Step of the Lansink Ladder								Total
	Recycling	Energy recovery	Other: sterilisation, then processing into meat-and-bone meal for the production of biofuel	Other: detoxification, neutralisation, and draining/dewatering (ONO)	Other: Destillation / wet soil remediation	Incineration	Not known	Disposal (long term storage)	
Industrial waste	815,346	693,513							1.508,859
Paper waste	165,194								165,194
Hazardous waste	48,572	187,225	137,586	22,848	15,993	58,700	1,579	10	472,513
Total	1,029,112	880,738	137,586	22,848	15,993	58,700	1,579	10	2,146,566
Third parties	2,486	20,494							22,980
Total WUR	1,031,598	901,232	137,586	22,848	15,993	58,700	1,759	10	2,169,546
Fraction	48%	41%	6%	1%	1%	3%	<1%	<1%	

Table B3-2d Total quantity of waste (kg) per municipality 2021[1, 2]

Location - complex	Industrial waste	Hazardous waste	Paper waste	Total
Wageningen	623,584	234,374	143,288	1,001,246
Lelystad	770,791	204,324	17,648	992,763
Den Helder	3,500	1,233		4,733
Drachten			325	325
Ede	20,363	230	1,495	22,088
IJmuiden	7,380	20,865	55	28,300
Leeuwarden	49,265	3,230	1,943	54,438
Meijel			160	160
Randwijk	10,000	403	70	10,473
Renkum	1,750			1,750
Sterksel	11,560			11,560
Valthermond	5,337			5,337
Vredepeel	3,235			3,235
Yerseke	2,094	7,854	210	10,158
Total	1,508,859	472,513	165,194	2,146,566

[1] An empty cell indicates that no figures are available.

[2] The industrial waste from The Hague, Hengelo, Leeuwarden, Lisse, Marwijksoord, Sterksel, 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.

Table B3-2d Quantity and composition of waste in 2020-2021 (in kg) for each complex under Dutch Environmental Management Act (Wet milieubeheer)

	Lelystad Complex		Wageningen Campus		Wageningen De Dreijen	
	2021	2020	2021	2020	2021	2020
Industrial waste	570,386	947,073	596,493	843,453	4,478	12,928
Residual waste / bulky waste	106,866	144,307	420,390	408,795	4,353	12,254
Organic waste / green waste / swill	12,840	691,610	66,661	299,970	69	510
Construction / demolition / rubble	436,180	70,160	18,730	41,190		
Foil/plastics		216	30,953	32,806	56	164
Glass			20,320	10,461		
Soil	14,500					
Wood	10,800	13,280	38,980	39,515		
Manure	122,700	27,500				
Metals				10,700		
Other			460	16		
Paper / cardboard waste	6,315	5,010	123,098	119,232	7,165	18,610
Hazardous waste	40,789	11,641	234,358	238,396		95
Hazardous waste	40,789	5,195	197,745	205,450		95
Animal waste (Rendac)		6,446	29,711	26,132		
White and brown goods			6,902	6,814		
Total	617,490	963,724	965,674	1,201,081	11,643	31,633
Separation %	83%	85%	56%	66%	63%	61%

Table B3-2f Quantity and composition of waste in 2021 (in kg) for each Wageningen Campus location

Waste flow	Actio/ Nexus	Atlas	Aurora	Axis	Carus	Forum	Gaia	Helix	Innova-tron	Leeuwen-borch
Residual waste	3,566	5,264	3,583	50,338	35,300	17,533	20,417	15,768		5,931
Paper / cardboard	5,610	6,170		15,865		14,360	6,420	13,260	1,093	11,725
Organic / green / swill	821	1,867	1,618	7,671		6,613		5,099		3,725
Foil / plastics	1,040	775	225	2,980	505	2,628	955	2,600		886
Construction / demolition / rubble			4,230		1,220	3,800				1,900
Wood				4,380		1,720				
Glass				635	620	265		350		127
Hazardous waste	860	5,116		31,537	21,981	5,489	4,861	19,524		16
Total	11,897	19,192	9,656	113,406	61,569	52,407	32,653	56,601	1,093	24,310
Separation %	70%	73%	63%	56%	42%	67%	37%	72%	100%	76%

Waste flow	Lumen	Nergena	Orion	Exp. Farm Droevendaal	Radix	Radix Serre, Klima, Argos en Nova	Schouten-hoef	Sports Centre de Bongerd	Vitae	Zodiac
Residual waste	6,318	21.600	8,516	4,020	69,454	104,632	15,393	6,160	34,080	15,000
Paper / cardboard	6,725		4,570		19,845	6,850	770	1,080	11,150	9,825
Organic / green / swill	3,345		6,165			16,460		1,527	14,443	2,299
Foil / plastics			1,530			12,360		555	2,050	2,405
Construction / demolition / rubble						9,480	4,970			
Wood		4,980	1,140			26,760				
Glass			350		225	10,440		26	7,435	
Scrap									460	
Hazardous waste	4,880		7,338		9,928	12,492	230		103,963	6,389
Total	21,268	26,580	29,609	4,020	99,452	199,474	21,363	9,348	173,581	35,918
Separation %	70%	19%	71%	0%	30%	48%	28%	34%	80%	48%

Table B3-2g Quantity and composition of waste in 2021 (in kg) for each Lelystad location

Waste flow	Edelhertweg	Houtribweg	Runderweg	Wisentweg
Residual waste	26,620	126,901		
Paper / cardboard	6,315	11,333		
Organic / green / swill	12,840	640		
Foil / plastics		1,425		
Construction / demolition / rubble	328,120	3,640		88,160
Glass	14,500			
Wood				
Hout		10,800		
Manure		1,425	122,700	
Hazardous waste	25,564	97,092		
Animal waste (Rendac)		81,668		
Total	413,959	333,499	122,700	88,160
Separation %	94%	62%	100%	100%

Table B3-2h Quantity and composition of waste in 2021 (in kg) for other locations

Afvalstroom	ASG (WLR)	ASG (WMR)	ESG	PSG	SSG (WECR)
Residual waste	44,535	11,668	1,750	13,492	
Paper / cardboard	1,943	265		70	485
Organic / green / swill				5,080	
Foil / plastics		60			
Construction / demolition / rubble	16,290				
Glass					
Wood		1,261			
Hout					
Manure					
Hazardous waste	3,230	3,745		403	
Animal waste (Rendac)		26,207			
Total	65,998	43,146	1,750	19,045	485
Separation %	33%	73%	0%	29%	100%

Table B3-2i Quantity of waste (in kg) in 2021 and 2020, broken down according to organisational component[1, 2]

2021	Industrial waste	Paper waste	Hazardous Waste	Total	Separation %
AFSG	168,844	29,125	51,061	171,076	61%
ASG	400,842	25,644	240,312	663,165	65%
CS+	28,251	6,170	5,116	25,350	60%
ESG	45,111	13,145	9,741	55,671	48%
FB	226,799	33,945	13,145	148,967	58%
PSG	796,637	52,834	47,276	885,860	71%
SSG	36,959	12,210	16	22,895	83%
WFSR	171,081	14,345	71,699	173,581	80%
Subtotal for WUR	1,874,524	165,194	472,513	2,146,566	68%
Third parties	20,979	2,001	0	22,980	11%
Total	2,169,547	167,195	472,513	2,169,547	67%
2020	Industrial waste	Paper waste	Hazardous Waste	Total	Separation %
AFSG	103,275	24,940	47,560	175,775	61%
ASG	326,116	28,871	249,275	604,262	57%
CS+	13,820	6,384	8,240	28,444	73%
ESG	32,369	10,685	5,731	48,785	52%
FB	125,629	50,000	13,239	188,868	64%
PSG	1.353,430	40,580	54,442	1,448,452	78%
SSG	15,873	13,115	154	29,142	71%
WFSR	278,385	10,395	85,652	374,432	90%
Subtotal for WUR	2,248,879	184.986	464,293	2,898,158	73%
Third parties	22,741	1,964	142	24,847	11%
Total	2,271,620	186,950	464,435	2,923,005	72%

[1] In the case of multi-tenant buildings, the waste is assigned to the main tenant.
[2] 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 2014-2021, broken down according to organisational component

Organisational component	2014	2015	2016	2017	2018	2019	2020	2021
AFSG	44,610	45,222	51,820	60,504	48,674	49,937	47,560	51,061
ASG	158,932	154,690	201,792	203,189	299,770	285,323	249,275	240,312
CS+						8,920	8,240	5,116
FB	7,985	11,280	10,901	16,000	12,024	5,433	5,731	9,741
ESG	18,412	13,876	15,425	17,083	18,011	14,655	13,239	13,917
PSG	38,986	49,132	31,184	16,093	64,649	46,844	54,442	48,387
SSG	117	58	186	89	44	40	154	16
WFSR	36,890	35,706	40,817	49,672	49,014	67,878	85,652	103,963
Subtotal for WUR	305,932	309,964	352,125	362,630	492,186	479,030	464,293	472,513
Third parties*	52,503	47,390	50,622	59,525	65,559	20,428	142	
Total	358,435	357,354	402,747	422,155	557,745	499,458	464,435	472,513

* 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 CO_2 footprint

CO_2 inventory in 2021

The inventories of the CO_2 footprint and CO_2 compensation were carried out in conformity with ISO 14064-1:2006 (E), which was based on the Greenhouse Gas Protocol. The CO_2 performance ladder, version 3.1, was used as a starting point. The completeness of the data used for the CO_2 footprint and CO_2 compensation footprint is checked annually by the independent agency Royal HaskoningDHV.

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

Scope 1: (direct emissions)	▪ 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)	▪ 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)	▪ 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 CO_2 footprint. This has been recalculated for revision in 2016 according to the CO_2 performance ladder system.
- From 2015 onwards, calculations are performed with the CO_2 emission factors that were actualised in 2014 (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 CO_2 footprint and CO_2 compensation footprint.

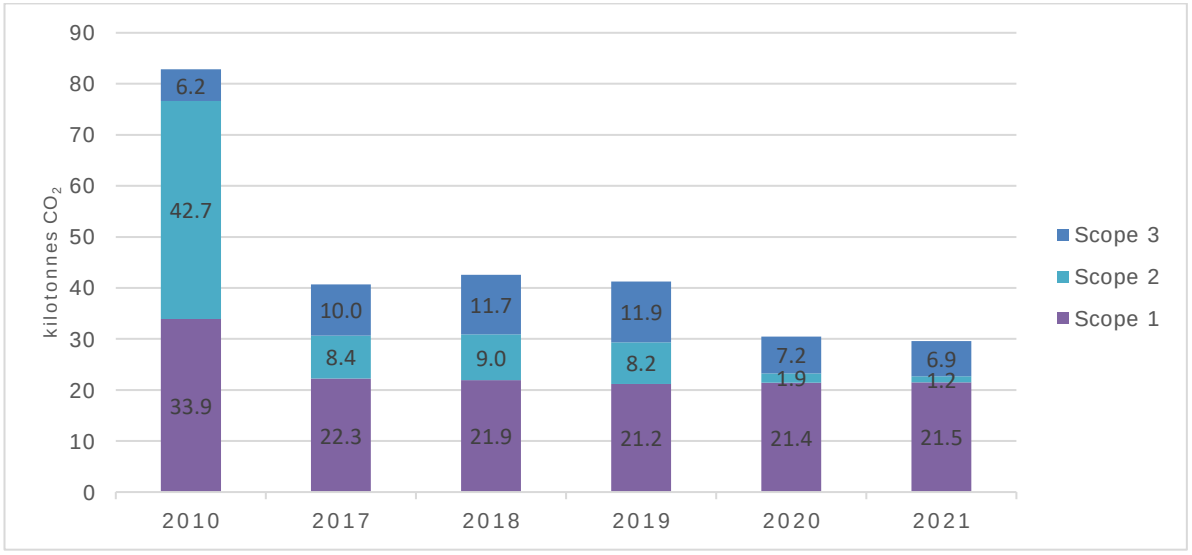


Figure B3-3a CO_2 emissions (in kilotonnes) per scope in 2017-2021 and reference year 2010

Table B3-3a Breakdown of greenhouse gas emissions by scope (in tonnes of CO_2) in 2017-2021 and reference year 2010

Scope	Component	Emission in CO_2-eq (in tonnes)					
		2010	2017	2018	2019	2020	2021
Scope 1	Buildings - natural gas	20,325	11,430	11,250	10,912	10,970	12,162
	Buildings - coolant	527	132	207	89	104	103
	Organisation's vehicle fleet	513	130	113	165	187	138
	Leased vehicles	511	320	302	323	35	124
	Rented cars	84	64	45	47	13	49
	Rented coaches	114	150	153	161	36	104
	Agricultural vehicles	817	926	1,115	982	1,337	1,142
	Agricultural land	6,355	5,735	5,100	5,100	5,602	5,110
	Livestock	4,649	3,369	3,635	3,421	3,042	2,575
	Total of scope 1	33,894	22,256	21,921	21,198	21,326	21,508
Scope 2	Buildings - electricity	33,058	0	0	0	0	0
	Vehicles - electricity	0	3	10	7	2	34
	Business travel in private cars	1,354	898	946	891	595	517
	Business air travel	8,156	7,473	7,977	7,218	1,247	636
	Business travel by public transport	147	32	32	39	8	2
	Total of scope 2	42,714	8,405	8,966	8,156	1,852	1,190
Scope 3	Waste processing	1,317	1,790	2,109	2,323	2,558	2,129
	Air travel students	1,269	1,597	2,037	2,102	415	78
	Commuting	3,623	6,658	7,555	7,466	4,226	4,668
	Total of scope 3	6,209	10,045	11,700	11,891	7,196	6,875
Total		82,818	40,703	42,587	41,245	30,454	29,572

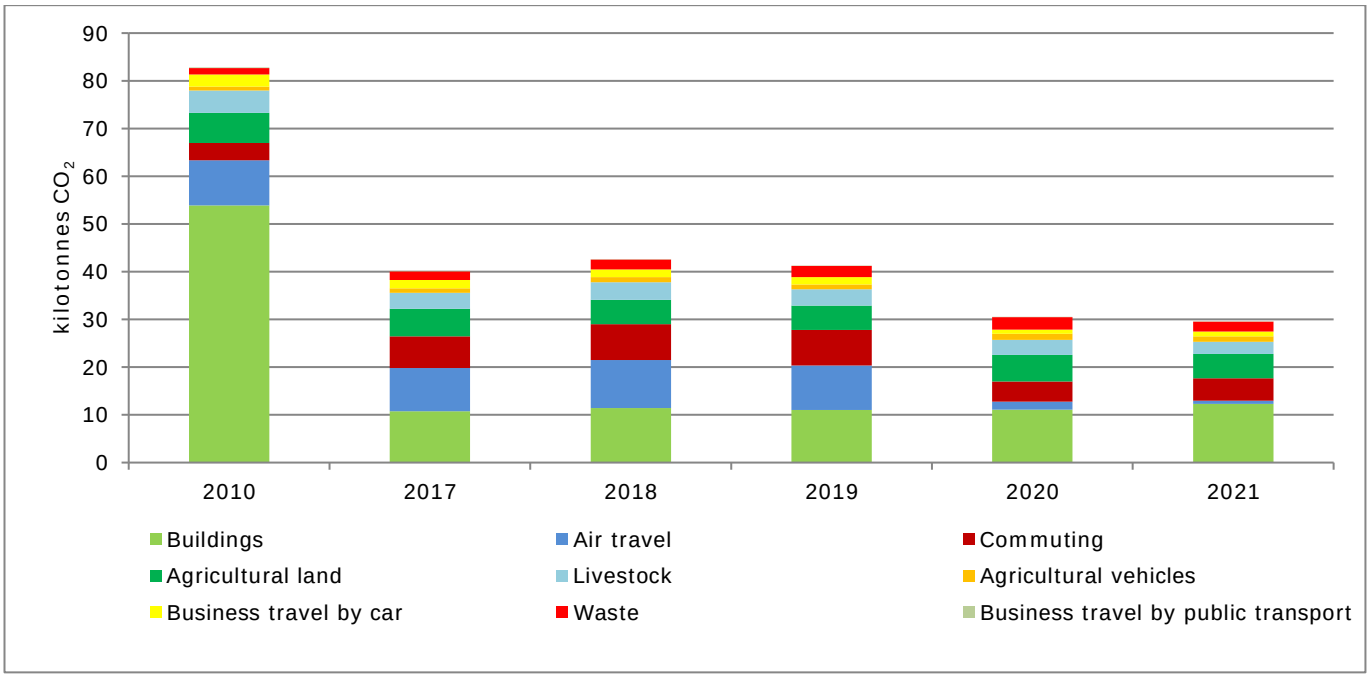


Figure B3-3b WUR's CO_2 footprint in 2017-2021 and reference year 2010

CO_2 compensation

WUR compensates its energy use in the following ways:

- By generating its own wind energy (over 54 million kWh in 2021).
- Thermal storage systems on WUR's own sites, to heat and cool various buildings on Wageningen Campus (5,9 million kWh in 2021).
- By generating its own solar energy (3.3 million kWh in 2021).
- The separation of the various types of waste to the maximum possible extent.

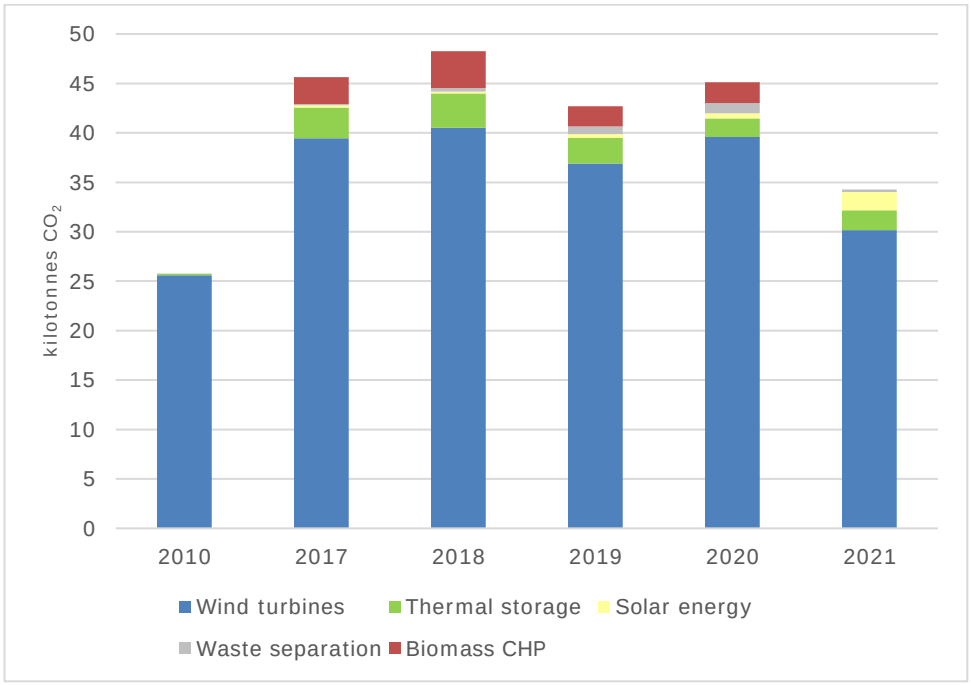


Figure B3-3c WUR's CO_2 compensation measures in 2017-2021 and reference year 2010

B3.4 Energy consumption

Energy consumption	Electricity (kWh)	Gas (Nm^3)	Energy (MWh)	Tonnes CO_2
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)**	**Tonnes CO_2**
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%

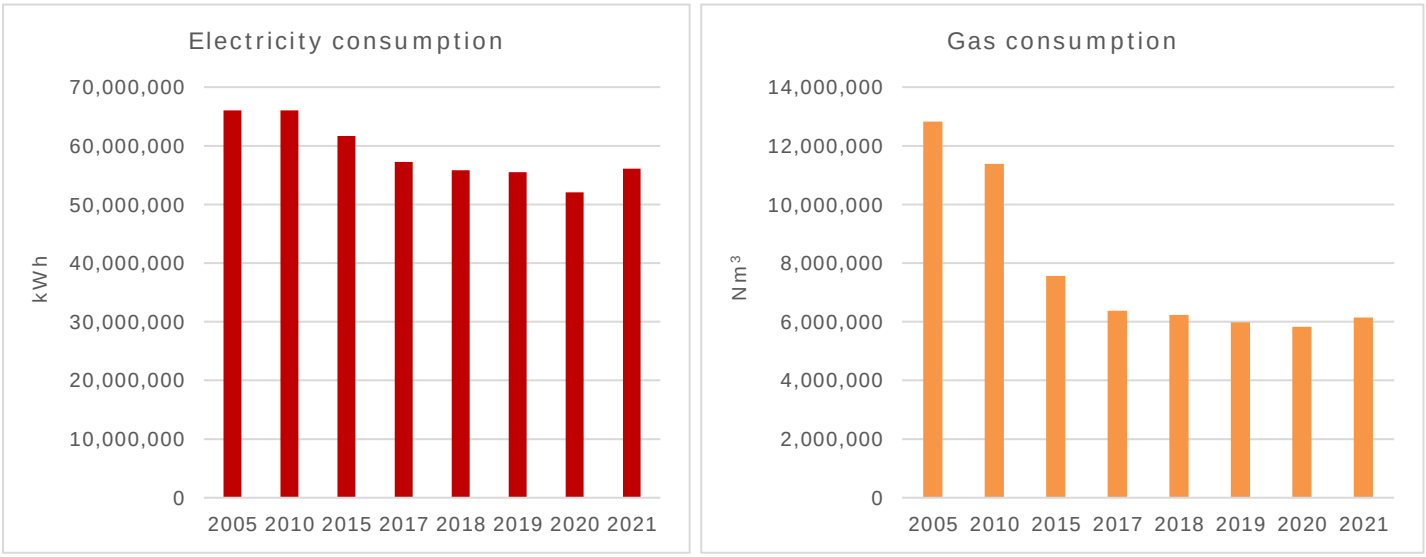


Figure B3-4a. Electricity consumption (kWh) and gas consumption (Nm^3) in 2005, 2010, 2015 and 2017-2021

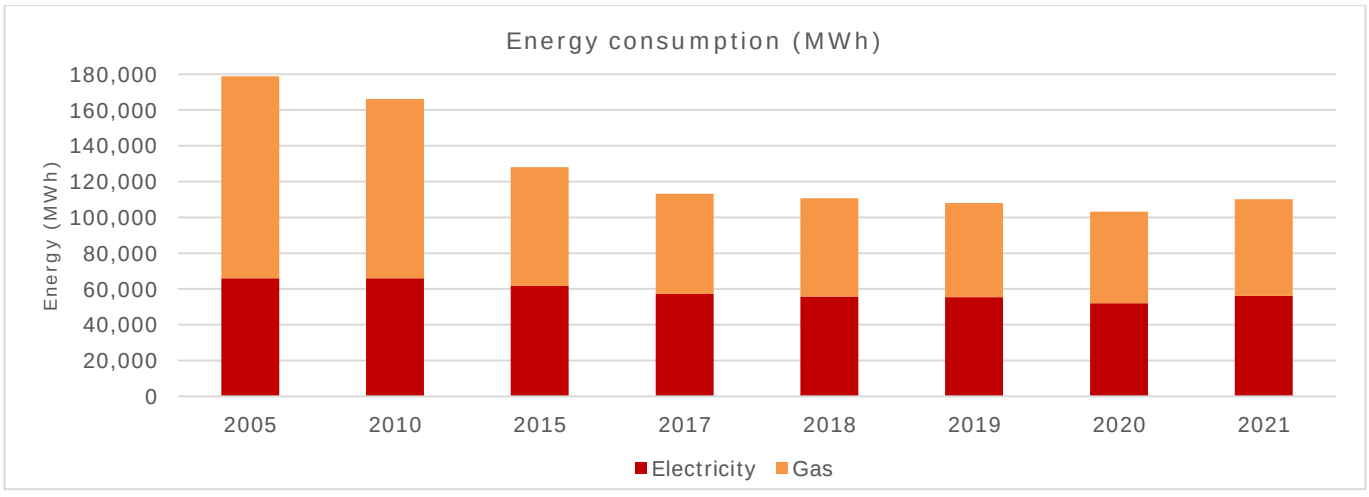


Figure B3-4b. Energy consumption converted to MWh in 2005, 2010, 2015 and 2017-2021

B3.5 Water consumption

Water use	Mains water (m^3)	Well water (m^3)
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 use compared to 2005	Mains water (m^3)	Well water (m^3)
2021	58%	6%
2020	57%	13%
2019	67%	14%
2018	71%	20%
2017	79%	22%
2015	91%	38%
2010	106%	36%
2005	100%	100%

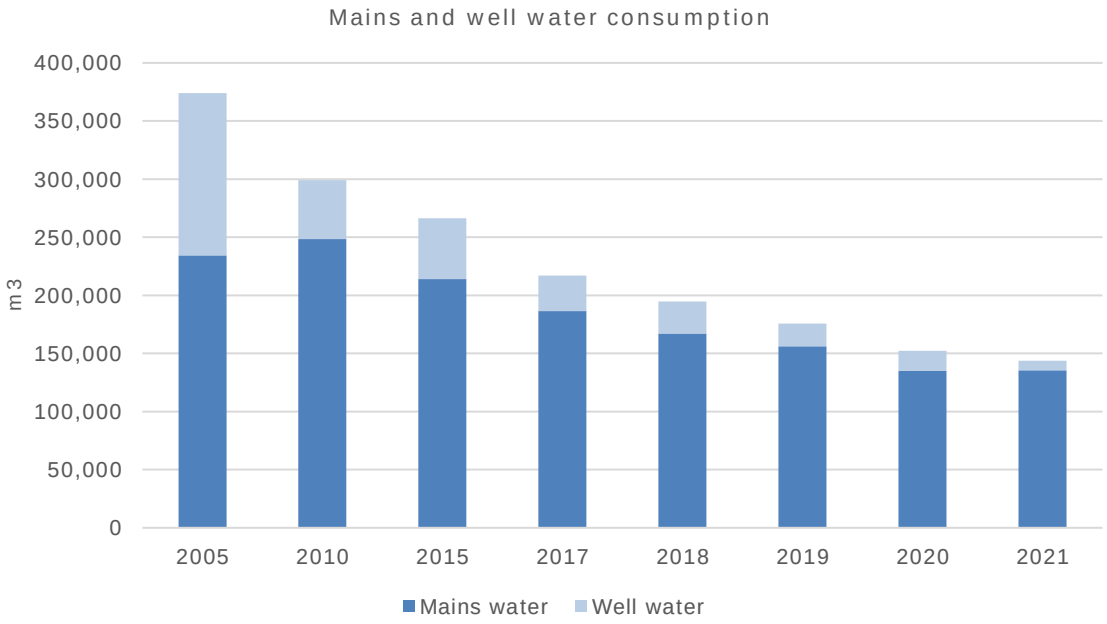


Figure B3-5a. Mains water and well water consumption (m^3) in 2005, 2010, 2015 and 2017-2021

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).

Environmental permits have been issued for:

- Wageningen Campus and De Dreijen
- WUR complex Lelystad
- WBVR Lelystad
- Wageningen other and other locations.

See table B4-1. Table B4-2 gives an overview of the environmental permit regulations for the activities of the organisational components

Table B4-1 Overview environmental permits regulations per organisational component in 2021

Organisational component	Wageningen Campus	De Dreijen Wageningen	WUR complex Lelystad	WBVR Houtribweg Lelystad	Other Wageningen	Other locations
Agrotechnology & Food Sciences Group (AFSG)	X					
Animal Sciences Group (ASG)	X		X	X		X[1,2]
Environmental Sciences Group (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]
Corporate staff+ (CS+)[10]	X				X[11]	

1. Dairy Campus (Goutum), 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. Auditorium (De Aula and Achter de Aula), student accommodation in Wageningen (Haarweg and Stadsbrink)

Table B4-2 Environmental regulations per organisational component

Organisational component	Environmental logbook[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 the complex permits.
- Registration of hazardous substances must take place at all locations where hazardous substances are used. Chemical registration 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.
- Periodic checks and tests of the systems, such as fume hoods, 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 2021

In the past year, the Permits Centre supervised 29 permit procedures, see Table B4-3.

Table B4-3 Overview of WUR permit procedures in 2021

Location	Project	Permits[1]
Lelystad, Edelhertweg 1	Mobile hydrogen filling point	Environmental permit under Wabo
Lelystad, Edelhertweg 1	Electrolyzer storage generated energy	Environmental permit under Wabo
Lelystad, Edelhertweg 1	Li-ion battery for storage generated energy	Environmental permit under Wabo
Lelystad, formerly Runderweg 5	Storage of energy via battery	Construction and environmental permit under Wabo
Randwijk, WPR Field crops	Solar panels as canopy roof	Construction under Wabo
Valthermond, WPR Field crops	Renovation canteen	Construction under Wabo
Valthermond, WPR Field crops	Extension	Notification AB
Wageningen	General Introduction Days (AID): activities + temporary camping	APV, camping, alcohol act
Wageningen Campus	Replacement bulk gas facilities	Construction and environmental permit under Wabo
Wageningen Campus	Construction bicycle path	Felling, wooded bank and replanting plan
Wageningen Campus	Drain and compensate water bodies for bike path	Water Act permit
Wageningen Campus - Aurora	Commissioning building	Construction under Wabo: usage notification
Wageningen Campus - Omnia	Felling of trees	Felling under Wabo
Wageningen Campus - Unifarm	Replacement insect greenhouse	Construction and environmental permit under Wabo
Wageningen, De Dreijen	Felling of trees	Felling under Wabo
Wageningen, Haarweg 333	Extension temporary construction permit	Construction under Wabo
Wageningen, Experimental fields De Ossekampen	Test set-up manure	Construction under Wabo and RO
Wageningen University / Wageningen Research	Working with chemicals	4 permits / exemptions / notifications / registrations

[1] Wabo = Environmental Permitting (General Provisions) Act / RO = Spatial Planning Decree / APV = General Mu`nicipal by-law / AB = Activities Decree

Appendix 5: Compliance

B5.1 Incidents and complaints in 2021

WUR uses an incident monitoring system to report incidents. A total of 7 environmentally related reports were made in 2021. The incident reports are specified in the Annual Report on Working Conditions 2021 (Arbojaarverslag). The environment-related reports are explained below. In 2021, 4 complaints or reports of nuisance were handled.

Incidents

Incident 1

Location:	Zodiac car park at Vijfde Polder, Wageningen
Cause:	Leakage of oil from company vehicle.
Result:	A small amount of hydraulic oil leaked onto the clinker pavement.
Action:	Incident was reported to the competent authority. Cleaned up leaked oil, installed leakage tray.
Follow-up action:	Checked for contamination of the soil between the clinkers. No contamination was found.
Environmental damage:	None
Status:	Completed

Incident 2

Location:	Houtribweg 39, Lelystad
Cause:	Glycol leakage from solar water heater as a result of a ruptured pipe from thermal impact.
Result:	About 20-30 litres of glycol leaked onto the site.
Action:	Incident was reported to the competent authority.
Follow-up action:	Leakage stopped, contaminated site has been remediated. Analyses showed no increased concentrations of glycol in soil or water after remediation.
Prevention:	The leakage was fixed and two panels with condensation were replaced. The system was completely drained, flushed and filled with a biodegradable glycol. The biodegradable glycol replaces the glycol. This creates less damage to the environment in case of an emergency.
Environmental damage:	Yes, the soil was contaminated with propylene glycol and ethylene glycol. The contaminated soil was remediated and the soil was subsequently declared "clean" by an accredited agency. The final evaluation of the excavated soil concluded that none of the samples from the well walls and well bottom measured elevated values for glycols. There is no need for further remediation work.
Status:	Completed. The solar water heater has been recommissioned.

Incident 3

Location:	De Dreijen, Wageningen
Incident:	An unknown person dumped a burned-out scooter belonging to a third party on a WUR property.
Result:	Possible contamination with oil, grease and fuel residues in soil.
Action:	Incident was reported to the competent authority. The remains of the scooter and soil were removed by the waste disposal company. Clean soil was brought in, applied and the topsoil was seeded with grass.
Follow-up action:	None
Environmental damage:	None
Status:	Completed

Incident 4

Location:	Akkermaalsbos 2, Wageningen
Cause:	A sample package of pesticides got stuck in a freight elevator.
Result:	Liquid (Metolachlor) spilled into the elevator shaft and onto the floor of the sample room.
Action:	The liquid was cleaned up immediately. In the process, the windows were closed and no additional ventilation was provided. All contaminated material was put into a chemical

waste drum for solid waste. This was sealed and placed in a fume hood. The "mop water" was put into a jerry can and disposed of as chemical waste. No liquid entered the drain, according to the employees involved. After the In-house emergency and first aid service team and fire department were called in, the room was ventilated by opening the windows.

Prevention: Instructions on handling hazardous materials and correctly loading the freight elevator.
Environmental damage: None
Status: Completed

Incident 5
Location: Corner of Droevendaalsesteeg/Bornsesteeg and in parking structure near Radix
Incident: Damage to private vehicle after it went off the road. Vehicle was then parked in the parking structure and where it leaked fluids.
Action: Incident was reported to the competent authority. Adsorption pellets used on own property, street cleaned by municipality of Wageningen to eliminate effects of possible leakage of liquids from vehicle.
Follow-up action: None
Environmental damage: None
Status: Completed

Incident 6
Location: De Elst 1, Wageningen
Incident: Destruction with hydrochloric acid in a fume hood with scrubber resulted in the release of hydrochloric acid fumes.
Action: Incident was reported to the competent authority. The operation of the scrubber was checked before switching it on again.
Follow-up action: None
Environmental damage: None
Status: Completed

Incident 7
Location: Intersection Bronland, Akkermaalsbos and Bornsesteeg, Wageningen
Incident: A third-party commercial vehicle leaked diesel fuel.
Action: Incident was reported to the competent authority. Road management of the municipality of Wageningen spread absorption granules and cleaned the road. No diesel was discharged to surface water or rainwater drain.
Follow-up action: None
Environmental damage: None
Status: Completed

Complaints

Complaint 1 Possible horse manure in a ditch.
Nature of complaint: A tenant of land near Droevendaalsesteeg has left horse manure along a ditch. This could potentially contaminate the ditch.
Follow-up action: Internal inquiries were made as to how to remove the manure. Students collected the manure.
Environmental damage: None
Prevention: Tenant has been addressed. Employees of WUR regularly ensure that manure is adequately removed so that there is no danger to water and soil quality.

Complaint 2 Noise nuisance Aurora, Wageningen
Nature of complaint: Local resident experiences noise pollution from Wageningen Campus activities.
Follow-up action: Investigation into origin of noise. Noise appears to be traced back to fans on Aurora's roof.
Environmental damage: None

Prevention:	The fan in question has defects and was initially wrapped in insulating material to provide immediate sound attenuation. Also, the use of the fan has been limited as much as possible to what is strictly necessary.
Follow-up action:	The fan motor has been replaced. This permanently reduced the noise emission.
Complaint 3	Complaint about activities with soil on De Dreijen (Wageningen) reported by local residents to the Omgevingsdienst de Vallei.
Nature of complaint:	Soil has been excavated on De Dreijen to combat Japanese knotweed. This soil has been sieved out and is kept spread out in a parking lot. The soil will be monitored for an extended period to investigate the effects of this control method. The surrounding area was not adequately informed about the nature and purpose of the work.
Follow-up action:	WUR has explained the work and has permission to continue the trial. When the trial is finished, the soil will be returned to the original excavation site.
Environmental damage:	None
Follow-up action:	It has been communicated to the authority and local residents what activities will take place during which period.
Prevention:	Timely communication to the surrounding environment (to local residents and competent authority).
Complaint 4	Nuisance has been reported from the residences above Campus Plaza (Wageningen) from the use of the outside fire bowls near Forum.
Nature of complaint:	Use of the fire bowls near Forum may result in smoke disturbance to nearby residents during the afternoon or evening, depending on weather conditions.
Follow-up action:	When granting permission to use the fire bowls, attention is drawn to the fire alert advices on the websites of rivm.nl and stookwijzer.nu, in addition to the existing conditions for using the fire bowls.
Environmental damage:	None
Prevention:	Provide further instructions to users and monitor improper use of the fire bowls.

Colophon

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Photography: Bobby de Vos (cover and p. 7), Social Media Team – Spread the WURd in cooperation with Green Office Wageningen (p. 11), Erna Maters (p. 19)

October 2022