

IMPACT REPORT 2024

We join forces to help our world thrive
for at least 1,000 more years



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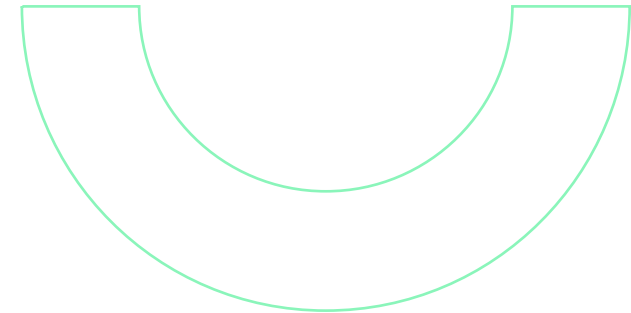
01. Introduction → Message from our leadership

We join forces to help our world thrive for at least 1,000 more years

Welcome in VITO's first ever Impact Report. We are very proud to share our achievements of 2024, where we made a significant impact both in Flanders and globally, driving an economically sustainable green transition, enhancing climate resilience, and promoting healthier living environments. We are pleased to share with you the societal and economic impact we generated (our 'handprint') and the VITO efforts done (our 'footprint') in this integrated report that already follows the framework as set out by the EU Corporate Sustainability Reporting Directive (CSRD).

Over the past year, we have further sharpened our new impact strategy, our brand narrative, organisational structure and objectives. We have secured a new **management agreement with the Flemish government** for 2024–2028, confirming their trust in VITO as the internationally renowned research organisation, turning science into technology for the green transition. Our mission, as outlined in the management agreement, is to strengthen Flanders' competitiveness in Europe and globally by attracting, developing, and integrating both Flemish and international talent into the region's economic fabric. By contributing to the European Clean Industrial Deal, we reinforce the transition towards a regenerative economy where ecology and economy are balanced. We could not achieve this without our **1,300 VITO 'Visioneers'**, our enthusiastic employees who are the heartbeat of innovation. Their wonder and curiosity drive VITO's core mission: turning scientific insights into groundbreaking technological innovations, AI solutions and policy advice.

To better support industry, governments and collaboration across our many research teams and other partners within our **extensive ecosystem**, the new VITO flagship lab EARTH building is rising at our site in Mol. This state-of-the-art building will house our expanded **lab, upscaling and pilot infrastructure** and will allow us to develop and test technological solutions from the lab phase to near-industrial production scale. This way, we turn science into **technological solutions that strengthen our industry**: our innovations are economically viable, practically implementable, and minimise investment risks for companies.



In this report, we look back at our most significant realisations considering our new impact strategy and we evaluate our impact. Sustainability at VITO concerns both our internal working as well as the work we do for clients and society, all embedded in good governance. We are very proud to share our successes and challenges in **maximising our positive impact through innovation**, while actively **optimising our own societal footprint**. This first integrated impact report reflects our commitment to transparency and continuous improvement. We invite you to read this report from that perspective, knowing that we will keep expanding our insights and CSRD compliance in the coming years. However, we take pride in these achievements today and are pleased to share our progress with stakeholders, hopefully inspiring others to contribute to our main objective: **to join forces to help our world thrive for at least 1,000 more years**.

We hope to inspire you all. Thank you for your dedicated collaboration throughout 2024, and we look forward to achieving even greater impact together in 2025!

Enjoy the reading,

Inge Neven,
CEO VITO

Ingrid Vanden Berghe,
Chair of the Board of Directors VITO





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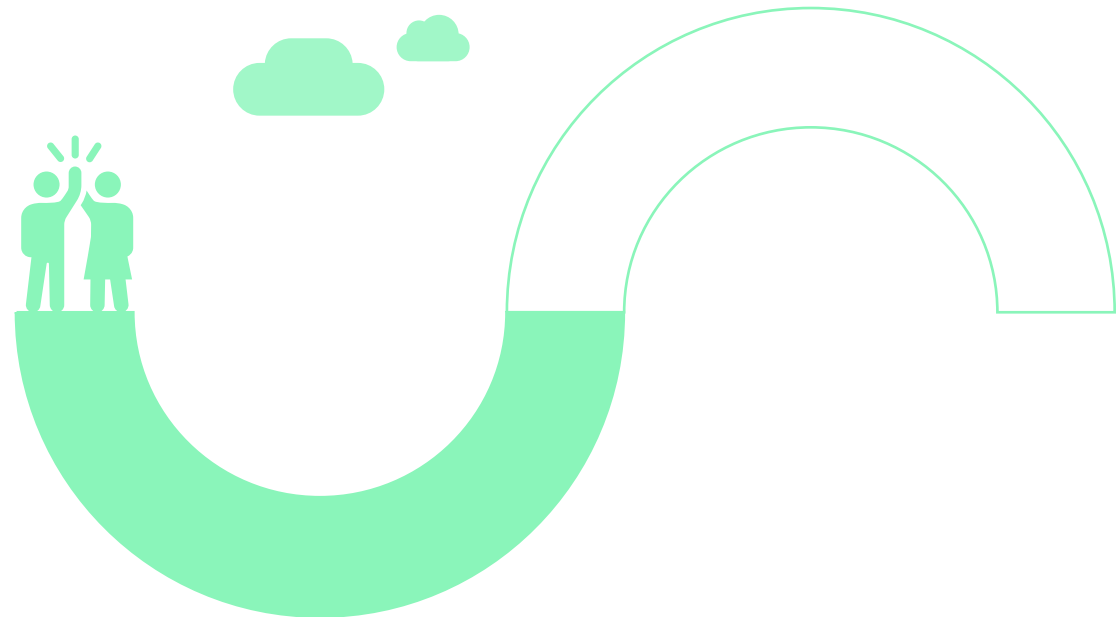
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01. Introduction → Sustainability at VITO: maximising our handprint, optimising our footprint



Sustainability at VITO: maximising our handprint, optimising our footprint

Sustainability has always been at the heart of our organisation, guiding our work and decisions. We are committed to maximising our positive impact through innovation while actively optimising our own societal footprint.

In 2024, we have taken on a more structured and holistic approach, dedicating resources to further embed sustainability into our operations. This integrated impact report reflects our commitment to transparency and continuous improvement. We aim to annually share our progress with stakeholders, inspire others, and openly discuss both our achievements and the challenges we have encountered along the way.

We invite you to engage with this report from that perspective, and we look forward to building on these insights. Next year, we will expand on our findings and further align with CSRD, reinforcing our dedication to responsible and impactful business practices.



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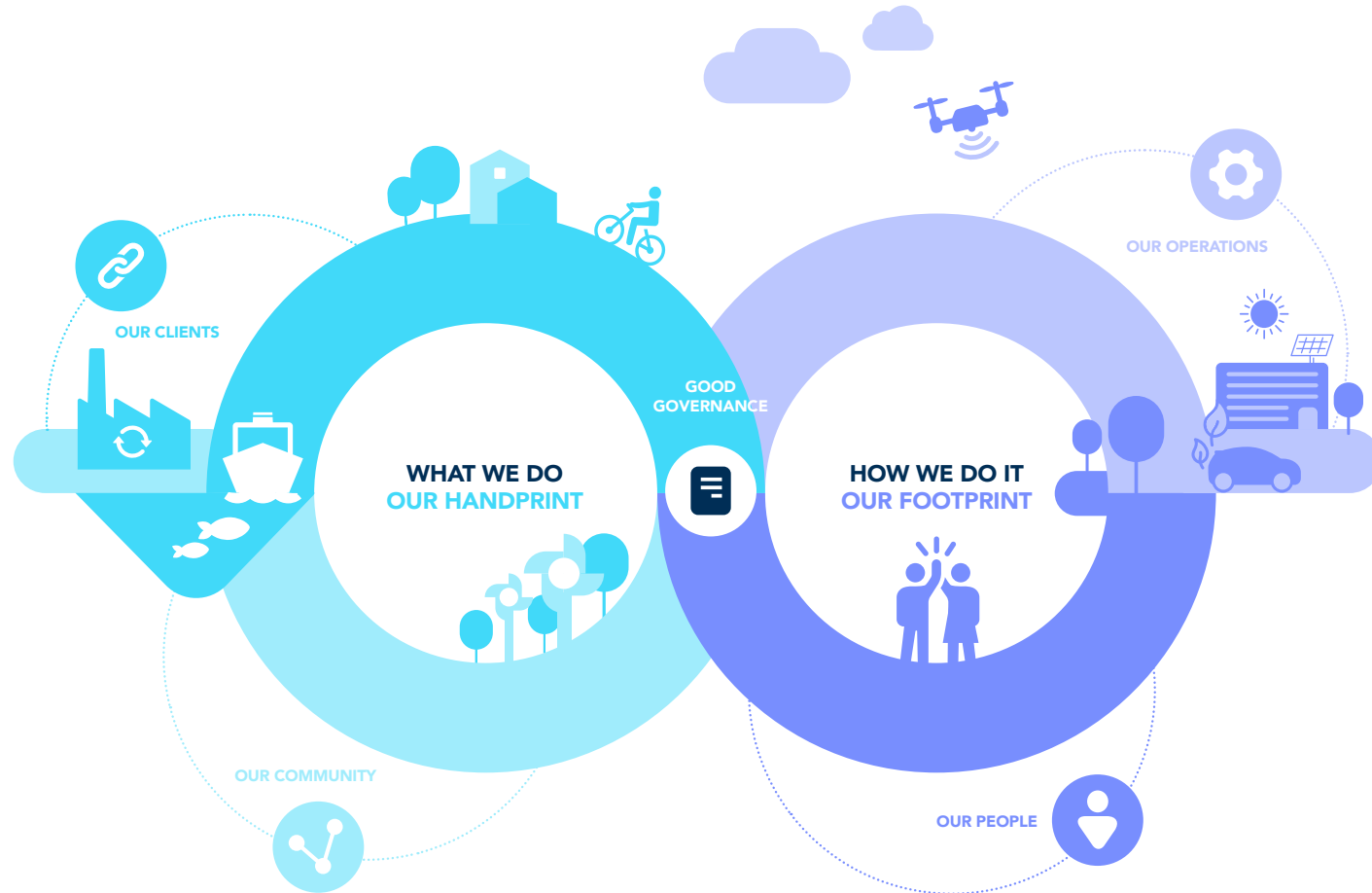
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VITO'S IMPACT MODEL: MAXIMISING OUR HANDPRINT, OPTIMISING OUR FOOTPRINT

Sustainability at VITO concerns both our internal working as well as the work we do for clients and society, embedded in good governance. All elements of our impact strategy model are interconnected and influence and reinforce each other.



OUR CLIENTS

Accelerate sustainability impact with our clients through the translation of research into solutions and advice.



OUR COMMUNITY

Collaborate across the sustainability knowledge chain, and increase awareness in our community to inspire and engage citizens and the scientific community to take sustainable action.



OUR PEOPLE

Nurture a culture of inclusion, wellbeing and opportunity for our (future) people and empower them to develop sought-after careers in and outside VITO.



OUR OPERATIONS

Promote sustainable, safe, and secure practices throughout our operations and value chain.



GOOD GOVERNANCE

Champion quality, excellence and independence through sound governance and ethical and responsible conduct.



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CSRD and VITO: general information and material ESG topics

ABOUT VITO: GENERAL DISCLOSURES

VITO: THE SCIENCE-TO-TECHNOLOGY PARTNER FOR BUSINESSES, GOVERNMENTS AND SOCIETY

VITO, one of Europe's leading research centres with 1,300 employees, turns scientific insights into groundbreaking technological innovations, AI solutions, and policy advice. We do so with a single objective: to help the world thrive for at least 1,000 more years.

What we do: maximising impact in three impact areas

We have concentrated our research activities on three key areas where we aim to make the greatest impact in Flanders, Europe, and globally: **a regenerative economy** that reinforces planetary boundaries (prioritising electrification and circularity), smart climate solutions for **resilient ecosystems**, and a **healthy living environment** harmonising humans, industry, agriculture, and nature.



A REGENERATIVE ECONOMY

Economy and ecology in balance: we aim to drive economic prosperity through the sustainable use of resources while reinforcing planetary boundaries. The goal is to (re)use and optimise each building block, molecule, and water and energy source for as long and as efficiently as possible.

[read more →](#)



RESILIENT ECOSYSTEMS

We help companies and governments with climate mitigation and adaptation solutions. We aim to create ecosystems that are more resilient to disasters, thereby enhancing our overall resilience and security.

[read more →](#)



A HEALTHY LIVING ENVIRONMENT

We provide insights into living conditions that enhance the health and well-being of citizens. We demonstrate how to preserve clean air, water, and soil in densely populated environments, and ensure access to fossil-free, healthy, and comfortable housing in resilient living environments.

[read more →](#)





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Who we do it for: our three client groups

As a science-to-technology partner, we support companies, governments, and society in their sustainability transition.

COMPANIES

VITO supports companies in the sustainability transition, with technology and advice for workable and economically viable solutions. Scientifically based, focused on solutions and cooperation.

GOVERNMENTS

Policymakers can rely on the support of VITO's independent research to make science-based policy choices and realise sustainable breakthrough projects.

SOCIETY

Science is not just for scientists. We enjoy sharing our knowledge and want to get everyone excited about sustainable technology through science communication and STEM projects.

How we do it: our three pillars

How do we bring this mission to life? Thanks to our 3 pillars: our multidisciplinary experts, our unique lab, scale-up, and testing infrastructure and our systemic approach.

MULTIDISCIPLINARY EXPERTS

Our staff collaborate in multidisciplinary expertise teams across more than 40 research domains. This combined know-how and transversal way of working allow us to look at each challenge from many perspectives and accelerate the breakthrough of technological innovations.

UNIQUE LAB, SCALE-UP, AND TESTING INFRASTRUCTURE

VITO's state-of-the-art lab and scale-up infrastructure is the ideal testing environment for our teams and partners to validate new technologies, make them market-ready and reduce investment and innovation risks for companies.

SYSTEMIC APPROACH

At VITO, we always work within and across our extensive network of stakeholders: governments, companies, scientists and citizens. In this way we provide systemic solutions which not only work on paper, but also in the complex reality of everyday life.





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OUR LOCATIONS



The **EARTH** building,
rising at the
VITO HQ site
in Mol.

1

VITO Mol
Head office
Boeretang 200
2400 Mol



2

VITO Berchem
Roderveldlaan 5
2600 Berchem



3

VITO Kortrijk
Flanders Make
Graaf Karel de Goedelaan 16/18
8500 Kortrijk



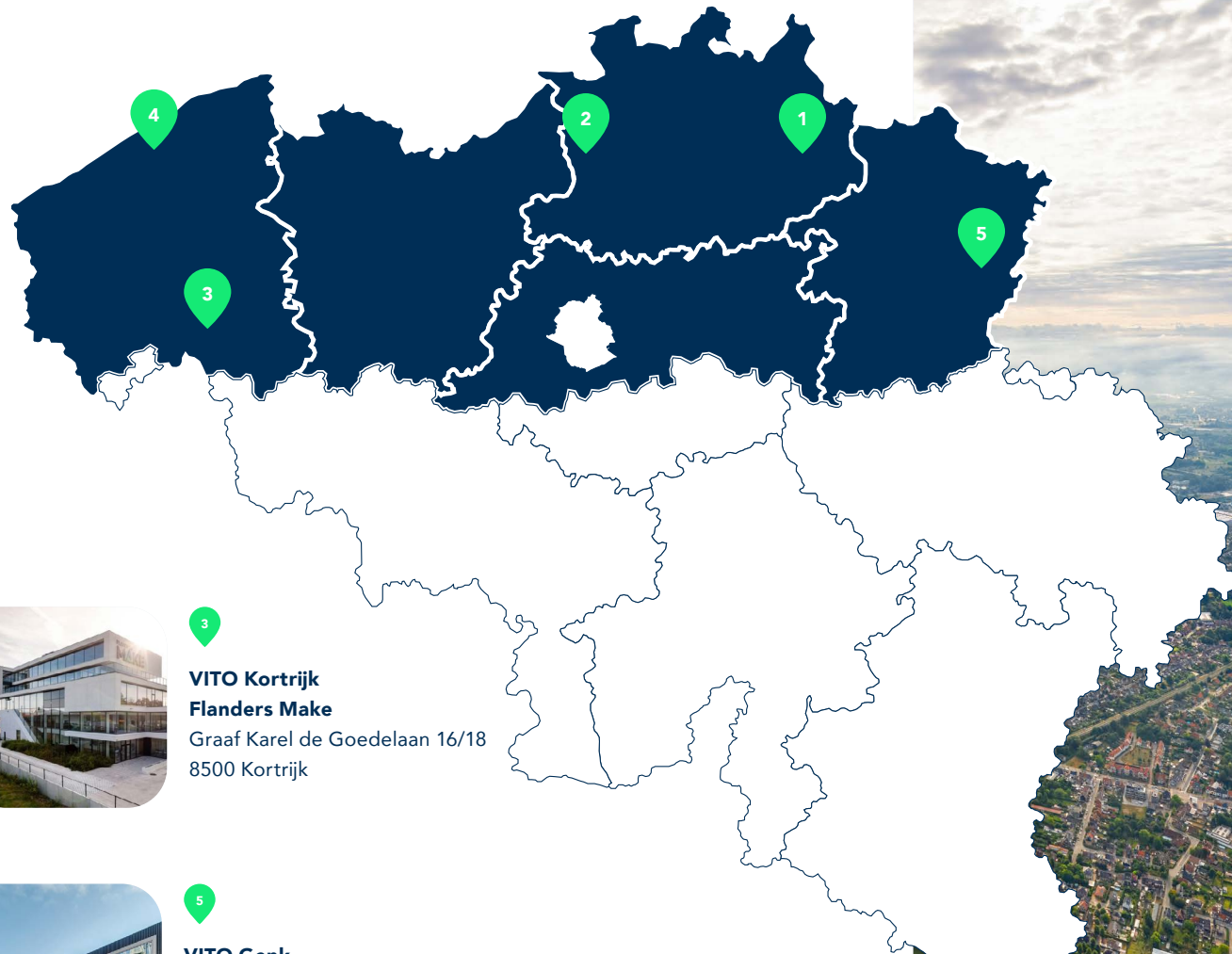
4

VITO Oostende
Bluebridge
Wetenschapspark 1
8400 Oostende



5

VITO Genk
EnergyVille
Thor Park 8310 en 8320
3600 Genk





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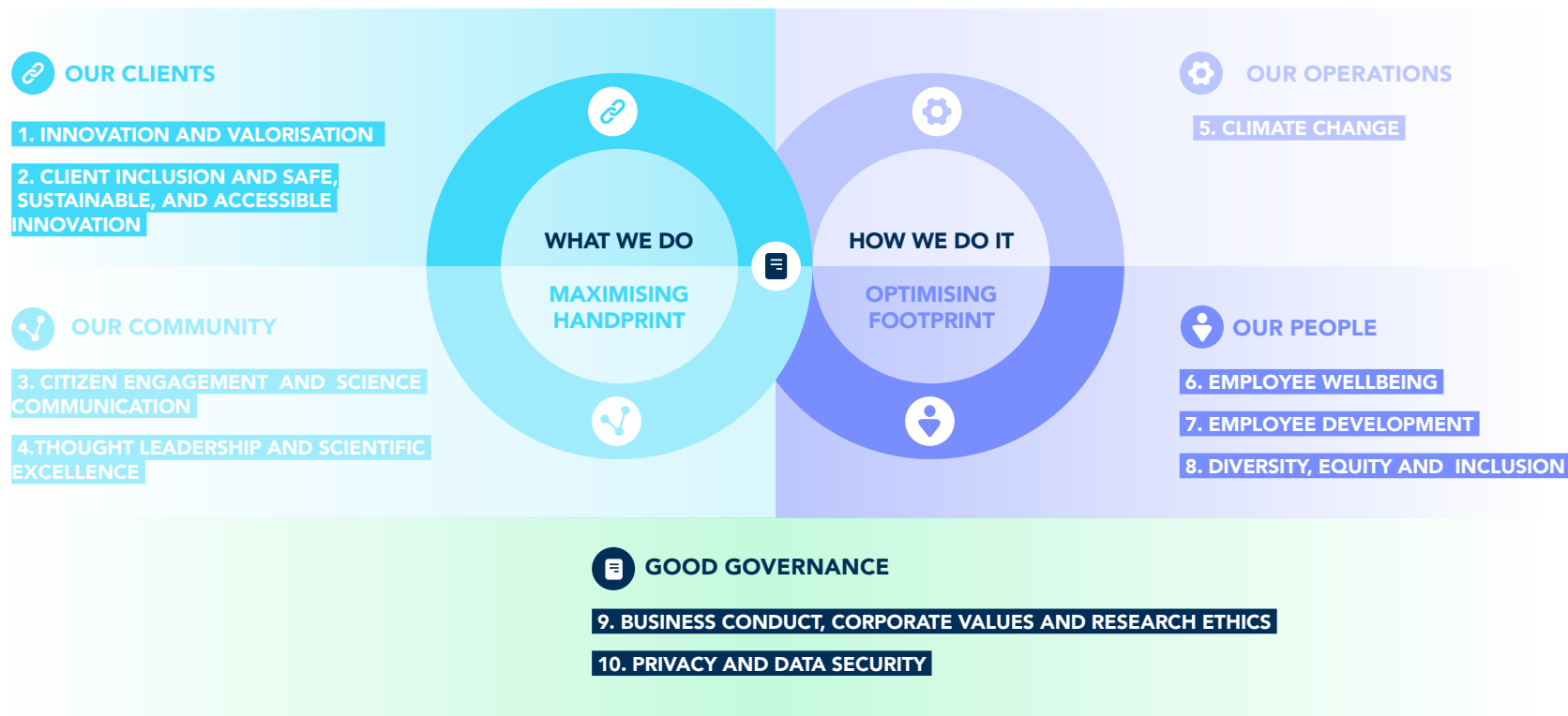
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VITO'S DOUBLE MATERIALITY ASSESSMENT: 10 MATERIAL TOPICS

In 2024, VITO conducted its first double materiality assessment according to the European Sustainability Reporting Standards (ESRS) to support the planning of its long-term sustainability strategy. In close collaboration with a diverse group of key stakeholders, we carried out a diligent evaluation of our impacts on the environment and society (impact materiality) as well as the sustainability-related risks and opportunities for VITO (financial materiality). Through this process, **we identified 10 topics** that are **the most important to our organisation and that stakeholders expect us to take action on**. These 10 material topics are clustered according to VITO's handprint-footprint model, and will form the core of this integrated report.



For our full double materiality assessment process: [see appendix](#)



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OUR CLIENTS

1. INNOVATION AND VALORISATION

This topic addresses the impact VITO creates through its technology development, services and innovation support to industry and policy (e.g. support in reducing clients' environmental footprint, increased climate resilience, contribution to healthier living environment...).

ESRS*
Entity-specific

MATERIALITY
Double material

2. CLIENT INCLUSION AND SAFE, SUSTAINABLE, AND ACCESSIBLE INNOVATION

This topic emphasises the importance of engaging with a broad client base, including start-ups, SMEs and non-profits, by addressing their unique needs and financial constraints. It also focuses on developing technology that is safe and sustainable by design (SSbD), ensuring that our innovations, once scaled to industrial/commercial level, are safe and accessible to a wide range of end-users. This approach supports a fair and just transition to more sustainable practices.

ESRS
Entity-specific

MATERIALITY
Impact material

OUR COMMUNITY

3. CITIZEN ENGAGEMENT AND SCIENCE COMMUNICATION

This topic addresses the role VITO plays in science communication and dissemination to the broader public, inspiring and educating citizens to take sustainable action in their daily life or professional choices.

ESRS
Entity-specific

MATERIALITY
Impact material

4. THOUGHT LEADERSHIP AND SCIENTIFIC EXCELLENCE

This topic addresses VITO's impact through its contribution to the development, strengthening and expansion of the knowledge base on sustainable development.

ESRS
Entity-specific

MATERIALITY
Impact material

OUR OPERATIONS

5. CLIMATE CHANGE

This topic addresses the direct and indirect greenhouse gas GHG emissions from VITO's own operations and in the value chain (scope 1, 2 and 3).

ESRS
E1

MATERIALITY
Impact material

OUR PEOPLE

6. EMPLOYEE WELLBEING

This topic addresses working conditions and physical and mental wellbeing of employees: fostering secure employment, reasonable working hours, fair compensation, collective bargaining and social protection.

ESRS
S1

MATERIALITY
Double material

7. EMPLOYEE DEVELOPMENT

This topic focuses on VITO's talent management lifecycle, aiming to enhance employee excellence. It concerns VITO's approach to advancing the knowledge and skills of current and future employees through training, performance evaluations, and coaching, thereby promoting employability and career growth.

ESRS
S1

MATERIALITY
Impact material

8. DIVERSITY, EQUITY AND INCLUSION

This topic focuses on equal treatment and opportunities for all in the workplace (incl. recruitment) in own operations.

ESRS
S1

MATERIALITY
Voluntary

GOOD GOVERNANCE

9. BUSINESS CONDUCT, CORPORATE VALUES AND RESEARCH ETHICS

This topic addresses how VITO ensures integrity, independence and excellence through ethical, responsible and value-driven business and research conduct.

ESRS
G1

MATERIALITY
Double material

10. PRIVACY AND DATA SECURITY

This topic addresses impacts, risks and opportunities related to collection, retention, and use of sensitive, confidential, and/or proprietary employee, client, citizen or partner data.

ESRS
Entity-specific

MATERIALITY
Financial material

* European Sustainability Reporting Standards



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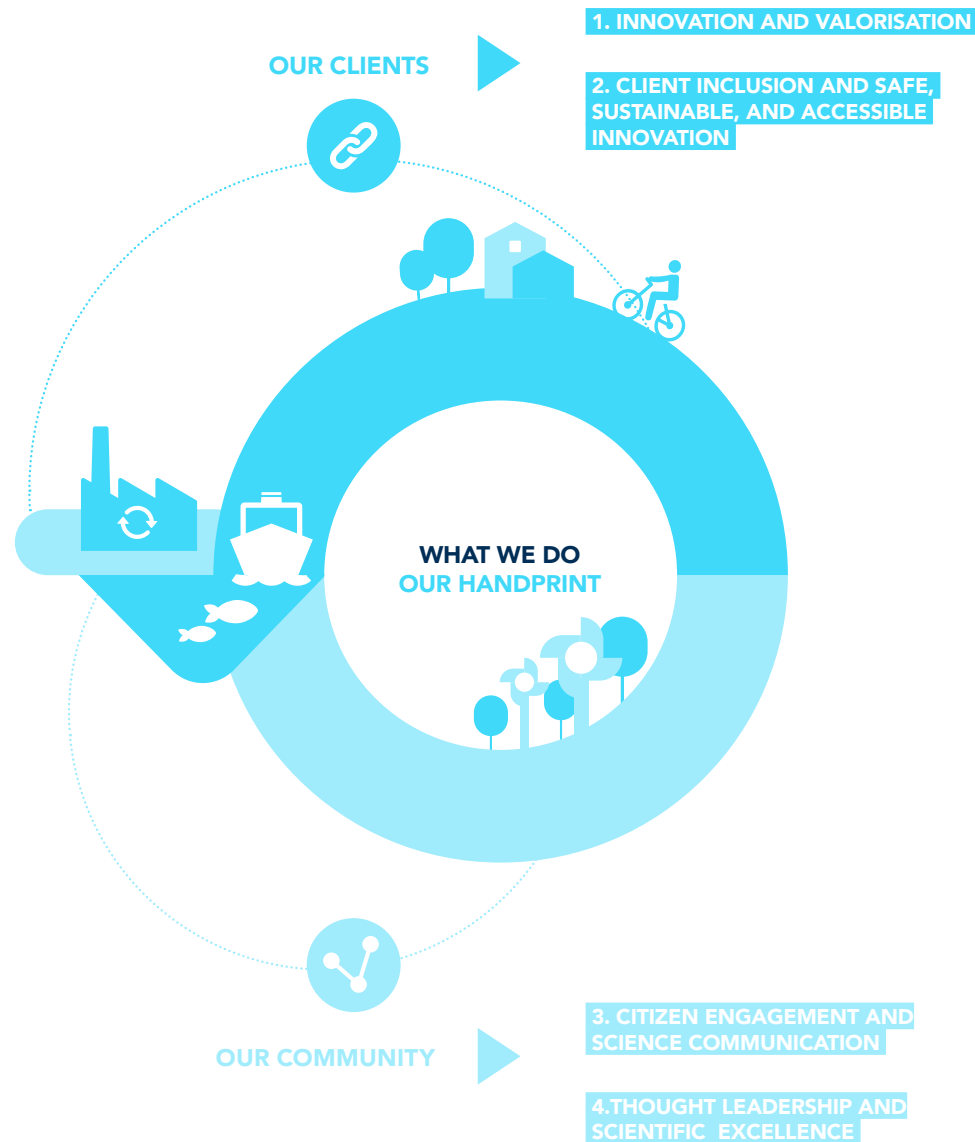


02. VITO's handprint

VITO's Handprint: accelerating positive impact

At VITO, we exist to join forces our world thrive for at least 1,000 more years. To achieve our goal of building future-proof industries and resilient societies, we develop innovative technological solutions, and actively share our knowledge with businesses, government bodies and citizens. **The environmental and societal impact that we create through what we do for our clients and our communities, is what we call VITO's handprint.**

In our CSRD materiality assessment we identified **4 material topics that relate to our handprint**, which we will discuss and report about in this chapter.





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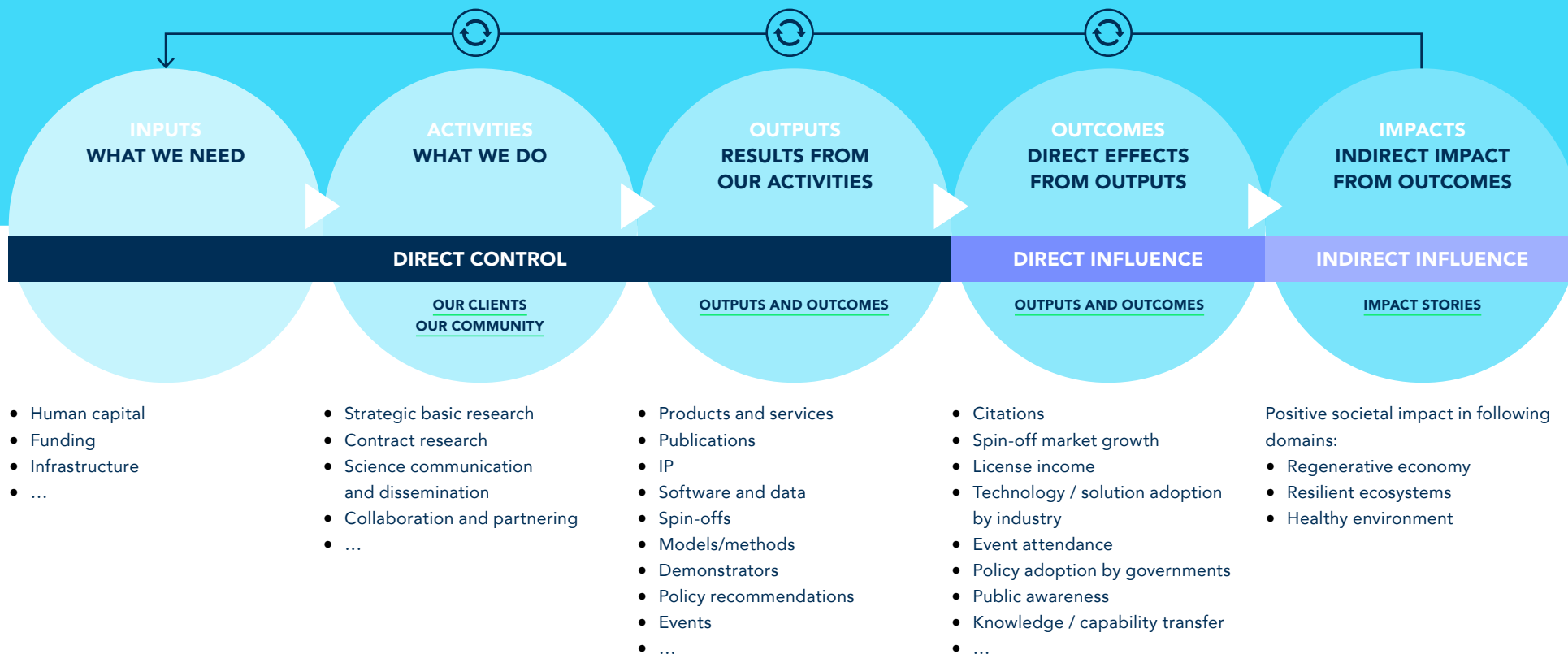
02. VITO's handprint → Impact through the work we do

IMPACT THROUGH THE WORK WE DO

The societal role we play, translating our research into environmental, social, and economic benefits, compels us to understand and **actively manage the way in which we create impact**. VITO operates along the '**Impact Pathway Framework**'. This framework outlines how research activities convert inputs to outputs, which translate to (direct) outcomes and (indirect) impact. Indeed, in most cases, it is not our activities or outputs that create direct impact but rather the subsequent steps and actors involved. VITO applies this framework to evaluate how we measure success and to **steer on impact through the definition of our impact domains and by embedding impact indicators into our portfolio management**. While the impact process is depicted as linear, it is rarely so in practice. However, this model helps to understand the different steps involved to convert research into societal change.

In what follows, we will cover:

- **Our impact stories:**
case studies to describe our impact of 2024
- **Our Clients and Our Community:**
how we steer towards maximising handprint impact in our activities
- **The outputs and outcomes we deliver:**
outputs and outcomes delivered in 2024





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02. VITO's handprint → Our impact stories

Our impact stories

DRIVING THE FUTURE OF GREEN HYDROGEN: VITO AND AGFA STRENGTHEN THEIR ALLIANCE

Challenge

The global transition to sustainable energy has intensified the demand for efficient hydrogen production technologies. Alkaline water electrolysis, a key method for green hydrogen generation, relies on high-performance gas separators to optimise efficiency and durability. However, the challenge lies in developing advanced separator materials that enhance performance while remaining cost-effective and scalable.

Solution

VITO and Agfa have been collaborating in this field since 2007, leveraging their expertise to develop innovative gas separation solutions. VITO's breakthrough in separator technology led to the creation of ZIRFON™, a high-performance membrane for alkaline water electrolysis. Given Agfa's proficiency in thin-film casting processes, a strategic partnership was established in 2009 to further develop and commercialise ZIRFON™. Over the years, ZIRFON™ has become the benchmark in the field, setting the industry standard for efficiency and reliability. With increasing market demand, Agfa invested in a larger production facility to meet global needs.

In 2024, VITO and Agfa renewed their strategic partnership and licensing agreements for another ten years, committing to the continued development of next-generation separators. A dedicated research programme has already started, aiming to introduce an advanced separator type in the short term, ensuring technological leadership and market competitiveness.





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02. VITO's handprint → Our impact stories

Impact

The extended partnership between VITO and Agfa secures ongoing advancements in hydrogen production technology, reinforcing Europe's leadership in the green energy transition. By enhancing the efficiency and durability of alkaline water electrolysis, the next-generation ZIRFON™ separators will contribute to cost reductions and accelerate the adoption of green hydrogen solutions worldwide.

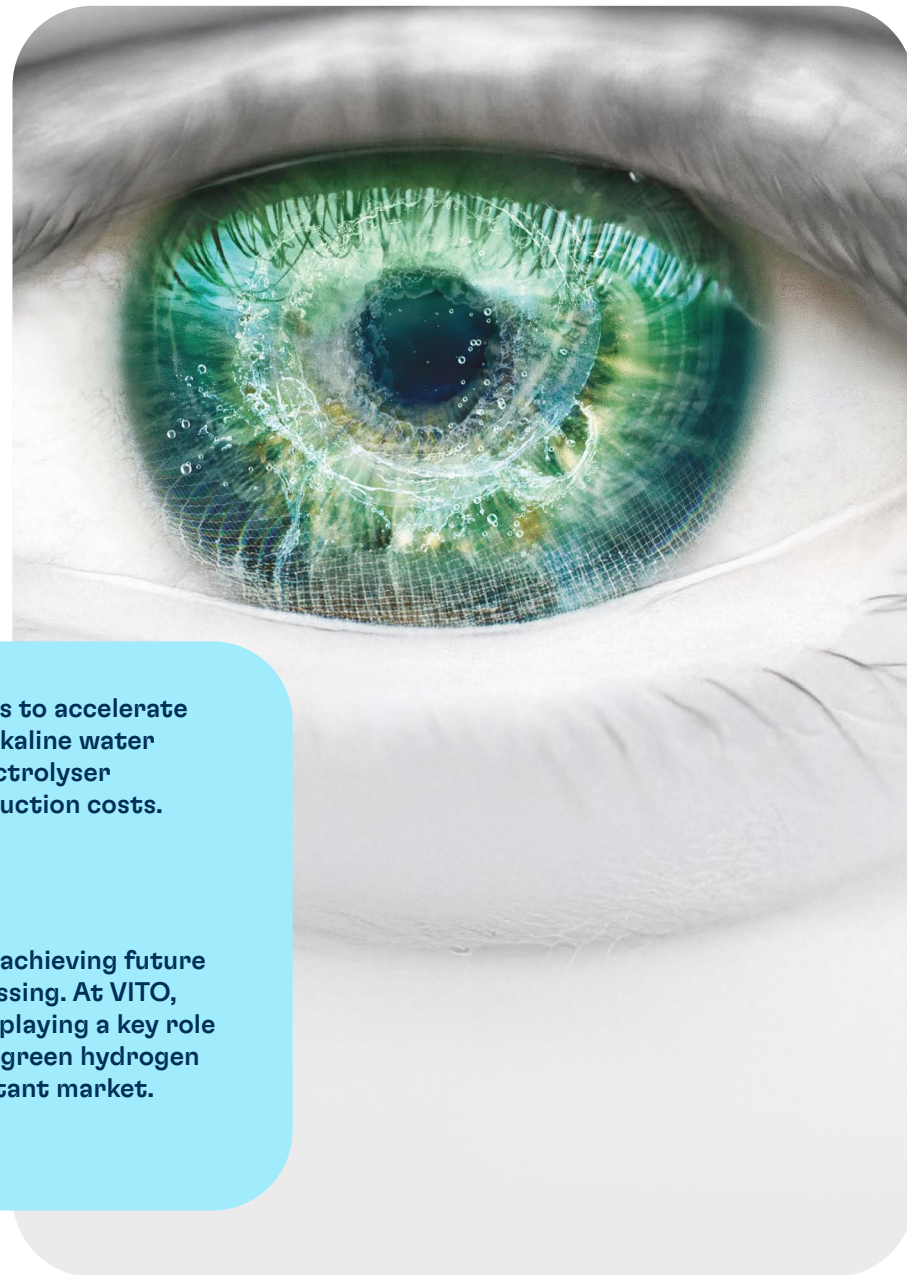
Beyond strengthening the market position of both partners, this collaboration plays a crucial role in global decarbonisation efforts. As hydrogen gains momentum as a clean energy source, the VITO-Agfa alliance remains at the forefront of innovation, ensuring that emerging industry demands for scalability, cost-effectiveness, and environmental impact are met.

The extended Agfa-VITO partnership will allow us to accelerate the development of innovative membranes for alkaline water electrolysis, with the overall aim of boosting electrolyser performance and reducing green hydrogen production costs.

RUBEN DE BRUYKER - Innovation Manager Agfa

Hydrogen will become increasingly important in achieving future goals for sustainable energy and chemical processing. At VITO, we are pleased to support a Flemish company in playing a key role in this transition by co-developing materials for green hydrogen production and helping them grow in this important market.

ROEL VLEESCHOUWERS - Business Developer VITO





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02. VITO's handprint → Our impact stories

MINERAL CARBONATION: A KEY INNOVATION FOR SUSTAINABLE CONSTRUCTION

Challenge

The building industry is a significant contributor to global CO₂ emissions, with cement production alone accounting for around 8%. As CO₂ release is an inherent part of the process, switching to alternative energy sources does not provide a solution. Meanwhile, steel production generates large volumes of steel slags as a by-product, with the Flemish steel industry alone producing over 700,000 tonnes annually. These slags are often landfilled or used in low-value applications, representing a missed opportunity for resource efficiency and circularity.

Solution

VITO, in collaboration with Orbix, developed the Carbstone process, a mineral carbonation technology that transforms steel slags into valuable building materials while permanently storing CO₂. This process reduces waste, directly captures CO₂ within the material, and mitigates cement use, leading to a substantial reduction in indirect emissions. [Read more](#)

The Carbstone technology has been successfully implemented industrially, with Masterbloc producing circular building blocks since 2022. In 2024, Vandersanden opened a pilot factory for the production of facing bricks using the Carbstone technology. The first Pirouet® bricks are already being used in construction projects, with further expansion planned. Additionally, as part of the [Horizon Europe Carbon4Minerals](#) project, which VITO coordinates, researchers are investigating the integration of CO₂ capture from industrial flue gases into the Carbstone process and expanding its applicability to a broader range of steel slags.

The technology was also recently showcased at the [Futurebuild fair in Brussels](#) as a key solution for sustainable construction.





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02. VITO's handprint → Our impact stories

With mineral carbonation, we're speeding up a natural process to capture CO₂ and produce sustainable building materials for the future.

MIEKE QUAGHEBEUR - Programme Manager VITO

Impact

The Carbstone technology delivers measurable climate benefits. Carbstone products can store up to 350 kg of CO₂ per cubic metre, and Vandersanden's process achieves an uptake of 60 kg CO₂ per tonne.

VITO is further expanding its research into new mineral carbonation applications. The [ERA-MIN CO₂TREAT](#) project focuses on producing cement replacements from carbon steel slags, offering greater flexibility by allowing CO₂-treated materials to be transported as powders. Meanwhile, the [Horizon Europe Carbon4Minerals](#) project is developing a slurry-based carbonation process to broaden its industrial applicability. Additionally, the recently approved CARBOOST initiative aims to create lightweight, insulating carbonated building materials, optimising both energy and resource efficiency over their lifetime.

Through mineral carbonation, VITO is pioneering circular construction solutions, transforming industrial by-products into high-value, low-carbon building materials.





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PATHS2050: A COLLABORATIVE INDUSTRIAL STRATEGY FOR A CARBON-NEUTRAL TOMORROW

Challenge

Belgium stands at a pivotal moment in its energy transition. In recent years, high inflation and soaring energy costs have impacted economic stability and industrial competitiveness. At the same time, delays in renewable energy projects, infrastructure expansion, and hydrogen deployment, coupled with rising material and technology costs, pose significant challenges for the future of Belgium's carbon-neutral energy system.

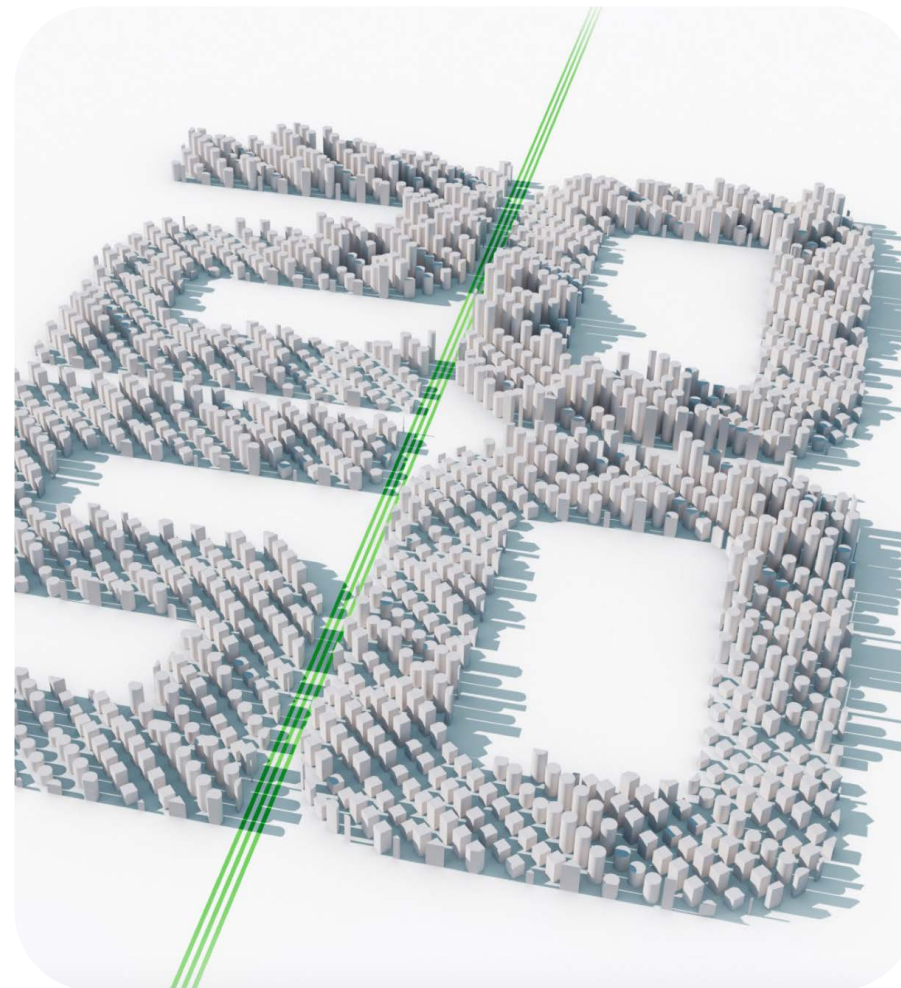
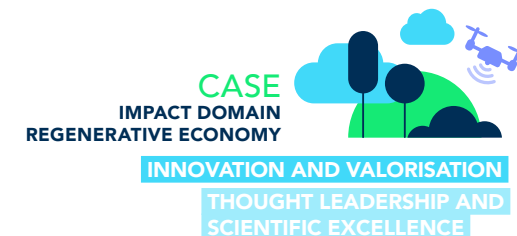
How can Belgium achieve its 2030 climate goals, and what progress must be made by 2040 to stay on track for a net-zero 2050? What role can and should electrification, hydrogen, and Carbon Capture and Storage (CCS) play in Belgium's future energy system? Which urgent infrastructure investments are needed to support this transition?

Solution

In 2022, VITO at EnergyVille successfully co-launched the PATHS2050 Platform, leveraging insights from 200 EnergyVille researchers to develop data-driven roadmaps for the optimal way to make Belgium climate neutral by 2050, and this at the lowest possible societal cost.

Since then, VITO has repeatedly been commissioned to enrich the PATHS2050 Platform with additional sensitivity studies, resulting in evolving insights which ensure that the platform remains at the forefront of energy strategy development - providing a robust, scenario-based framework to guide policy and investment decisions.

Thus, 2024 also saw the inception of the PATHS2050 Coalition: a collaborative effort with five key industry leaders (BASF, ArcelorMittal, Luminus, Elia, and Fluxys) and a testament to VITO's unwavering commitment to keep on feeding and clarifying the discussion on the path towards a sustainable and economically viable Belgian energy system.





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By bringing together key Belgian industry players to exchange and challenge their insights on the future energy system, we lay the foundation for robust pathways to net-zero emissions by 2050 —backed by Belgium's most detailed techno-economic energy system model and rigorous, data-driven analysis.

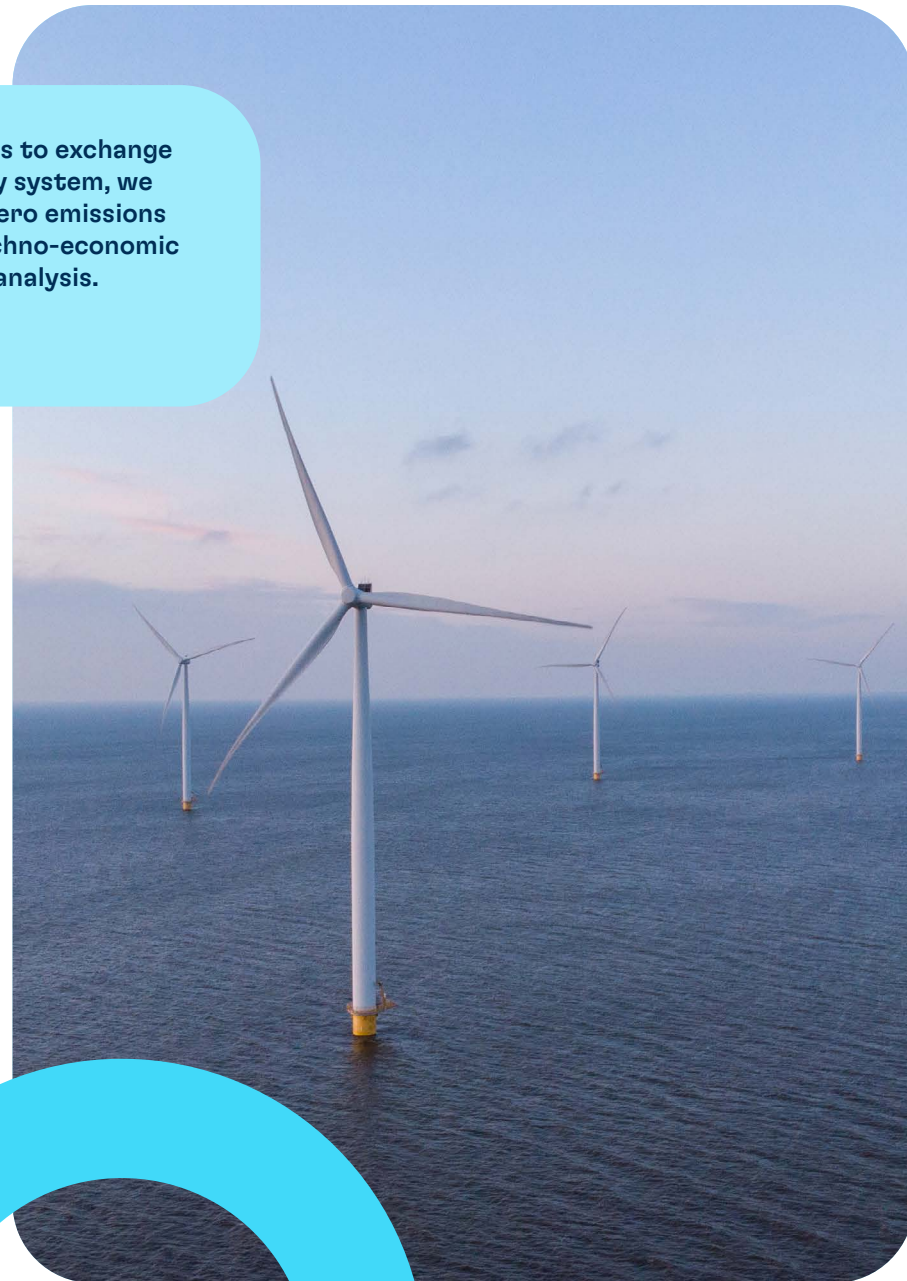
PIETER LODEWIJKS - Programme Manager VITO

Impact

Through the PATHS2050 Platform, VITO helps to guide Belgium's transition to carbon neutrality in a cost-effective and industrially viable way. Indeed, since its inception, the platform has become an indispensable resource for industry leaders, policymakers and researchers alike, offering insightful scenarios that support strategic decision-making and that integrate evolving economic, technological, and industrial challenges. With the right policies, Belgium can accelerate the energy transition while maintaining industrial competitiveness. Hence, aligning stakeholders around a shared vision is crucial for long-term energy and economic resilience. Through a strong collaboration, with key industrial partners, continuous research and a vision to expand the PATHS2050 Coalition in the future, VITO provides strategic insights for infrastructure planning, investment decisions, and policymaking.

PATHS 2050

PATHS 2050 →





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PLEEVI REVOLUTIONISES WORKPLACE EV CHARGING

Challenge

The adoption of electric vehicles (EVs) is growing rapidly, particularly among company fleets. Employees and visitors increasingly rely on workplace charging stations, but managing this demand effectively is complex. Charging needs vary, energy availability fluctuates, and costs can rise at peak times. Additionally, the European Union's goal for 87% of all electricity consumption to be renewable by 2040 puts further pressure on companies to integrate sustainable energy solutions. While many smart charging systems focus on cost and energy savings, they often overlook charging reliability and user experience. The challenge is clear: how can companies provide reliable, cost-effective, and sustainable EV charging without compromising convenience?

What sets Pleevi apart is not just that we go beyond traditional load balancing, but also that we maintain a strong co-development partnership with VITO, even after spinning off. This collaboration ensures that we continuously integrate the latest research insights, allowing Pleevi to remain the most innovative and intelligent charging optimiser on the market.

WOUT LAGAE - Co-founder and CEO Pleevi





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Solution

Pleevi, a spin-off of VITO (partner in EnergyVille), has developed an AI-driven platform that optimises workplace EV charging. Unlike traditional smart charging systems, Pleevi not only reacts to real-time data but also predicts energy flows 24 hours in advance. This forecasting allows for better grid management, reducing strain on infrastructure while ensuring optimal energy use. By integrating renewable sources such as solar and wind power, as well as stationary battery storage, Pleevi provides a seamless and sustainable charging experience. The system also considers the energy consumption of the main building and adapts to employee work patterns. For example, on Fridays, when more employees work remotely, the platform adjusts energy allocation accordingly. Pleevi ensures charging sessions are not only greener but also more reliable and cost-efficient.

Impact

Pleevi's technology is already proving its effectiveness, with successful implementations in Belgium, Germany, and France in collaboration with major players such as Phoenix Contact and VMA (part of the CFE Group). With a target to manage 25,000 charging points by 2027, the company is on track for significant growth. Investors have already demonstrated their confidence, contributing €1 million to scale Pleevi's impact across Europe.

By optimising renewable energy use, enhancing grid stability, and preventing overloads, Pleevi offers a high-return solution that meets both economic and environmental needs. As companies accelerate their transition to electrified mobility, Pleevi is set to play a crucial role in shaping the future of sustainable and intelligent workplace EV charging.





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MONITORING HEALTH OF YOUNG PEOPLE LIVING NEAR A METAL RECYCLING PLANT

Challenge

In a consortium with PIH and Hasselt University CMK, VITO addressed growing concerns about environmental pollution in Hoboken, Kruikebeke, and Hemiksem, arising from the industrial activities of the Umicore metals recycling plant in Hoboken (Belgium). The main objective was to assess how these operations contribute to the internal exposure to harmful metals (specifically lead, cadmium, and arsenic) and to evaluate the associated health risks for local residents.

Solution

To address this challenge, VITO and its partners conducted an extensive human biomonitoring study, focusing on adolescents. This age group was selected because of its increased sensitivity to environmental pollutants and lack of occupational exposure, making adolescents ideal candidates for early detection of environmental health risks. Blood and urine samples were collected to measure exposure biomarkers for lead, cadmium, and arsenic. These results were then compared with data from the Flemish adolescent reference population (FLEHS-4) and health-based guidance values.

The comprehensive approach extended beyond the simple measurement of metal exposure levels. The study explored a wide range of potential exposure determinants, including the distance from each participant's residence to the Umicore site, wind direction, lifestyle habits, local nutrition, and both indoor and outdoor environmental conditions. Additionally, environmental samples such as settled dust (indoor and outdoor), and ambient air were analysed to explore their relationship to the internal exposure levels. Furthermore, VITO contributed to the assessment of biomarkers of early biological changes and health effects, examining factors such as cardiometabolic health, immune function, thyroid hormone levels, puberty development, kidney function, cognition, and overall well-being, and investigated associations between metal exposure and early health effects.





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Impact

The findings were significant. A substantial number of participants exhibited metal concentrations above health-based guidance values, with average internal levels of lead and one arsenic species notably higher than in the Flemish reference population. Importantly, blood lead levels decreased with increasing distance from the Umicore plant, confirming its contribution as a pollution source.

The study has raised public awareness and provided valuable insights for local governments, Umicore, and health professionals. The published report now serves as a crucial resource for evaluating current policies, guiding future measures, and taking action to reduce metal exposure and protect public health.

[Read full study \(only available in Dutch\).](#)

Study executed by the Provincial Institute for Hygiene (PIH) of the Province of Antwerp, VITO, Hasselt University, and the University of Antwerp

Study commissioned by



High concentrations of lead have significant effects on health, particularly in children and adolescents. They affect brain development, increase the chance of respiratory infections, and result in behavioural problems.

ELLY DEN HOND - Coordinator Provincial Institute for Hygiene

The results are a clear signal to continue measures for monitoring emissions, environmental pollution, and exposure.

JORIS MOONENS - Spokesperson Flanders' Department of Care





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LAYING THE FOUNDATION FOR A KNOWLEDGE HUB IN SPATIAL MODELLING

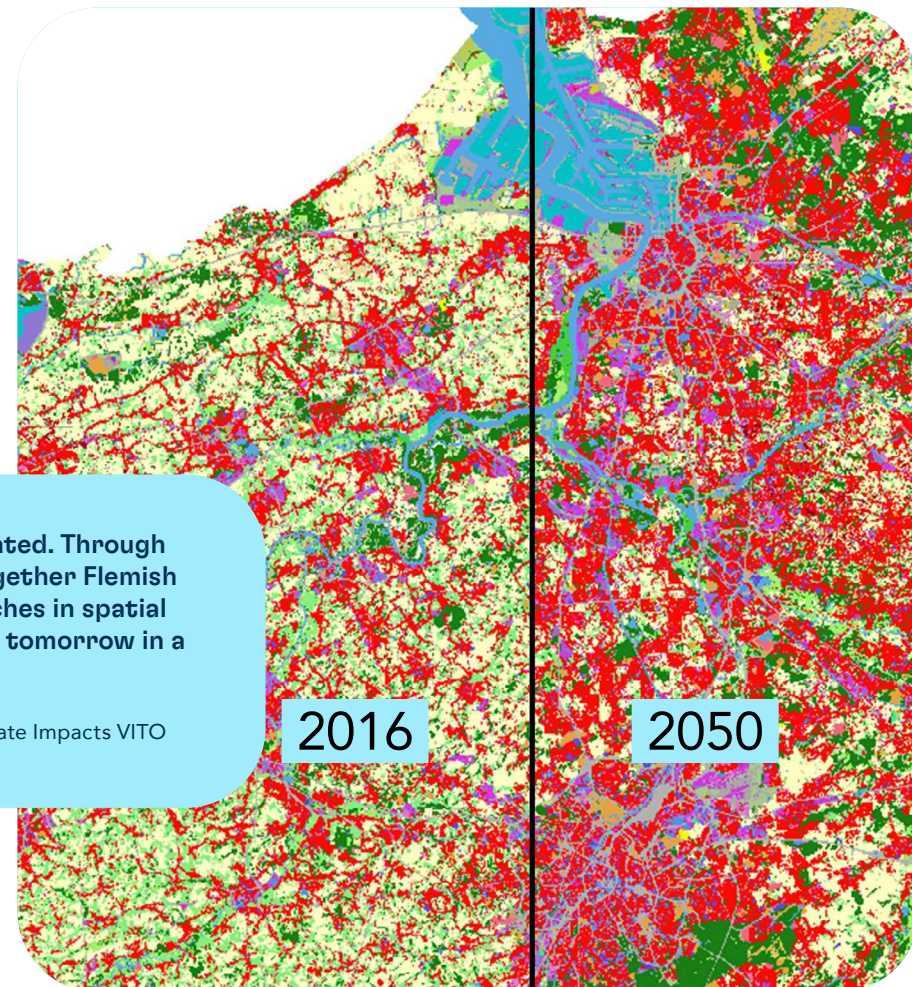
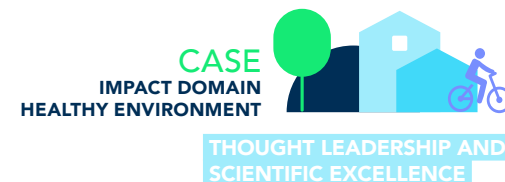
Challenge

To effectively support environmental policy, a structured approach to using spatial models is essential. VITO has developed both a land use model (GeoDynamix) and a system model for Flanders, maintaining ownership and management of these tools. Currently, the land use model is used to address policy-related questions raised and funded by the Founding Fathers, a group of users from various policy domains and levels of government in Flanders. While this funding supports ongoing developments, it often results in ad hoc improvements, limiting the ability to pursue longer-term innovations. To ensure the model remains relevant for tackling future multi-thematic, systemic, and complex spatial challenges, a long-term development strategy is necessary. This will enhance policy support for both the Flemish and provincial administrations and ensure a more comprehensive approach to spatial planning.

[More about GeoDynamix](#)

Environmental issues are nearly always interrelated. Through its cross-thematic expertise, VITO can bring together Flemish policymakers and incorporate systemic approaches in spatial models to tackle spatial challenges of today and tomorrow in a collaborative way.

RAF THEUNISSEN - Programme Manager Land Use and Climate Impacts VITO





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Solution

To strengthen the GeoDynamix model, VITO has invested in several key areas to kick-off a Knowledge Hub, aiming to build a solid foundation for spatial modelling in Flanders. First, the model's processing speed and efficiency have been improved with enhanced IT infrastructure, enabling faster handling of intensive spatial datasets and automation of algorithms. Second, advancements have been made through new research projects, with the involvement of two PhD students developing new algorithms to support more integrated and systemic approaches to spatial analysis. Lastly, dissemination efforts have been initiated through the development of an interactive dashboard, allowing users to access model results more easily, and through the Founding Fathers event, where stakeholders engaged in discussions on recent model advancements and future directions. This event showcased the potential of developing a Knowledge Hub and the added value of a collaborative approach to spatial modelling.

[More about the Founding Fathers](#)

Impact

The impact of initiating a Knowledge Hub is significant, as it has accelerated the advancement of spatial modelling, pushing it beyond its current capabilities. Investments in data updates, transparency, and accessibility have increased the reliability of policy decisions based on the model. Future developments will focus on cross-thematic and systemic spatial challenges, equipping the Flemish Government with tools to tackle more complex spatial issues. This impact extends beyond Flanders, positioning the region as an international leader in integrated and systemic spatial modelling for environmental planning.

vito KENNISHUB
RUIMTELIJK
MODELLEREN

VITO - GEODYNAMIX →





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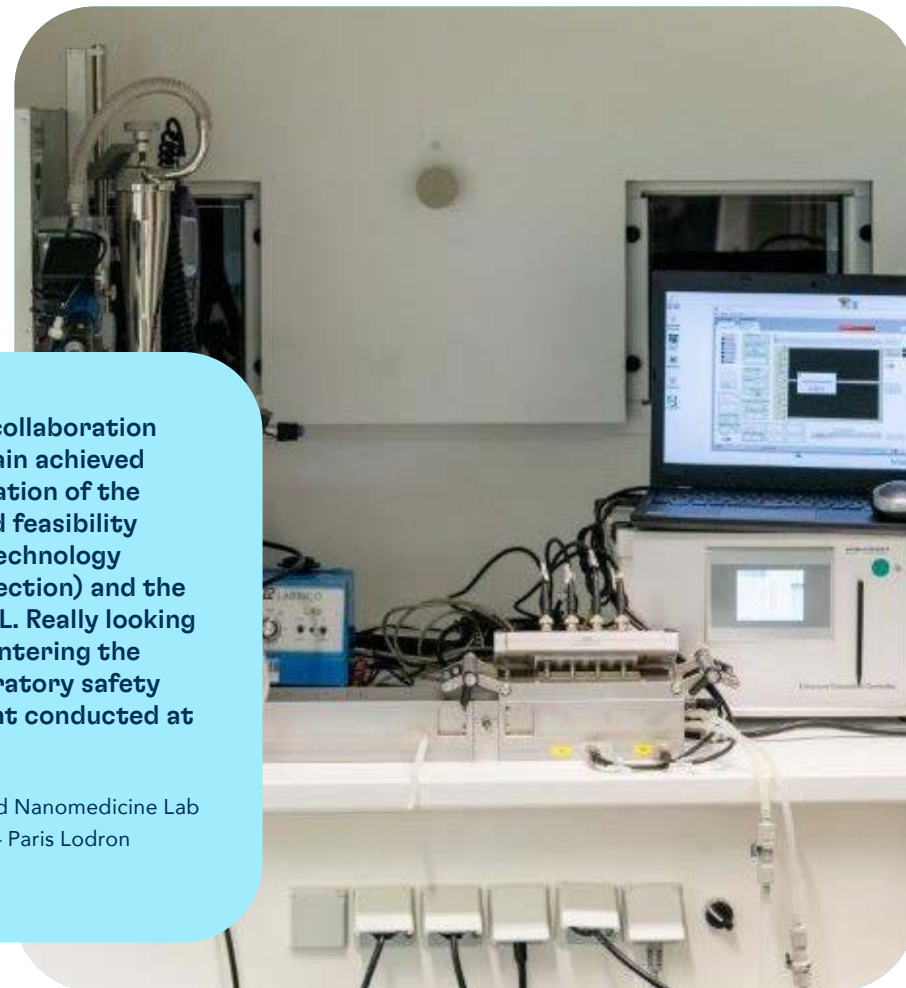
INHALATION PLATFORM NAVETTA: A COMPREHENSIVE APPROACH TO SAFETY TESTING OF DRUGS AND CHEMICALS

Challenge

Respiratory diseases are on the rise globally, impacting more individuals than ever before. To treat these diseases effectively, delivering medicine directly to the lungs is an important method. This process, called pulmonary drug delivery, makes the treatment more effective while reducing side effects. At the same time, chemical safety testing and risk assessment are moving away from animal-based experiments toward laboratory-based in vitro methods and computer simulations. This shift follows the '3 R' principle, which stands for replacement, reduction, and refinement of animal testing.

It was a pleasure to see that the long-standing collaboration between VITO and the Himly Lab at PLUS has again achieved some great milestones. These include the publication of the market-ready prototype with our suitability and feasibility study in the Computational and Structural Biotechnology Journal (Nanoscience and Advanced Materials section) and the signing of the license agreement with VITROCELL. Really looking forward to our joint NAVETTA invention finally entering the global market and contributing to in vitro respiratory safety and pulmonary pharmaceutical efficacy assessment conducted at the air-liquid interface.

MARTIN HIMLEY - Group leader of the Respiratory Health and Nanomedicine Lab at the Department of Biosciences and Medical Biology PLUS – Paris Lodron University Salzburg





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Solution

To support this shift, scientists from Paris Lodron University of Salzburg (PLUS) created the first prototype of NAVETTA, which was further developed by VITO as part of the European FP7 NanoValid project. NAVETTA is an air-liquid interface (ALI) exposure module designed to test how airborne substances, such as drugs, chemicals, or consumer products, influence human lung cells in a realistic environment.

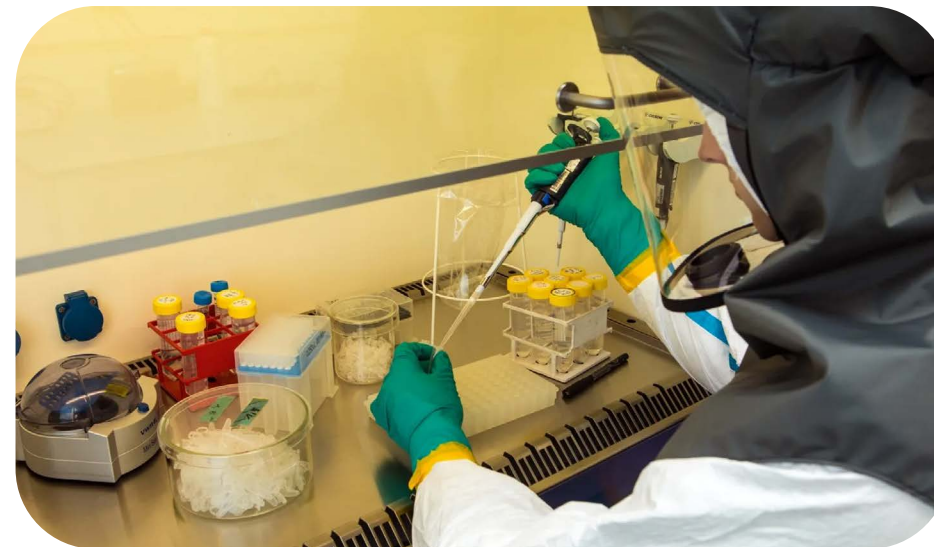
Inside the device, permeable inserts are positioned, which contain cultured lung cells grown on one side and nourishment from the other side. This simulates how airborne substances come into contact with lung cells in real-life settings. It also uses a smooth, low-speed airflow that mimics how air moves through the smaller airways that lead to the alveoli, where gas exchange occurs. An electrical field enhances particle deposition onto the lung cells. Additionally, the system controls temperature and humidity levels, ensuring that cells remain viable for exposure periods of up to 24 hours.

Impact

In a proof-of-concept study, researchers used NAVETTA to expose lung cells to nano-aerosols generated from copper oxide nanoparticles. They evaluated cell survival and immune responses. Their findings were published in the Environmental Science and Technology Journal. [Read article](#)

The system was further refined to improve ease of cleaning, enhance its design, and ensure consistent results. A second study demonstrated NAVETTA's precision, reliability, and ability to handle different aerosol types effectively and was published in the Computational and Structural Biotechnology Journal. [Read article](#)

Now commercially available through the company VITROCELL Systems GmbH, NAVETTA offers a realistic, safe, and efficient solution for testing the safety of airborne substances, such as chemicals and inhalable drugs. [More about VITROCELL](#)



We are happy to introduce NAVETTA to our range of exposure systems. This system is especially well-suited for particle exposure, including pharmaceutical compounds. Its horizontal continuous flow ensures a gentle process, while deposition efficiency is enhanced by an integrated electrical field. NAVETTA can be seamlessly combined with aerosol generators commonly used in the pharmaceutical industry. Additionally, the built-in humidification system simplifies operation. We would like to express our gratitude to VITO and the Himly Lab at PLUS for their excellent collaboration on this project.

TOBIAS KREBS · Managing Director VITROCELL Systems GmbH

VITROCELL
SYSTEMS

TPI.tv →



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FROM DRONES TO SMARTPHONES: INNOVATIVE SOLUTIONS FOR TACKLING LITTER

Challenge

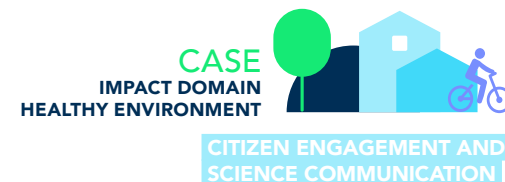
Street litter remains a major environmental challenge in Flanders. In 2023, an average of 0.97 kg of litter per person was collected, according to OVAM. This litter not only increases cleanup costs but also poses a serious ecological threat. A substantial amount of this litter ends up in rivers and seas, damaging ecosystems and disrupting the food chain. Preventing litter from entering waterways is crucial, but identifying litter hotspots for targeted cleanups remains challenging due to limited ground observations.

Solution

In 2023, the Waste Watchers project tackled this issue by using drone imagery to monitor litter from a bird's-eye view. Citizens were empowered to use consumer drones to gather high-resolution images along riverbanks, ensuring wider coverage at a lower cost than complex monitoring systems. To ensure data quality and safety, participants received training and tools to collect drone data in a responsible and standardised way. The captured images were then processed using Artificial Intelligence (AI) to detect, localise, and quantify litter along the riverbanks.

This innovative approach resulted in a comprehensive mapping of litter hotspots along the Scheldt River, with more than 9,000 images analysed using AI technology. The collaboration between VITO and the non-profit organisation River Cleanup was recognised with two prestigious Geospatial Awards, highlighting its innovative use of technology and its significant social and environmental impact.

Building on this success, the River Watchers project expanded participation by enabling citizens to map litter using their smartphones. Participants take photos of waste, which are automatically recognised by AI. This innovative technology identifies and categorises various litter types, such as PET bottles and mesoplastics, supporting policymakers in developing more effective strategies for tackling river pollution.



A section of the first prototype map visualising the number of litter pieces per hectare detected by the computer, with object locations aggregated into a heat map



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Impact

During the Flemish River Monitoring Day, citizens, organisations, and companies are invited to monitor riverbanks. Participants upload photos to an interactive website, where their contributions instantly appear on a map. An AI model then analyses the images to identify and categorise litter. This initiative turns environmental action into a collaborative effort, fostering a stronger sense of community responsibility and promoting cleaner rivers for future generations. It reflects the power of technology and citizen involvement in protecting Flanders' natural ecosystems.

Empowering citizens of all ages to engage in scientific projects using smartphone imagery and AI-driven litter detection not only boosts participation but also revolutionises environmental monitoring and waste categorisation efforts.

ARNE VAN OVERLOOP - Project Manager River Watchers
VITO Remote Sensing



VITO - RIVER CLEANUP →

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TACKLING CLIMATE, ENERGY AND WATER CHALLENGES THROUGH INTERNATIONAL COLLABORATION

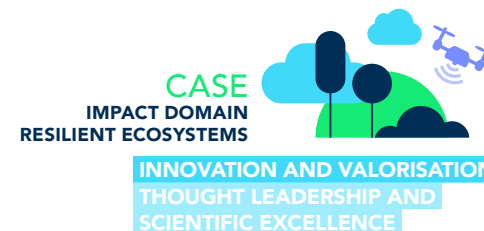
Challenge

The fight against climate change requires a global effort, with Nationally Determined Contributions (NDCs) serving as key mechanisms for international commitments under the Paris Agreement. In practice, however, NDCs don't come without their own set of challenges, including those specific to developing countries. African Union member states, for example, currently still face substantial gaps in their capacity building programmes, leading to complexities in African climate policy in general and the energy sector in particular. Additionally, the interconnection between water, energy, and food security in sub-Saharan Africa presents complex challenges that demand integrated solutions.

Similarly, in Suriname, the need for sustainable and safe decentralised drinking water solutions, including both technological innovation and socio-environmental adaptation strategies, is critical to enhancing climate resilience in rural communities. River water needs to be boiled using wood fires before it can be used as drinking water, and this results in significant CO₂ emissions. Furthermore, in the wet season during floods, which are becoming more frequent due to climate change, the river water becomes even more polluted so that boiling is not an option anymore.

The results obtained in the implementation of this NDC Support Center Pilot Program are very encouraging, in particular the commitment of the countries at the highest level by the responsible ministers and the involvement of the various actors involved in the energy sector.

RASHID ALI ABDALLAH · Executive Director AFREC





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Solution

To help address these challenges, VITO has been at the forefront of multiple international projects that strengthen climate resilience and sustainability through knowledge-sharing and innovative solutions.

In 2021, VITO and the African Energy Commission (AFREC), with support from the Flemish Government, launched the [NDC Support Center](#) to create an African Knowledge Center with the aim of sustainably increasing the maturity of African countries in energy statistics, energy system modelling and greenhouse gas (GHG) emissions reporting.

In 2024, the three-year NDC Support Center Pilot Program in Malawi, Morocco, Mozambique, and Uganda came to a successful end, having delivered tangible results which lay the foundation for long-term governance improvements. Within the framework of the NDC Support Center Stakeholder Forum that took place in Brussels in the autumn of 2024, a groundbreaking White Paper was published, proposing to redefine the traditional paradigm of capacity building in the shape and form of six special recommendations. [Discover more](#)

Meanwhile, to tackle the interdependency of water, energy, and food systems in sub-Saharan Africa, VITO co-developed an open-source planning tool as part of the EPIC project. The tool, applied in the Volta and Tana River basins, facilitates stakeholder engagement in designing sustainable pathways for clean energy access and food security. [More about the EPIC project](#)

Furthermore, VITO is committed to strengthening collaboration with Flemish SMEs. As part of this effort, VITO is working together with BOSAQ on projects in Suriname, Moldova and Colombia aimed at enhancing climate resilience of inland communities by providing decentralised drinking water systems powered by renewable energy.



NDC Support Center →

[BOSAQ](#), a leader in sustainable water solutions, is contributing its expertise in water purification and management to ensure reliable access to clean drinking water. VITO's contribution includes testing battery storage technologies, optimising the water-energy integration of the installation for energy-efficient water supply solutions, and identifying strategies to provide additional energy services with the excess available, which will benefit local communities and strengthen their climate resilience. Besides this collaboration on a technological level, VITO's economic water expertise in tariffication will inspire the financial management of decentralised solutions with innovative business models.

Additionally, also in Suriname, VITO is collaborating with [Turbulent](#) to implement climate-driven micro-hydropower turbines for sustainable energy generation. Turbulent's innovative small-scale hydropower technology ensures a continuous, clean energy supply to rural communities, supporting local resilience and sustainable development. VITO contributes to this project with digital water services for water quality and quantity, as well with economic water expertise of these decentralised solutions.

Impact

VITO's initiatives drive impactful climate action. The NDC Support Center has strengthened African climate governance. The EPIC project fosters sustainable water-energy-food management. In Suriname, VITO enhances community access to drinking water, supporting climate adaptation. In short, through international collaboration and innovation, VITO is helping turn ambitious climate commitments into tangible action.



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ENHANCING IMPACT ON WATER RESILIENCE THROUGH DIGITAL MONITORING OF WATER QUALITY

Challenge

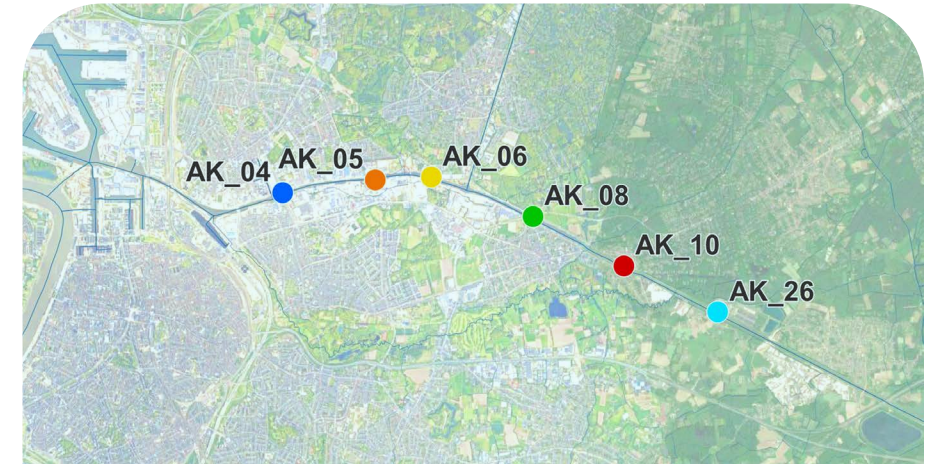
Water is a vital resource for industries, drinking water production, and transportation. However, climate change is significantly impacting water quality and its availability, particularly in key water bodies such as harbour docks, canals and large rivers. Rising salinity levels, caused by prolonged droughts and fluctuating water levels, pose serious threats to multiple stakeholders. This causes multi-stakeholder issues in areas such as the Antwerp port docks, the Albert Canal, the Ghent-Terneuzen Canal and the Yser basin, where salinity jeopardises shipping and port operations, as well as drinking water production. Addressing these challenges requires an innovative approach to monitoring and managing water resources effectively.

Solution

VITO, in collaboration with water-link, deployed a real-time sensor network consisting of 45 sensors along the Albert Canal and the Antwerp port docks. These sensors measure key parameters such as salinity (via conductivity), water temperature, and water depth. The system integrates IoT (Internet of Things) infrastructure using LoRa (Long Range) communication to ensure high-frequency data transmission to a cloud platform.

Similarly, in the Ghent-Terneuzen Canal, VITO and North Sea Port implemented a monitoring network based on the Internet of Water Flanders project (IoW) to track salinity levels in real-time at key locations such as Grootdok, Rodenhuedok, Autrichehaven, and Zevenaarhaven. The IoW project leveraged the application of digital technology for real-time water quality monitoring and decision support. Additionally, in the Westhoek region, drinking water producer "De Watergroep" uses IoW's sensor data to optimise drinking water production at the Blankaart WPC and its reservoir, ensuring timely water intake to counter salinity risks.

In both application cases, VITO has developed advanced digital tools, including data architectures, dashboards, algorithms, and predictive models to support decision-making. The VITO algorithms and models provide stakeholders with insights into water system dynamics, enabling efficient resource management, and water intake planning.





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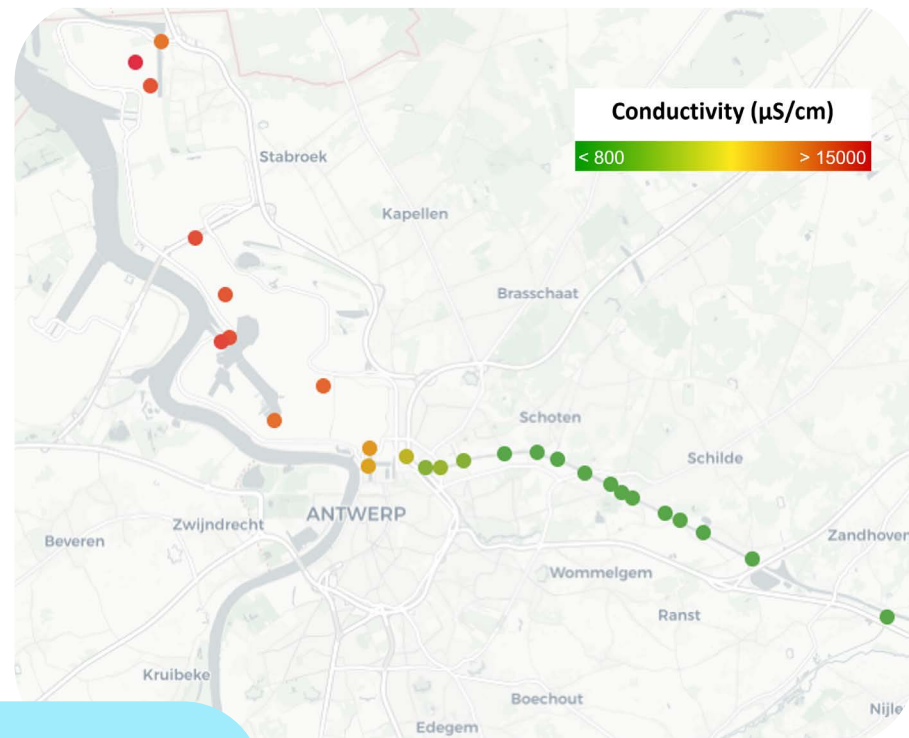
Impact

The real-time monitoring approach has significantly improved drinking water intake management on the Albert Canal and the Yser river, and water quality monitoring in the Antwerp port and the Ghent Terneuzen Canal. Continuous water quality tracking enables proactive responses to salinity increases, ensuring sustainable industrial operations, safe drinking water production, and stable port activities.

Recently, the IoW Flanders project received the prestigious Mülheim Water Award for its innovative approach to water monitoring and management. As VITO and its partners continue refining these technologies, their impact will extend beyond Belgium, offering a model for other regions facing similar water challenges.

Thanks to the data we collect through the sensor network deployed by water-link and VITO on the Albert Canal and the Antwerp Canal docks, we work closely with all involved parties to coordinate the management of our waterways. We gain insight into the mutual impact of our decisions, and support policies and measures with factual insights. In a proactive manner too.

SVEN KEMPENEERS - Process Engineer water-link



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TOWARDS A DECARBONISED AND RESILIENT BUILT ENVIRONMENT

Challenge

Buildings account for approximately 40% of the EU's total energy consumption and 36% of greenhouse gas emissions. As Europe seeks to meet its ambitious climate targets, decarbonising the built environment has become an urgent priority. The challenge, however, lies in accelerating renovation efforts and deploying sustainable heating solutions at scale. The 2024 Belgian Renovation Week underscored this pressing need, bringing together industry experts and policymakers from across Europe. Deep and fast renovation, innovative energy solutions and the implementation of heat pumps in existing buildings are primordial in reducing carbon footprints. Yet, significant barriers remain, from outdated infrastructure to misinformation about these innovative heating technologies.

Solution

VITO has been at the forefront of tackling these challenges through research, policy engagement, technological and social innovation. During the 2024 Belgian Renovation Week, VITO played a pivotal role in moderating discussions and presenting insights on accelerating renovation. In particular, VITO moderated the session "Innovating Renovations: Pioneering the Future of Built Environment Transformation". This session featured technological and digital industrial innovators, highlighting the importance of collaboration in driving transformation. [More about the Belgian Renovation Week](#)

Meanwhile, in the heating sector, VITO has actively countered misconceptions about heat pumps. A recent study of ours formed the basis of the 'Heat-Pump Ready' tool, launched by the Energy and Climate Agency of Flanders (VEKA). The study revealed that 70% of Flemish homes are already heat-pump ready, with 35% of single-family homes and 76% of apartments requiring no major modifications. The tool has guided thousands of homeowners in making informed decisions about their heating systems. [More about the study](#)

VITO also kicked off the [EU Heat Pump Accelerator Platform](#), a dynamic EU-wide initiative that aims to speed up the roll-out of heat pumps in buildings, industry, and district heating. In collaboration with the [European Heat Pump Association](#) and [Fraunhofer IIS](#), a platform was thus set up, bringing together over 70 heat pump industry representatives and experts from across the EU.

CASE
IMPACT DOMAIN
RESILIENT ECOSYSTEMS



CITIZEN ENGAGEMENT
CLIENT INCLUSION
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To drive the uptake of novel decarbonisation technologies in practice, VITO leads the European Green Deal project oPEN Lab, demonstrating the transformation of urban districts into Positive Energy Neighbourhoods. In Genk (Belgium), Pamplona (Spain), and Tartu (Estonia), this initiative is integrating sustainable building designs, renewable energy solutions, and smart energy management systems to create scalable and replicable models for the future. In the Genk leg of the project, under VITO's wings, twelve industrial partners are actively involved – ranging from innovative Flemish SMEs such as LITO, Cast4All and Futech over contractors such as Van de Kreeke and Van Roey, all the way to international technology manufacturers such as Daikin - each of them testing, demonstrating and improving their technologies and services. [More about oPEN Lab](#)



Our journey from small-scale pilots to large-scale impact in the energy transition starts with bold ideas, strong industry partnerships, and a commitment to innovation.

MAARTEN DE GROOTE - Programme Manager VITO



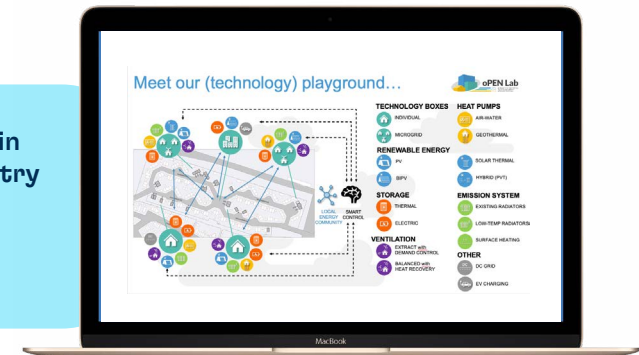
Impact

VITO's efforts are accelerating the transition to a decarbonised and resilient built environment. The 2024 Belgian Renovation Week strengthened policy frameworks, while the 'Heat-Pump Ready' tool empowered thousands of homeowners with practical steps for sustainable heating.

The EU Heat Pump Accelerator Platform is identifying key barriers to large-scale heat pump deployment, sharing best practices, and working in alignment with both European and national legislators to support the heat pump industry's growth.

Meanwhile, oPEN Lab's real-world demonstrations are proving the feasibility of deep renovation and Positive Energy Neighbourhoods. Beyond the twelve active industrial partners, the project is already having a broader impact on the private sector by developing commercialisation strategies, enhancing market competitiveness, and building stronger connections with potential adopters and clients across Europe.

By fostering collaboration across industry, government, and communities, VITO is not only addressing today's energy challenges but also creating a sustainable blueprint for the future.





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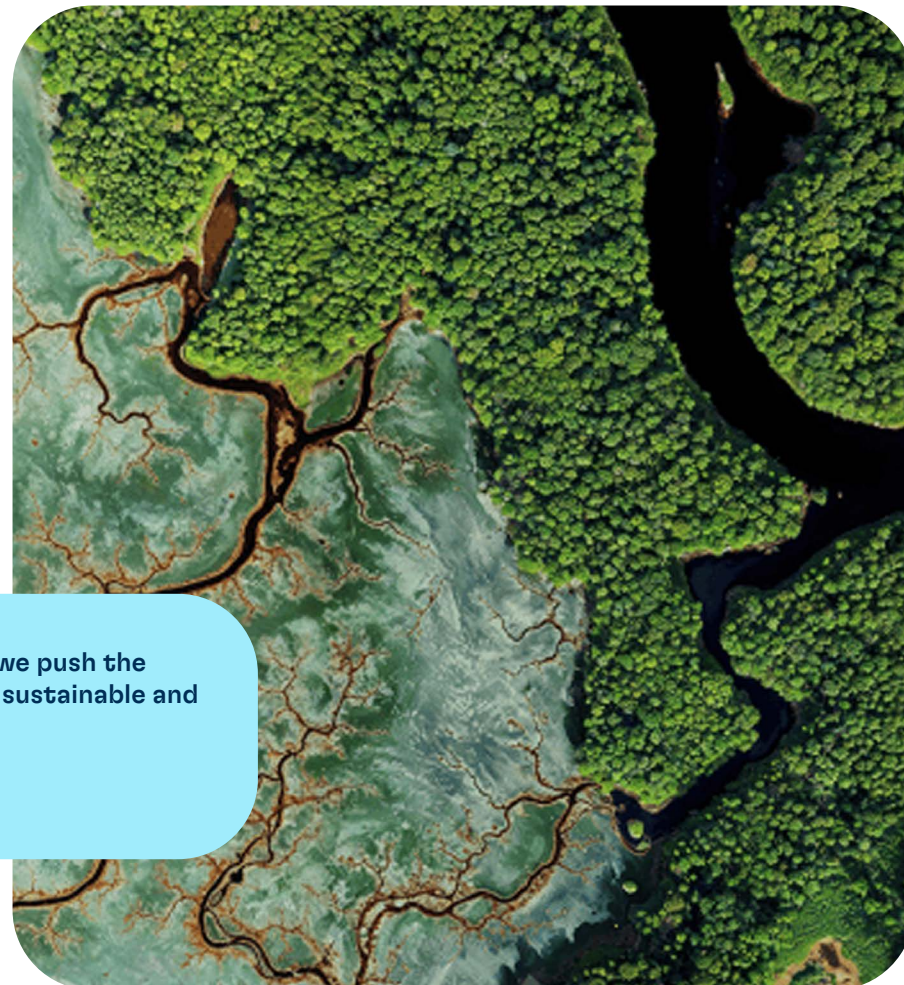
VITO REMOTE SENSING: A WORLD LEADER IN GLOBAL LAND MONITORING

Our remote sensing journey began in 1998 with the creation of the first 1km-resolution global vegetation maps as part of the CNES/Belgian/ESA SPOT-VEGETATION programme. Building on this foundation, VITO expanded its expertise through pioneering initiatives, including the Flemish PEGASUS stratospheric drone programme, the Swiss/Belgian/ESA APEX hyperspectral airborne programme, the European Sentinel-Copernicus programme, and the Flemish Reference Tasks. These advancements have positioned VITO as a leader in remote sensing applications, providing critical data and insights for all impact domains associated with a resilient society (economy, health, ecosystems).

From land cover and agricultural mapping at a worldwide scale to continental ecosystem assessments and national disaster response, VITO integrates satellite, airborne, and in-situ data to support policymakers, companies, and researchers. Remote sensing now plays a key role in various policy areas, including agriculture, water management, ecology, infrastructure, security, energy transition, and the circular economy, supporting planning, monitoring, and enforcement. At the core of these efforts is Terrascope, a powerful platform providing seamless access to Copernicus data and cloud-based analytics, ensuring that geospatial intelligence is both actionable and accessible.

Through advanced platforms and AI algorithms, we push the boundaries of geospatial intelligence to support sustainable and resilient societies.

RUDI TORFS - Unit Director Environmental Intelligence VITO





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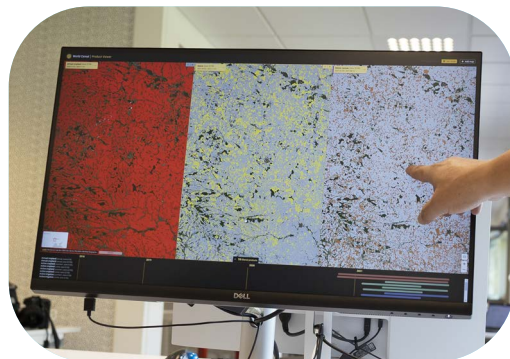
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Land monitoring at global scale: EC-Copernicus and the ESA World-Series

VITO has played a pioneering role in global land monitoring through its leadership in the EC's Land Monitoring Service and ESA's World programme. Projects such as LCFM (Copernicus Global Land Cover and Tropical Forest Mapping and Monitoring), ESA WorldCover, ESA World Ecosystem Extent Dynamics, and ESA WorldCereal are crucial components of the Copernicus Earth Observation Programme. The LCFM service delivers high-resolution land cover maps and tropical forest monitoring products (2020 to 2026), providing essential insights into global land cover and ecosystem changes. [More about LCFM](#)

Through the [Copernicus Programme](#), VITO achieved a major milestone by producing global vegetation maps at 10 meter resolution, fusing Sentinel-2 optical imagery with Synthetic Aperture Radar (SAR) data from Sentinel-1. This effort was born in [ESA's WorldCover project](#) and further elaborated in LCFM, delivering the most uniform and accurate global land cover maps available today. These projects also showcased the successful implementation of the European Cloud Computing capacity to handle massive global datasets. Furthermore, VITO led the consortium that developed the ESA WorldCereal map, the world's first dynamic system providing seasonally updated cropland and crop-type maps at 10 meter resolution on a global scale. [More about the ESA WorldCereal project](#)

The success of WorldCereal highlights VITO's proficiency in data science, artificial intelligence, and remote sensing tailored for environmental monitoring. This initiative provides European policymakers with continuously updated and independent insights, particularly in geopolitical conflict zones such as Ukraine and Sudan, where agricultural lands are at risk, endangering food security, ecosystems, and public health.



Impact

Remote sensing is a key enabler for environmental sustainability and economic growth. It enables continuous monitoring of ecosystems, forests, and oceans, helping track deforestation, vegetation shifts and pollution. In disaster management, real-time data on wildfires, floods, and hurricanes support faster, more effective responses. It optimises agriculture by assessing soil health, irrigation, and crop conditions while improving resource management for water and minerals. Biodiversity conservation benefits from monitoring habitat changes and detecting human activities like land degradation, urbanisation and overfishing. Economically, remote sensing enhances precision agriculture, infrastructure planning, and resource exploration, reducing costs and increasing efficiency. It also supports early warning systems, minimising security-related economic losses. The growing geospatial sector fosters job creation, while accurate satellite data replaces costly ground surveys, enabling smarter decisions that balance economic progress with environmental protection.

To support these large-scale processing activities, VITO is one of the largest contributors to the openEO open-source application programming interface. This technology is firmly embedded in the Copernicus Data Space Ecosystem (CDSE), the European cloud environment and gateway to the golden standard of Earth Observation data, Copernicus. By leveraging cloud computing, openEO enables more efficient data processing and AI-driven insights, helping policymakers and scientists respond to environmental challenges.

Continental applications: INCA, Natural Capital Accounting and Copernicus Services

At the continental level, VITO has developed advanced remote sensing solutions, many of which utilise Copernicus Services. The Integrated Natural Capital Accounting (INCA) framework uses remote sensing to quantify ecosystem services and assess land-use changes, offering policymakers data-driven insights into biodiversity, carbon storage, and sustainable land management.



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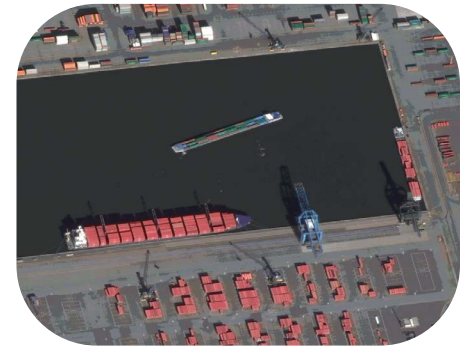
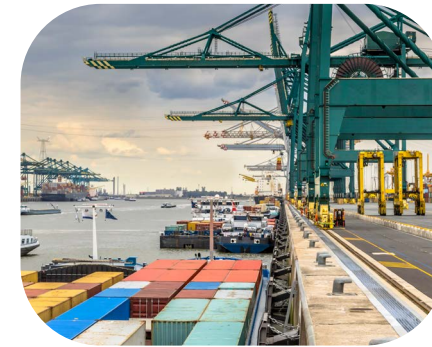
VITO also contributes to Natural Capital Accounting (NCA), developing the algorithms and insights to support governments and companies in evaluating and managing their environmental impact, ensuring economic growth aligns with ecological sustainability. Through the Copernicus Climate Change and Land Monitoring Services, these applications provide a critical foundation for environmental policymaking.

National and local applications: Monitoring of natural hazards and critical infrastructure via fusing local remote sensing and Copernicus Emergency Management

VITO's remote sensing expertise is also applied at the national and local levels, supporting a wide range of applications. Beyond satellite-based products, VITO has diversified its portfolio to include airborne and terrestrial-based remote sensing services, offering very high-resolution solutions for sectors such as agriculture, marine and coastal environments, infrastructure asset management, and urban planning. Through the MAPEO digital laboratory, organisations can implement customised remote sensing solutions, including LiDAR, sonar, mobile mapping, and thermal imaging to supply the specific data needs of their applications.



Geospatial data plays a crucial role in policy decisions, enabling governments to make informed choices on land use, disaster response, and environmental monitoring. VITO's expertise also supports rapid flood mapping and response, providing real-time data for emergency management and mitigation efforts. Additionally, innovative ultraviolet cameras are used to detect oil spills more effectively, improving maritime safety and environmental protection. In the maritime sector, high-precision ship positioning with drones enhances navigation and optimises operations in busy waterways.



Terrascope: Powering geospatial intelligence

At the heart of VITO's remote sensing innovations is Terrascope, the cutting-edge Belgian Earth Observation data space that facilitates the user community with seamless access to Copernicus data archives and cloud-based processing. Managed and operated by VITO on behalf of the Belgian Science Policy (BELSPO), Terrascope enables scalable and real-time geospatial analytics, empowering policymakers, researchers, and companies to derive actionable insights from Earth Observation Data.

Through Terrascope, VITO continues to push the boundaries of geospatial intelligence, ensuring that land monitoring, climate analysis, and environmental decision-making remain state-of-the-art with respect to the European and global sustainability efforts.

[More about Terrascope](#)

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BREAKING BARRIERS IN PFAS CHARACTERISATION WITH NON-TARGET ANALYSIS

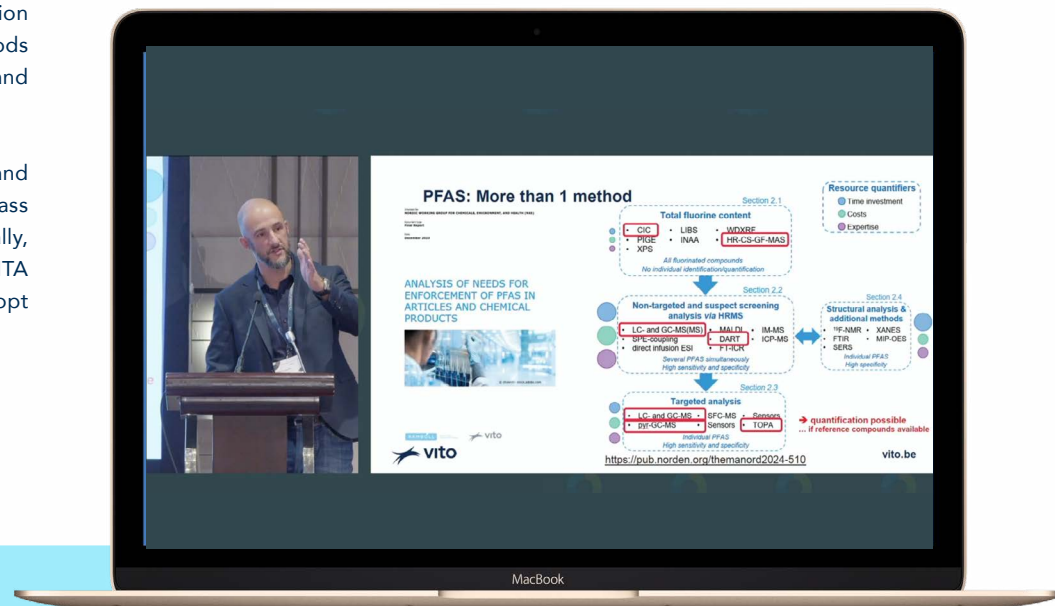
Challenge

PFAS are harmful chemicals that persist in the environment, contaminating water, soil, and air. Widely used in industrial processes and consumer products, their resistance to degradation makes them a long-term threat to ecosystems and human health. Traditional testing methods only detect known PFAS, leaving many unidentified, which limits effective regulation and pollution control.

A more advanced approach, Non-Target Analysis (NTA), enables the detection of both known and unknown PFAS. Yet, its implementation presents challenges. NTA requires high-resolution mass spectrometry (HRMS), making it expensive and demanding specialised expertise. Additionally, current regulations focus on specific PFAS compounds, complicating the integration of NTA results into legal frameworks. Many laboratories and industries also lack the resources to adopt NTA widely.

The biggest challenge is that we don't even know what all PFAS look like. With Non-Target Analysis, we can finally start uncovering the hidden part of the iceberg—the contamination below the surface. This is the future of environmental monitoring, but regulation and industry must evolve simultaneously.

STEFAN VOORSPOELS - Senior Scientist Chemical Analysis, R&D Team Manager VITO





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Solution

VITO has developed advanced methods to enhance PFAS detection using NTA. By applying high-HRMS, VITO can identify previously unknown PFAS that would otherwise go unnoticed. This allows regulators and industries to stay ahead of emerging contamination risks. Combining NTA with existing analytical techniques provides a more comprehensive picture of PFAS pollution, strengthening environmental monitoring efforts.

VITO is also collaborating with European policymakers to incorporate NTA into new regulations. Instead of relying solely on fixed limits for specific PFAS, this approach emphasises trend-based monitoring, enabling quicker action when pollution levels rise. Furthermore, VITO has pioneered the world's first validated method for measuring PFAS emissions from industrial chimneys, addressing a critical regulatory gap and allowing industries to track and reduce emissions effectively.

Impact

VITO's work is transforming PFAS monitoring by making it more comprehensive and proactive. Regulators can now detect pollution earlier, enabling faster intervention. Industries benefit from improved monitoring tools, helping them to prevent contamination and comply with evolving regulations. Cleanup efforts are also more effective, as NTA identifies unknown PFAS that traditional methods miss, ensuring thorough remediation.

By bridging the gap between science and regulation, VITO is driving policy improvements to better protect the environment and public health. Through its pioneering research in PFAS monitoring in air, water and soil, VITO is helping Europe adapt to new challenges and implement more effective pollution control strategies, thus reinforcing its position as a global leader in PFAS research.

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CREATING A SUSTAINABLE, CIRCULAR FASHION INDUSTRY

Challenge

The fashion industry is one of the most resource-intensive sectors, generating nearly seven million tonnes of textile waste annually in Europe alone. Current recycling processes are inefficient, hindered by technological, economic, and regulatory barriers. As a result, most discarded textiles end up in landfills or are incinerated, contributing to environmental pollution and resource depletion. To shift towards a circular economy, a comprehensive and scalable solution is required to enhance textile recycling and sustainable production practices.

Solution

VITO is driving the transition to a circular fashion industry through research, innovation, and collaboration. One of VITO's key contributions is its research for the European Environment Agency (EEA), providing crucial insights into textile waste management and the urgent need for sustainable practices. Additionally, VITO played a leading role in SCIRT, a European innovation initiative that brought together research organisations, fashion brands, textile manufacturers, and recyclers to address systemic barriers in textile recycling. Through SCIRT, VITO successfully demonstrated a complete textile-to-textile recycling system, proving that high-quality clothes can be produced from discarded textiles. [Read more about SCIRT](#)

As part of SCIRT, VITO and Flanders DC developed the [True Cost Calculator](#). This tool enables fashion professionals, including designers, buyers, and sustainability managers, to comprehensively measure and compare the environmental and social impact of clothing across its life cycle. By providing clear and actionable insights, the True Cost Calculator facilitates more sustainable decision-making within the fashion industry. [Go to the True Cost Calculator](#)





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Impact

After more than three years of intensive research and collaboration, SCIRT has demonstrated that a more sustainable fashion industry is achievable. SCIRT's solutions are already making a tangible difference. Belgian fashion brand Xandres successfully integrated SCIRT's circular principles by designing a fully recyclable collection using high-quality recycled textiles. This showcases the feasibility of circular fashion, inspiring more brands to embrace sustainable practices.

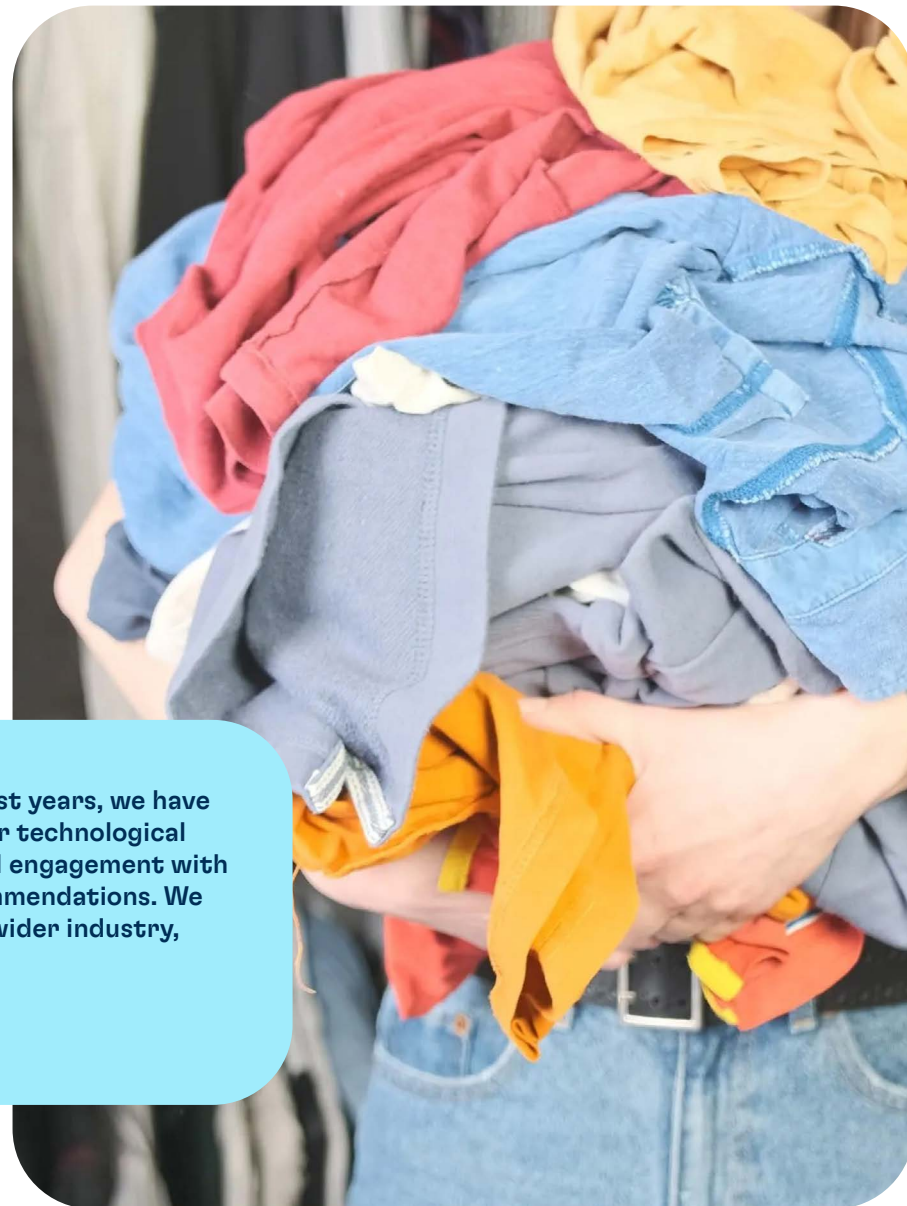
Moreover, work developed for the EEA has also influenced European regulations, with VITO's studies contributing to key policy developments. The 2019 report *Textiles and the Environment in a Circular Economy* informed the European Commission's 2020 Circular Economy Action Plan, while the 2024 study on returned and unsold textiles laid the foundation for new EU legislation banning the destruction of unsold clothing.

[Read study](#)

SCIRT was a demanding project, but over the past years, we have gained invaluable knowledge. In addition to major technological and production advancements, our research and engagement with stakeholders have led to important policy recommendations. We hope these insights will benefit Europe and the wider industry, driving further progress towards sustainability.

EVELIEN DILS - Programme Manager Circular Economy VITO

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VITO AND FLANDERS TECHNOLOGY & INNOVATION: A SHARED MISSION FOR FUTUREPROOF INDUSTRIES AND RESILIENT COMMUNITIES

Challenge

With the relaunch of Flanders Technology & Innovation (FTI) in 2024, the Flemish government aimed to strengthen Flanders' position as an innovative knowledge region worldwide. Central to this ambition were tangible, future-oriented projects designed to improve the daily lives of Flemish citizens and to strengthen the growth and resilience of companies. From 15 to 24 March 2024, FTI brought science and technology closer to the public through a ten-day inspiration and experience festival across six Flemish cities, each built around a specific theme. G-STIC, commissioned by VITO, organised FTI Hasselt with a clear ambition: to leave the city better than before. At the closing festival in Antwerp, VITO joined other leading knowledge institutions to showcase its innovations to a broad audience.

By putting innovation within the reach of the broad public, we turned abstract challenges into real, shared possibilities. The closing festival in Antwerp wasn't just about showcasing VITO's innovations – it was about inviting everyone in Flanders to imagine and co-create a sustainable future. Together, we aim to help the world thrive for at least 1,000 more years.

KRISTIN GEBOERS - Marketing & Communication Manager VITO



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Solution

At FTI Hasselt, VITO presented a wide range of innovations that brought sustainability to life. The launch of [VITOpolis](#), an interactive pop-up exhibition now touring across Flanders, invited visitors to explore what a sustainable future could look like and how they could help shape it. In the water experience container, visitors discovered smart, field-tested solutions for saving water on business parks.

VITO also demonstrated climate-conscious building practices with the installation of a carbon-neutral concrete bench, developed in collaboration with ResourceFull using a unique low-carbon cement. The SCIRT installation revealed the often-hidden world of textile recycling by tracing the journey of discarded clothing from waste to resource.



A standout highlight was the premiere of Circufix – an AI-powered app developed by VITO employees to help users diagnose and repair electronic devices. This app promotes circular behaviour by extending product lifespans and reducing electronic waste.

VITO further supported companies through innovation. At the Circular Boost Café, VITO and Q-lite presented environmentally friendly scenarios through Display-as-a-Service, part of Q-lite's new circular business model developed with VITO's support. At PXL Hasselt, [VITO Remote Sensing](#) demonstrated how drone and AI research can support the food industry, with a focus on automated weed detection.

At the Business Making Places summit – an inspiring day exploring urban mobility, the role of companies in cities, and impactful energy solutions – VITO was actively present through the [VITO4STARTERS](#) competition. In a thrilling final, eight promising start-ups pitched their sustainable solutions. The winner, B3ET, is developing biobased products from applewood and building a collaborative ecosystem across the fruit, biorefinery, and industrial sectors – supported by VITO's expertise.

At the closing festival in Antwerp, VITO engaged the public with an immersive experience focused on three domains: climate, resources, and the living environment – encouraging visitors to reflect on their own role in building a more sustainable future.

Impact

FTI Hasselt welcomed 12,000 visitors and engaged 6,500 participants in content-rich activities. The city benefited from tangible local initiatives – from the installation of the carbon-neutral bench to the revitalisation of Bootstraat and the formation of expert groups on sustainable energy.

Companies collaborating with VITO also experienced tangible outcomes. Q-lite accelerated its transition to a circular economy with its Display-as-a-Service model. B3ET, the VITO4STARTERS winner, is now pioneering circular innovation using applewood as a bioresource. By embedding companies into its sustainability efforts, VITO demonstrated that impactful change doesn't happen in isolation – it's built through partnerships. These collaborations are creating ripple effects across sectors, proving that when companies innovate with purpose, entire ecosystems benefit.

Thanks to VITO's efforts, Hasselt was not only inspired – it experienced real, lasting improvements. And the story didn't end there. The closing festival in Antwerp amplified this impact by reaching a broad audience. Through hands-on, interactive experiences, visitors were introduced to VITO's innovations, which sparked both reflection and dialogue around collective sustainability. FTI 2024 demonstrated that when research meets engagement, innovation doesn't just inspire. It drives lasting, meaningful change – for citizens, for companies, and for the future.



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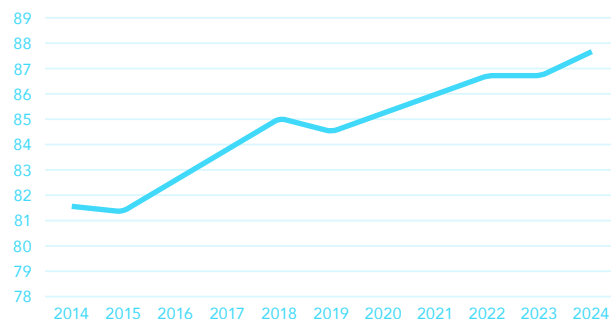


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VITO's three impact domains, regenerative economy, resilient ecosystems and healthy environment, specify the key themes we want to focus on. It is in these three domains, we work on **innovation and valorisation initiatives** with our three main client groups to deliver impact: governments, industry, and society. The case studies in [the previous chapter](#) illustrate how industry valorisation leads to impact and how we have leveraged our research to address societal and economic challenges across our three impact domains. In what follows, we discuss VITO's policies and actions that guide impact maximisation.

At VITO, we value the feedback from all our partners and clients. To ensure we continuously meet and exceed expectations, we send client satisfaction surveys at the end of every contract. The **client satisfaction** score is a quality objective within each unit, which is periodically monitored and reported. It is also addressed during the annual ISO management review at both the unit and VITO levels. Our client satisfaction score in 2024 was 94%. For reference tasks, an important part of the client work we do, a separate satisfaction survey is sent out. For 2024, the satisfaction score amounted to 88%, rising from 87% the previous year.



Reference task satisfaction score



LEEN GOVAERTS

Director Water and
Energy Transition



“As a sustainability-focused research organisation, we prioritise our clients by providing science-driven insights and innovative solutions to advance their sustainability goals. In the domain of water and energy transition, we collaborate closely with industries to ensure access to sustainable resources, often in cooperation with public actors to facilitate these transitions. For example, our cooperation with the Flemish chemical sector on circular water technologies and cross-border energy infrastructures helps drive a sustainable, competitive future for the region.”



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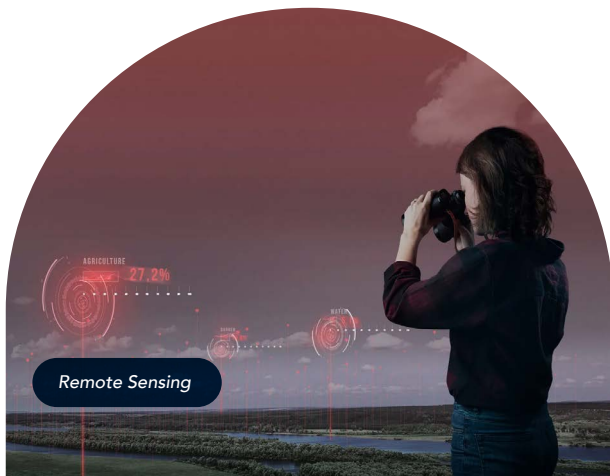
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INNOVATION AND VALORISATION

MAXIMISE SOCIETAL IMPACT THROUGH A STRATEGIC PORTFOLIO OF UNIQUE TECHNOLOGIES

To maximise our impact, we need to allocate our resources efficiently, focusing on areas where we have core competencies and unique strengths. Our research and valorisation activities are hence guided by a **holistic approach of portfolio management**. 'Societal Impact' is evaluated based on three impact drivers: economic impact (i.e. the potential to stimulate economic activity and/or employment), human life impact (i.e. the potential to increase the total healthy life years and/or quality of life), and environmental impact (i.e. the potential to reduce the strain on our environment).

In this way, **the VITO portfolio is evaluated annually**. The conclusions are used by VITO's Directors Team, with support from the Strategic Advisory Board (see section VITO's governance framework) that provides recommendations to guide strategic choices about which technology platforms to invest in, sustain or divest. For example, the development of our technology around 'Carbon Capture and Use' has been accelerated in 2024, as it is a strong technology platform addressing a growing industrial need in 2024.



OUR CLIENTS

1. INNOVATION AND VALORISATION

This topic addresses the impact VITO creates through its technology development, services and innovation support to industry and policy across its 3 impact domains (regenerative economy, resilient ecosystems, healthy environment). Sustainable impact is at the core of VITO's innovation and client work. The growing global awareness and action towards sustainability hence present a valuable opportunity for VITO's solutions. However, a potential decline in the prioritisation of sustainability by industry or governments poses a risk.



Internet of Water



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02. VITO's handprint → Our Clients → Innovation and valorisation

PILOT AND DEMO STEWARDSHIP FOR FUTURE-PROOF INDUSTRIES

VITO invests in **pilot and demonstration infrastructure** for its strongest technology platforms to address growing industry demand for de-risking new sustainable technologies. This approach not only facilitates higher adoption and valorisation of these innovations but also accelerates their market impact. By providing a controlled environment for testing and refining technologies and performing techno-economic analyses, VITO ensures that companies can confidently integrate these solutions into their operations, ultimately driving greater impact and economic growth.

Examples include:

AUTOCLAVE

By the end of 2024, VITO installed a state-of-the-art 7 m³ autoclave pilot, designed to fast-track the development and scaling of mineral carbonation technologies. This advanced system, capable of handling high CO₂ concentrations, will help transform captured carbon into valuable construction materials. Supporting projects like *Carbon4Minerals* in collaboration with industry leaders such as **ArcelorMittal**, **ETEX**, **Vandersanden**, and **Heidelberg Materials**, this initiative marks a major step toward a more sustainable, low-carbon construction sector.



GENERIC ROBOT ARM

As part of a cutting-edge technology platform for construction and building envelopes, this pilot features a robotic arm with a laser cutter, driving automation and prefabrication in the industry. By streamlining building processes, it enhances efficiency and sustainability. In collaboration with industrial partners such as **Resourcefull**, **Unilin**, **Daikin**, and **Cordeel**, the pilot is actively contributing to research projects that foster innovation and new construction methods, strengthening collaboration across the sector.



KNOWLEDGE HUB FOR LAND USE AND GEO-INTELLIGENCE

VITO has strengthened its data-driven research capabilities with advanced computing hardware and data systems, enhancing innovation in sectors such as agriculture, security, land use, and infrastructure. This investment also improves data accessibility and sharing, fostering stronger collaboration with partners. Notable projects include working with **Colruyt Group** to assess crop damage and supporting the **Port of Antwerp-Bruges** in detecting oil spills, demonstrating the real-world impact of data-driven solutions.





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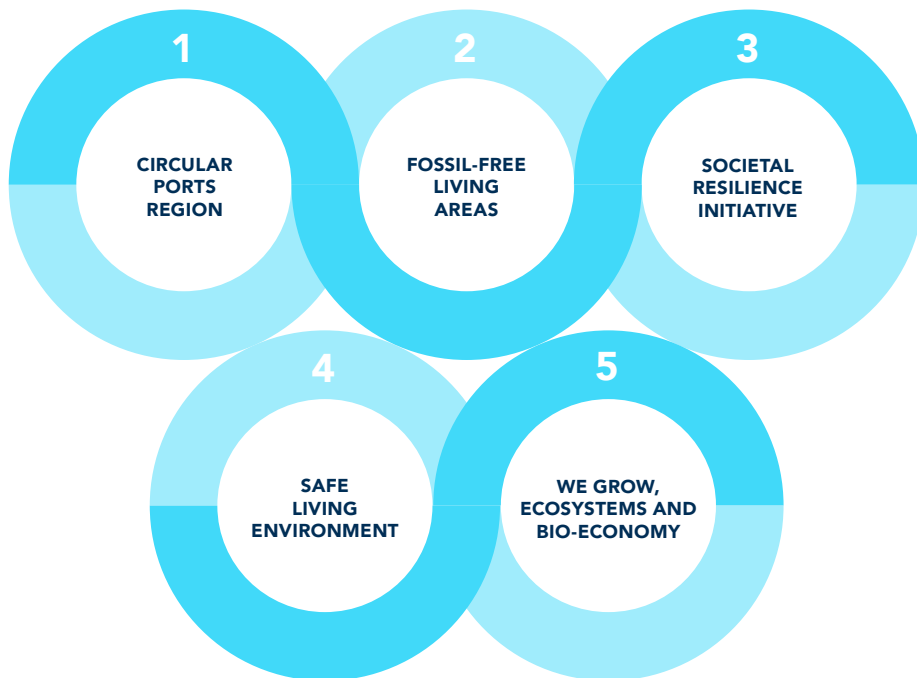


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TRANSVERSAL COLLABORATION, SYSTEM INNOVATION AND TRANSITION THINKING

Sustainability challenges are complex and interconnected, requiring holistic solutions. To drive greater impact, VITO restructured in 2024, **streamlining its organisation from seven to three business units** to enhance collaboration. Alongside this, a **structured innovation process** was introduced to fast-track high-impact multidisciplinary technologies through a clear evaluation framework. Four cross-disciplinary transversal projects have already been started, including an advanced redox flow battery, accelerating sustainable innovation.

In 2024, VITO launched **five ambitious thematic Missions** aligned with the Flemish Government Agreement and European objectives. These initiatives strengthen VITO's impact, attract partners and funding, and connect directly to our research programs in a transversal way. The Missions focus on:



Implementing sustainable solutions effectively in complex ecosystems requires a **strategic transition approach**. VITO embraces transition thinking to drive long-term, inclusive innovation, supported by Nexus, a dedicated team specialising in systemic and transition thinking and capacity building of our VITO research community on this subject. In 2024, VITO hosted a company-wide lunch talk and a crash course on the topic, with a deeper training program elaborating on systems thinking within each of the business units planned for 2025. This approach is closely integrated with VITO's transversal collaboration framework, ensuring maximum impact.

There is also an online Nexus hub accessible to all where transition learning and action tracks are made available.

[Website →](#) [Article →](#) [Podcast →](#)



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02. VITO's handprint → Our Clients → Innovation and valorisation

ECOSYSTEM COLLABORATION AND STRATEGIC PARTNERSHIPS

Collaboration is key for VITO to deliver on its three impact domains. To enhance our impact, we value and leverage the power of our diverse network of clients and partners. As such, we are committed to **deepening and strategically shaping our partnerships within our ecosystem: other research organisations, innovators, businesses, governments, civil society, and financial institutions.**



VITO has structural collaboration agreements with **all Flemish spearhead clusters** but also with other partners in the quintuple innovation helix to develop and implement long-term strategy and competitiveness programs. An overview of **priority clusters and partnerships** can be found [here](#). In 2024, 'MateriNex' was set up, the nexus for sustainable materials research in Flanders, and VLAKWA, the intermediary for integral water chain collaboration was strengthened by its integration into 'VITO Kennispunt Water'.



VITO is dedicated to **supporting Flemish strategic policy areas** in sustainable development and cleantech. We maintain strategic interactions with all relevant Flemish administrations and departments who can engage VITO for expert advice on long-term strategic policy matters. For example, in the previous period the government and its administrations heavily relied on VITO's expertise to tackle the crisis on 'substances of very high concern' like PFAS. More details can be found [here](#).

AGORIA



VITO has strengthened its collaboration with **sector federations** such as Agoria, Essenscia, UNIZO, and VOKA. For instance, VITO is partnering with Essenscia to assess infrastructure needs for a climate-friendly chemical cluster, and has launched a project under the Blue Deal Chemie to implement collective water purification in the Port of Antwerp/Bruges.



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CLIENT INCLUSION AND SAFE, SUSTAINABLE, AND ACCESSIBLE INNOVATION

CLIENT INCLUSION

Small- to medium-sized enterprises (SMEs) are a vital part of both the local and global economy. VITO is dedicated to supporting **SMEs in their sustainable innovation goals** by providing low-threshold access to our innovation services, expertise, training, and funding.

vito 4STARTERS

VITO4STARTERS, an initiative led by VITO, provides young companies focused on sustainable solutions the opportunity to participate in an annual pitching competition, connecting their innovative goals with VITO's expertise across key impact areas (regenerative economy, resilient ecosystems, and healthy environment). Launched in 2022, the programme has highlighted the growing role of sustainability and innovation in entrepreneurship. In its first two editions, 40 Flemish and European startups took part, with four—MyGrid, GRO2, Uze, and Clean Water Global—receiving direct technological support from VITO. In 2024, the programme saw 73 applications, and VITO supported five promising startups: Circulife, B3et, Cylib, Breed Bio, and D-CRBN. Additionally, VITO tracks the progress of these startups post-participation, offering insights into the lasting impact of our support on their long-term sustainability and success. More about VITO4Starters [here](#).



Since September 2024, VITO has been an active partner in Scaleup Flanders, a consortium aimed at accelerating the growth of scale-ups in Flanders. This initiative offers tailored support to high-potential, fast-growing companies through mentoring, technology transfer, and access to international markets and investors. As part of the consortium, VITO leverages its expertise in cleantech and innovation to help scale-ups address complex sustainability and technology challenges. This collaboration aligns with VITO's broader mission to drive sustainable transitions by supporting innovation at all stages of company growth, from start-up to scale-up. More about Scaleup Flanders [here](#).

OUR CLIENTS

2. CLIENT INCLUSION AND SAFE, SUSTAINABLE, ACCESSIBLE INNOVATION

This topic emphasises the importance of engaging with a broad client base, including start-ups, SMEs, and non-profits by addressing their unique needs and financial constraints. It also focuses on developing technology that is safe and sustainable by design (SSbD), ensuring that our innovations, once scaled to industrial / commercial level, are safe and accessible to a wide range of end-users. This approach supports a fair and just transition to more sustainable practices. Additionally, increasing the visibility and accessibility of VITO services presents an opportunity to connect with a broader client audience. Supporting impact start-ups or SMEs based on VITO research insights can also help researchers better understand industry needs and how to valorise long-term research.





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02. VITO's handprint → Our Clients → Client inclusion and safe, sustainable, and accessible innovation

VITO AND EDIH EBE

VITO is also a key partner in the European Digital Innovation Hub Energy in the Built Environment (EDIH-EBE). This initiative, supported by the European Union, focuses on helping SMEs and public organisations in Flanders accelerate their digital and green transitions. VITO provides specialised services within this hub, offering SMEs access to cutting-edge expertise in digital technologies, cleantech, and sustainability. Through the EDIH EBE, VITO helps SMEs to:

- adopt digital technologies to optimise their business operations
- implement sustainable practices through technology solutions
- access funding opportunities and networks across Europe.

This partnership allows VITO to further support the innovation and competitiveness of SMEs, ensuring they are well-equipped to meet the challenges of the future.

With EDIH EBE, we bring together the expertise and support of top Flemish actors such as T2-Campus, Flux50, Embuild Limburg, Embuild Vlaanderen, and POM Limburg, and share it with other stakeholders to optimally prepare Flanders for this digital revolution.



VITO has continued to focus on **global impact** through collaborations with organisations such as the Department of Environment, DKBZA, Enabel, World Bank, FWO, and FAO, leveraging Flemish resources for climate financing and international cooperation.

G-STIC, the Global Sustainable Technology and Innovation Community, with VITO as founding partner, accelerates the implementation of technological solutions for the SDGs. The 7th **G-STIC conference in Delhi** attracted over 300 participants. Looking ahead to 2025, the focus will be on developing more structured partnerships and securing sustainable financing to strengthen synergies across the international landscape.

VITO also participated in the **COP**, organised events and seminars with both Flemish and international partners, and joined several Belgian economic missions. At the COP on Biodiversity, VITO, together with the European Space Agency (ESA) and the Group on Earth Observations (GEO), hosted an event showcasing solutions to map global ecosystem sizes.

Through its collaborations in Flanders, VITO is also building new connections with **international companies across Europe, the Middle East, Japan, and Brazil**. In this role, VITO acts as a 'broker' for other Flemish partners, as demonstrated recently in Brazil with the bio-economy sector.



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02. VITO's handprint → Our Clients → Client inclusion and safe, sustainable, and accessible innovation

SAFE AND SUSTAINABLE BY DESIGN (SSBD)

We are committed to ensuring that our innovations are not only effective but also **safe for human health and the environment** from the start. This involves evaluating safety and sustainability throughout the entire innovation process, from design and development to production and use. By applying Safe and Sustainable by Design (SSbD) principles and conducting impact assessments, we guide our innovations to be sustainable across economic, environmental, and social dimensions.

We have substantial in-house experience with methodologies such as **life-cycle sustainability assessment** (environment, social and economic sustainability) and **hazard and safety testing**. We employ both in basic research and in applications for companies, assessing innovations from others as well as our own, as demonstrated for pilots LignoValue and Pillar II. In 2024, as part of the VLAIO Moonshot program, which focuses on developing technologies to significantly reduce CO₂ emissions, VITO, alongside project partners, developed a sustainability evaluation tool. This instrument is designed to guide R&D early on, ensuring the most sustainable outcomes. The tool and framework are available for public use.

We want to explore how we as VITO can apply this expertise more consistently and systematically in our own research and how we can further support others in accelerating the development of safe and impactful innovations.

At European level, VITO is closely involved in PARC, the European Union's ambitious partnership that is tasked with improving and harmonising **chemical risk assessment**, and the relevant methods and tools. PARC brings together around 200 partners from 28 countries, with VITO as an executive board member. VITO's prominent role within the **biomonitoring** programme at PARC is thanks to the key role we played, and still play, in setting up and developing the Flemish human biomonitoring programme. VITO is also involved in EIRENE, together with the University of Antwerp, KU Leuven and the Flemish Department for the Environment. This **bio-analytical infrastructure** is being developed in Europe and is tasked with investigating how environmental factors contribute to the growing number of chronic illnesses in Europe.

We are proud to take a leading role in such European projects where we are especially committed to better data analysis and data usage thanks to our decades of knowledge building.



SSBD



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02. VITO's handprint → Our Community → Citizen engagement and science communication

Our Community

ENGAGING WITH CITIZENS AND THE SCIENTIFIC COMMUNITY

At VITO, we believe it is essential to work together across the sustainability knowledge chain and raise awareness within our community to inspire and engage both citizens and the scientific community in taking sustainable action.

Bringing science to citizens helps ensure they are well-informed about sustainability issues, empowering them to make choices that promote sustainable practices in their daily lives. Engaging with the wider scientific community through collaboration, scientific publications and education allows VITO to share research insights and expertise with a broader network of experts and strengthening our thought leadership position. This will drive our progress towards future-proof industries and resilient societies.



WALTER EEVERS

Director Research
and Valorisation



“The strength of our partnerships and the link with our communities fuels our mission to accelerate the transition to sustainable and strong industries and resilient societies. By working together, sharing knowledge and inspiring action, we create lasting impact.”



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02. VITO's handprint → Our Community → Citizen engagement and science communication

CITIZEN ENGAGEMENT AND SCIENCE COMMUNICATION

VITO places growing emphasis on **science communication** as a key skill for its researchers and a way to increase the societal impact of research. To support this, VITO offers various training courses for employees on topics like Science4Policy and encourages continuous development of communication skills. Our young scientists also have the opportunity to enhance their communication abilities through the scicomm academy of **SciMingo**, where they learn to present the essence of their research clearly and concisely in just a few minutes.



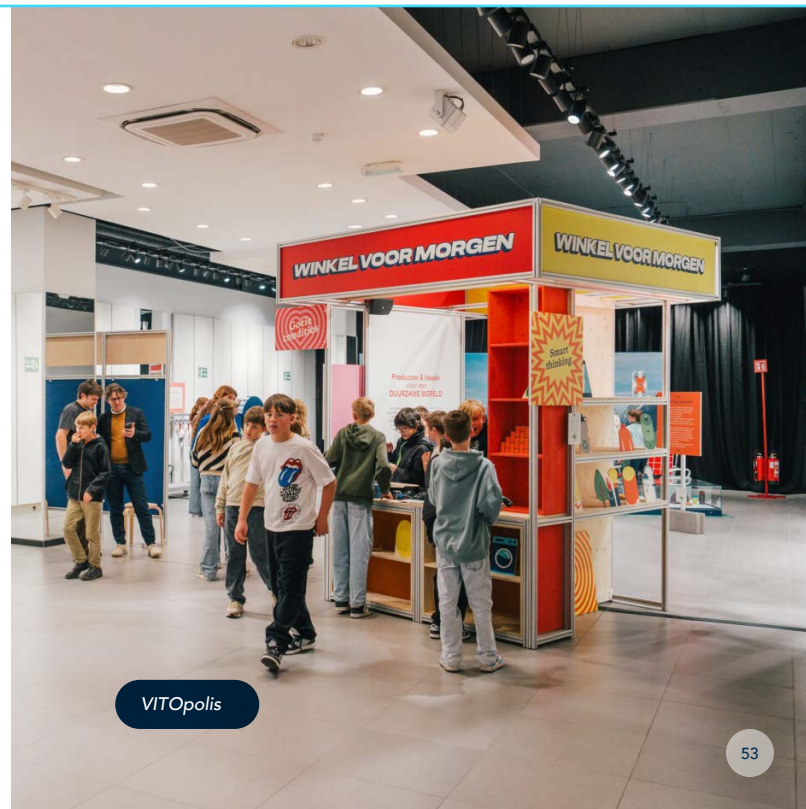
SciComm Academy

In addition, VITO endorses the objectives of the **STEM agenda 2030** of the Flemish Government by setting up and supporting concrete actions **to stimulate the inflow of young people into scientific and technological studies** and subsequently STEM professions. Concrete initiatives include the Deep Geothermal Learning Centre, the Lignin and CCS/CCU workshops and an online offering of workshops all related to sustainability and innovation. In 2024, we also launched **VITOpolis**: the interactive pop-up exhibit by VITO. VITOpolis is a travelling experience centre, dedicated to sustainable technology. Through fun and interactive modules, class groups, families, and everyone who is interested can explore sustainable solutions in areas like the economy, housing, waste management, and even fashion. In 2024, more than 7,500 citizens (mostly students) visited the pop-up.

OUR COMMUNITY

3. CITIZEN ENGAGEMENT AND SCIENCE COMMUNICATION

This topic addresses the role VITO plays in science communication and dissemination to the broader public, inspiring and educating citizens to take sustainable actions in their daily lives or professional choices. Such outreach not only enhances VITO's visibility among potential future employees with STEM-oriented profiles but also strengthens our reputation. Additionally, our commitment to science outreach and dissemination is a valuable asset in securing project funding.



VITOpolis



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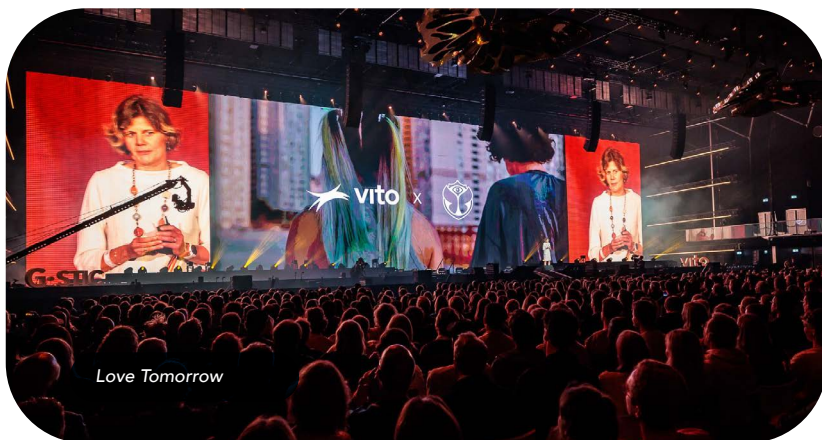
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02. VITO's handprint → Our Community → Citizen engagement and science communication

We are also involved in a range of **initiatives for both citizens and companies**, such as Nerdland, Love Tomorrow (5,500 attendees), de 'Dag van de Wetenschap' and Flanders Technology and Innovation (FTI) and we share our insights and activities through the [Z-Sustainable Future](#) programme on Channel Z.

As VITO, we are partner in citizen science and STEM trajectories such as [Waste Watchers](#), Edubox for Energy and [Sustainable stories](#).



1.600

times in specialised media

Press coverage

25%

press releases



75%

spontaneous

In 2024, VITO featured more than 1,600 times in general and specialised media. About 25 % of the press coverage is generated by press releases of VITO, but 75 % is generated by spontaneous press contacts. In about 40 % of the press coverage an expert of VITO is being interviewed. The expertise of the VITO researchers proves to be well known and appreciated. About 70 % of the articles and radio and tv coverage are situated in the general press channels as VITO's impact strongly aligns with the socio-economic reality. Main topics were climate change, energy transition including geothermal energy, wastewater re-use by industrial plants, circular textile as well as outreach to the general public via FTI and our own VITOpolis.

As provided in the management agreement with the Flemish government, we will continue our commitment to communicate with young people and citizens in 2025. We will do so by continuing existing activities and introducing new initiatives. For example, starting in 2025, VITO will be involved in the Solar Olympiade for STEM youngsters.



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02. VITO's handprint → Our Community → Thought leadership and scientific excellence

THOUGHT LEADERSHIP AND SCIENTIFIC EXCELLENCE

OPEN SCIENCE

By collaborating, publishing, and educating, VITO connects with the broader scientific community, sharing research findings and expertise with a wider network of professionals. VITO actively supports the principles of Open Science and contributes to the Flemish Open Science policy through its involvement in the Flanders Research Data Network (FRDN). This network connects 36 Flemish research organisations to facilitate the exchange and reuse of FAIR (Findable, Accessible, Interoperable, and Reusable) research data. By promoting open data sharing, this collaboration enhances research integrity, quality, and efficiency, ultimately accelerating societal innovation.

To integrate **Open Science** practices within the VITO research environment, several initiatives have been launched. These include quick wins such as:

- Creating a company page on Zenodo: [VITO on Zenodo](#)
- Developing a VITO Data Management Plan (DMP) template in DMPOnline, based on the Flanders Open Science Board (FOSB) minimum DMP

In addition to these quick wins, VITO is adopting a more structured approach by establishing a Data Governance program. This program is focused on developing the VITO FAIR DATA roadmap which includes building a data lake and a data catalogue with meta data based on the FOSB metadata model.

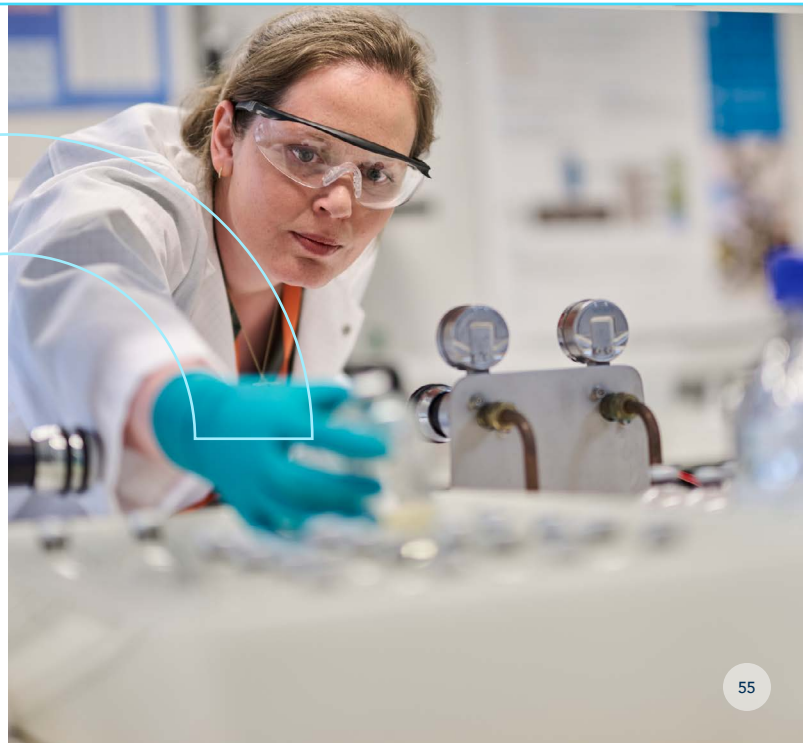
Since 2019, VITO also has an **open access policy for scientific publications** which result from funded projects. In 2024, 80% of VITO's publications were made available open access.



OUR COMMUNITY

4. THOUGHT LEADERSHIP AND SCIENTIFIC EXCELLENCE

VITO strengthens the global knowledge base on sustainability through scientific publications and strategic collaborations with academic partners and research institutes. We support PhD students and Postdocs in applied research and contribute as guest lecturers, preparing future talent to tackle societal challenges. These initiatives highlight our commitment to our scientific excellence, in line with the expectations of our key stakeholders. In addition, by providing open access to our findings, we further amplify our impact and ensure our research reaches a wider audience.





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02. VITO's handprint → Our Community → Thought leadership and scientific excellence

To strengthen collaboration across the knowledge chain, VITO maintains strong partnerships with **Flemish Strategic Research Centres (SOCs)** and universities. At **EnergyVille**— VITO's innovation partnership with Imec, KU Leuven, and UHasselt focused on sustainable energy in Genk—the Thoreaq testing facility, a state-of-the-art lab for the construction sector, was officially opened in 2024. Additionally, the Open Thor Living Lab, a large-scale infrastructure for developing and testing innovative energy solutions, was launched to accelerate market entry through collaboration with scientific institutions, businesses, educators, governments, and local citizens. In this context, development also began on CollecThor, a unique low-temperature district heating network.

Further strengthening ties with Flemish universities, VITO took steps toward more structured collaboration with **UGent, the University of Antwerp, and VUB** on circular economy research through the **CAPTURE** initiative. Formalised agreements (MoUs) were also signed with UHasselt and ILVO to enhance cooperation through clearly defined objectives and regular follow-ups.



EnergyVille



EARTO prize

Our thought leadership is being recognized on an international level. In 2024, we received the **EUSPA Top 10 ranking** worldwide for 'remote sensing' insights and analyses, the European award for the 'Internet of Water' project, the EARTO 1st prize for realized impact (European association of RTOs) for the spin-off Blue Foot Membranes.



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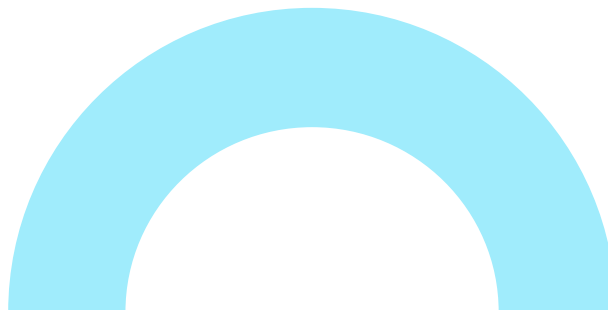
02. VITO's handprint → The outputs and outcomes we deliver

The outputs and outcomes we deliver

VITO actively measures how we deliver on our strategy through a set of performance indicators. These indicators underpin VITO's goals and ambitions and reflect the requirements of our management agreement with the Flemish government.

The progress on the targets and its KPI is also discussed on a quarterly basis with the Board of Directors and the responsible public administration WEWIS.

In the light of the outcome of our double materiality assessment, we aim to further finetune our performance indicators in 2025.



METRIC	2023	2024	CSRD-TOPIC
Private revenue	17.9 MEUR of which 10.2 MEUR from Flanders	18.9 MEUR of which 10.8 MEUR from Flanders	Innovation and valorisation
Public revenue	25.0 MEUR	31.1 MEUR	Innovation and valorisation
IP revenues	1.1 MEUR	0.9 MEUR	Innovation and valorisation
Patents filed and valorised	25 filed; 34 valorised	27 filed; 41 valorised	Innovation and valorisation
Spin-offs	8 (2018-2023)	9 (2019-2024)	Innovation and valorisation
Total private clients serviced	460	448	Innovation and valorisation
SME clients	72	70	Client inclusion
Non-profit clients	42	43	Client inclusion
Participants in VITO4Starters	24	73	Client inclusion
Avg client satisfaction	93%	94%	Innovation and valorisation
Citizens reached	2,020 media mentions	15,350 physical event attendance 227k citizens reached via digital channels 1,643 media mentions	Citizen engagement
Competitively acquired research resources/grants	46.6 MEUR	47.4 MEUR	Thought leadership
Peer-reviewed scientific publications	282	295	Thought leadership
Open access	80%	80%	Thought leadership
Ranking Scimago institute	17 (overall); 11 (innovation)	17 (overall); 11 (innovation)	Thought leadership
PhDs	83 and 18 promoted	96 and 8 promoted	Thought leadership





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03. VITO's footprint

VITO's Footprint: ensuring responsible operations

At VITO, we exist to help our world thrive for at least 1,000 more years. To achieve our goal of building future-proof industries and resilient societies, we not only look at what we do, but also how we do it. In 'our footprint', the second pillar of our impact strategy model, we go into detail about how we minimise our environmental and societal footprint, while maintaining operational excellence and good governance. Our human capital, our operations and our company governance all contribute to this.

In our CSRD materiality assessment we identified **4 material topics that relate to our footprint**, which we will discuss and report about in this chapter.





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03. VITO's footprint → Our Operations → How we operate sustainably, transparently, and ethically



Our Operations

As a pioneer in sustainability research, we are committed to ensuring our operations, facilities and infrastructure are both efficient and sustainable.

Our sustainability strategy focuses on the most impactful areas where we can make a meaningful difference. By concentrating efforts on key priorities, we can drive substantial change and continue to achieve long-term sustainability goals.

In our double materiality assessment of 2024, we evaluated the following environmental topics through the definition and scoring of IROs (Impacts, Opportunities and Risks) for topics below:

- Climate change mitigation (E1)
- Climate change adaptation (E1)
- Pollution of air, water, soil and living organisms (E2)
- Substances of (very high) concern (E2)
- Microplastics (E2)
- Water management and marine resources (E3)
- Biodiversity and ecosystems (E4)
- Resource inflows (E5)
- Waste (E5)



CARMEN SIX

Director
Finance and Operations



Also in 2024, our operations have remained focused on supporting our (internal) customers – ensuring their needs are met efficiently and effectively, with value-driven solutions that are both economically and environmentally sustainable.

We continue to leverage digital technologies to enhance our organisational capabilities and streamline internal processes.

As a leader in sustainability, we keep moving the needle by reducing our environmental footprint and advocating for sustainable practices.



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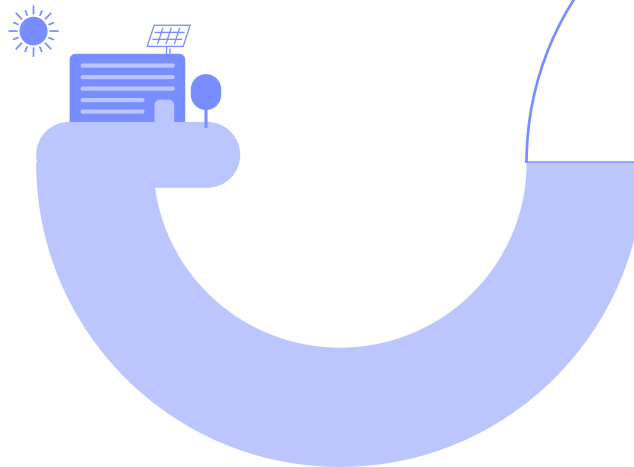


03. VITO's footprint → Our Operations → How we operate sustainably, transparently, and ethically

After determining the materiality thresholds, only '**Climate change mitigation**' (E1) emerged as **material**. This does not mean that we, at VITO, do not recognize our impact on the other topics mentioned. Based on EFRAG's proposed scoring method for IROs, which evaluates severity (in terms of scale, scope, and remediation) and likelihood, our impact on topics E2, E3, E4, and E5 - primarily influenced by lab-scale activities - was assessed as less significant. The topic 'Climate change adaptation' (E1) was diligently investigated using, amongst others, the 'IMPACT-tool' from '[Klimaatportaal Vlaanderen](#)'. No material physical impacts or risks were identified in VITO's operations or value chain. We continue to revisit our sustainability strategy and targets in light of our double materiality assessment and aim to focus there on our material topics.

Since 2017, **VITO's OnePlanet** team has been instrumental in their support and insights to continuously reduce VITO's operational environmental footprint. From installing drinking water taps in VITO offices to promoting bike leasing and hosting the annual Veggie Challenge, OnePlanet drives initiatives that positively impact our organisation's sustainability. Priorities from our 2024 double materiality assessment will guide our future plans and improvement efforts.

Finally, we hold [ISO 14001](#), [ISO 9001](#) and [ISO 45001](#) certifications as a proof of our commitment and continuous efforts to environmental management, quality management, and occupational health and safety, respectively. Regular external audits are performed to maintain these certifications.





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03. VITO's footprint → Our Operations → Climate change mitigation

CLIMATE CHANGE MITIGATION

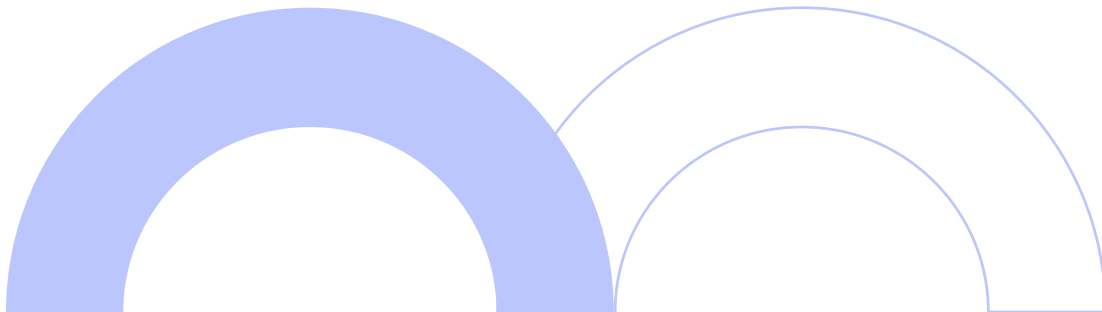
Measuring our carbon footprint

Calculating and monitoring our carbon footprint is crucial for taking effective action on climate change. VITO does these measurements according to the Greenhouse Gas (GHG) Protocol standards:

- **SCOPE 1** refers to direct emissions from VITO's own operations, including the fuel used from mobile sources such as VITO's vehicle fleet as well as stationary combustion from the fuel consumed in VITO buildings.
- **SCOPE 2** encompasses indirect emissions from VITO's operations, specifically those associated with the consumption of electricity, heating and cooling in its buildings.
- **SCOPE 3** includes indirect emissions that occur across VITO's value chain, such as those arising from purchasing of goods and services, business travel, employee commuting and waste management.

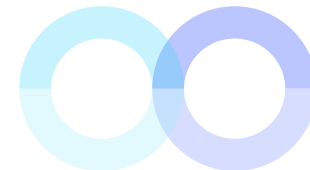
VITO has been measuring Scope 1 and 2 emissions since 2008. A first carbon assessment according to Greenhouse Gas (GHG) Protocol, including Scope 3 emissions was done for 2023 and 2024.

Our carbon footprint is based on financial- and consumption data. More details about our methodology can be found in the [appendix](#).



OUR OPERATIONS

5. CLIMATE CHANGE



We recognise that our operations contribute to global greenhouse gas (GHG) emissions, impacting the climate. However, we also see a key opportunity to use our in-house expertise to reduce these emissions and drive meaningful improvements.

This proactive approach is essential, as our stakeholders expect us to lead by example in climate action. By leveraging our knowledge and resources to cut emissions, we demonstrate our commitment to sustainability while also addressing transition risks, such as evolving climate regulations and potential changes in energy prices.





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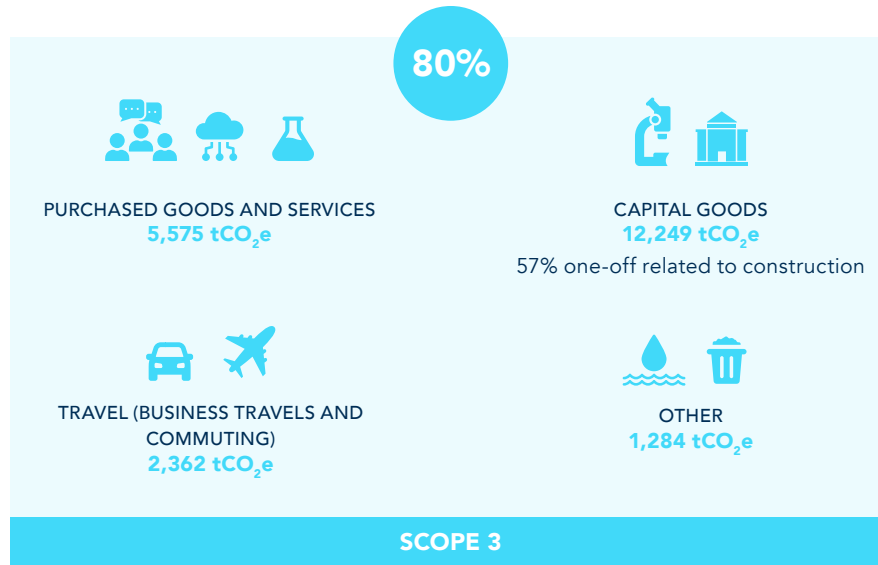
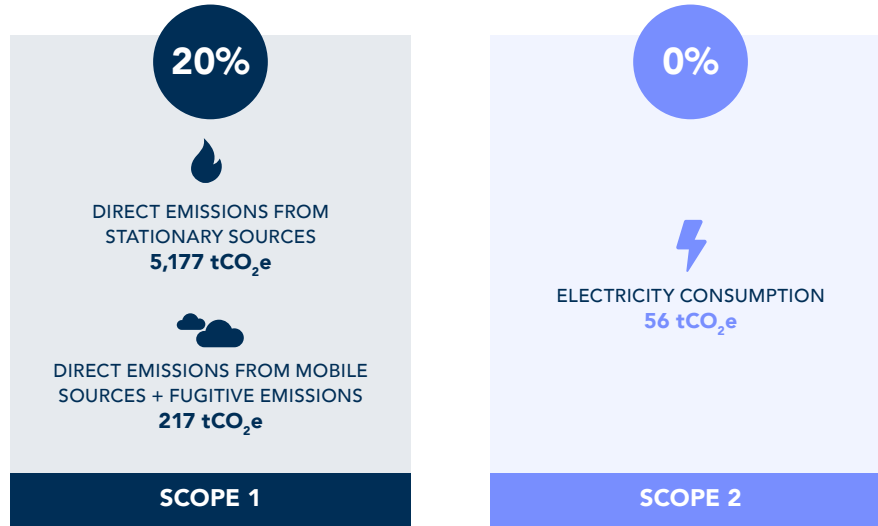
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03. VITO's footprint → Our Operations → Climate change mitigation

VITO'S 2024 CARBON FOOTPRINT IN tCO₂e



In 2024, VITO's total corporate carbon emissions, including those from the value chain, reached 26.920 tCO₂e, marking a 31% increase compared to 2023. This rise was primarily driven by the construction of a new building, with the remainder of the rise reflecting the expansion of VITO's core business activities (FTE growth of 7%, revenue growth of 10%).

For the absolute emission overview per category, please refer to the table in the [appendix](#): Scope 1 – Scope 3 emissions per category.



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03. VITO's footprint → Our Operations → Climate change mitigation

VITO'S ABSOLUTE CARBON EMISSIONS (SCOPE 1, 2 AND 3)

Our Scope 1 primarily consists of direct emissions from stationary combustion sources, providing heat for VITO's facilities as well as neighbouring businesses and homes. Scope 2 refers to indirect emissions from the electricity consumption of our buildings and operations. For VITO, Scope 2 is limited as we use 100% green electricity. Scope 1 and 2 make up 20% of VITO's total carbon footprint and rose by 8% from 2023 to 2024, an increase in line with observed FTE and revenue growth. We are actively investing in improvements to reduce our scope 1 and 2 GHG emissions: we have installed solar panels at our Mol site and are constructing a new low-carbon research and lab facility, EARTH, set to open in 2025 (more details in section below).

The total GHG emissions related to the construction of this new building had a significant impact on VITO's 2024 carbon footprint, exceeding a quarter of the overall GHG emissions making up 33% of scope 3. These emissions are considered non-recurring, and we have therefore reported them separately as well as calculated carbon intensity both including and excluding these non-recurring carbon emissions.





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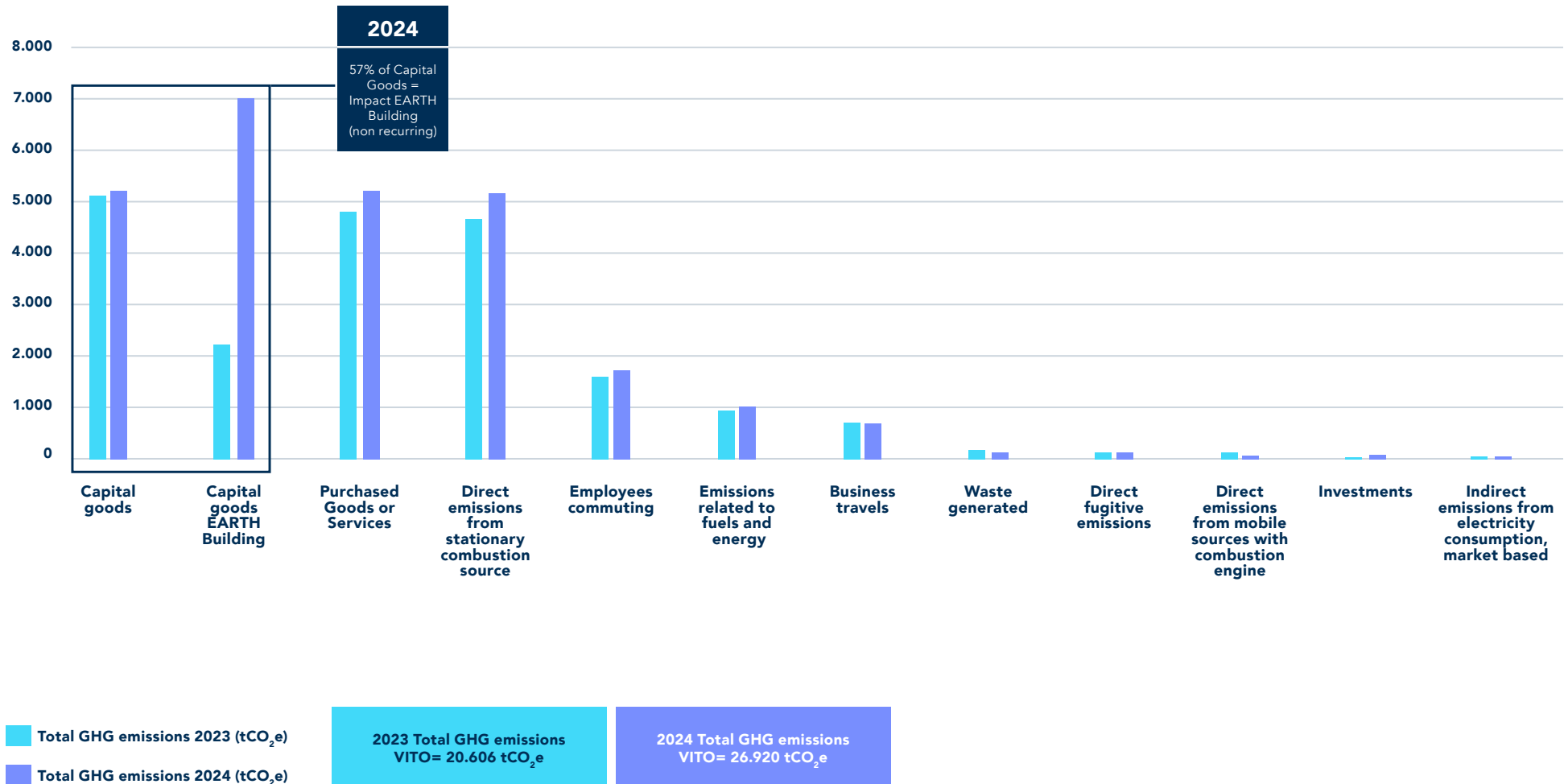
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VITO'S ABSOLUTE CARBON EMISSIONS (SCOPE 1, 2 AND 3)





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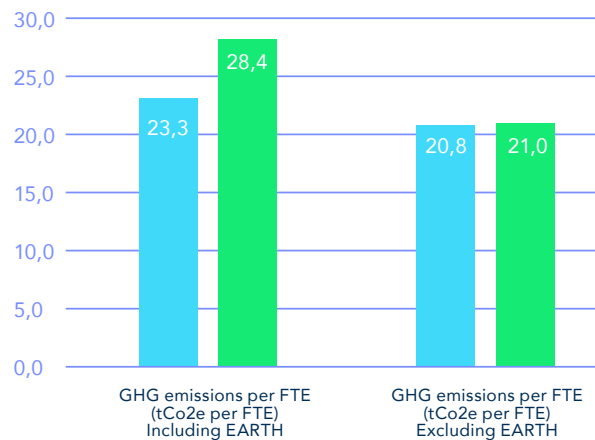
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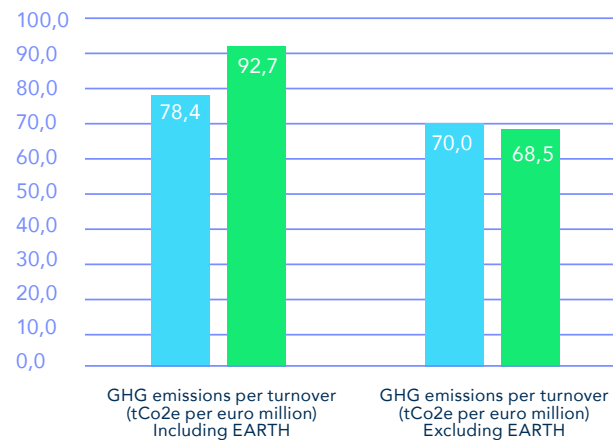
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GHG INTENSITY METRIC

GHG Emissions relative to VITO FTE count



GHG Emissions relative to VITO turnover



2023 2024

In 2024, VITO's Scope 3 total emissions were primarily comprised of 'Purchased Goods and Services' and 'Capital goods', including long-term assets like machines for our laboratories, the rest of carbon emissions originated from other sources such as Employee commuting and Business travel. Overall, Scope 3 emissions saw a significant rise, with + 75% of this increase being due to the building activities of the energy-efficient lab and office structure. The remaining increase in total Scope 3 emissions was in line with our mentioned revenue growth (~10%), leading to a rise in procurement expenditure.

A significant portion of VITO's projects and research efforts contribute to reducing or eliminating GHG emissions at our clients' sites. These 'avoided emissions' are not yet taken into account in the carbon footprint as reported here. Developing this capability in the future is expected to lead to a significant positive impact on VITO's overall carbon footprint.



Building activities EARTH



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03. VITO's footprint → Our Operations → Climate change mitigation

OUR PROGRESS

VITO, as a Flemish government entity, is committed to achieve the targets as set out in the 'Intern Klimaatplan Vlaamse Overheid'. This means that we aim to reduce our GHG emissions from facilities, technical installations, and business travel (over land) by at least 55% in 2030 (base year = 2015). Facilities need to be carbon neutral as of 2045. In light of climate change mitigation emerging as material in our double materiality assessment of 2024 and as a leader in climate science, we want to go beyond the ambitions stated above by using in-house expertise to formulate a more holistic transition plan including scope 1, 2 and 3.



Geothermal plant Mol

The shift to clean energy

VITO's energy consumption plays a major role in its carbon footprint, and the company is actively transitioning to clean energy through both technology and strategic procurement.

- **Renewable electricity:** Since 2021, VITO has sourced green electricity through a power purchase agreement with Vlaams Energiebedrijf. In 2024, solar panels were installed at the **Mol site**, generating **650MWh per year** from rooftop installations. An additional **ground-mounted** solar array, completed at the end of 2024, is expected to produce **2,672MWh annually from 2025**.
- **Geothermal energy:** A key contributor to **Scope 1 emissions** is **natural gas use**, which heats VITO's facilities as well as neighbouring businesses and homes. To address this, VITO began exploring **deep geothermal energy** in 2015, launching **Flanders' first deep geothermal power plant**. This initiative not only supplies clean heating to the site and surrounding areas but also contributes valuable research to expand geothermal energy across the region. More details on this project can be found [here](#).
- **Heat pumps:** As part of its sustainability strategy, VITO is installing **heat pumps** for the **TAP building**, with completion expected by **summer 2025**. This will contribute to lowering **Scope 1 emissions**.





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03. VITO's footprint → Our Operations → Climate change mitigation

Towards a Sustainable Infrastructure Portfolio

Transitioning to clean energy is just one part of the solution - **managing energy consumption** is equally crucial, especially as some of VITO's buildings are older structures. To address this, VITO is developing a Masterplan Infrastructure to ensure its facilities, including laboratories, are efficient and sustainable in the long term.

A key milestone in this strategy is the **EARTH building**, part of VITO's new Sustainability Park. Construction progressed well in 2024, with plans to relocate part of the company's lab and research activities there by late 2025. The EARTH building is powered by ATEs (Aquifer Thermal Energy Storage), an advanced open-loop geothermal system that stores and reuses warm or cold groundwater depending on the season. It is being designed to achieve a GRO score of 2.5 (on a scale from 1 to 3), classifying it as a "better" sustainable building, with 2.7 considered outstanding. By integrating energy-efficient infrastructure alongside renewable energy solutions, VITO is reinforcing its commitment to **long-term sustainability**.



The new infrastructure will not only create a **more efficient working environment** but will also serve as a hub for **cutting-edge research and innovation**. It will house numerous **labs and demonstration spaces** where next-generation circular raw material technologies are developed and scaled for market use.

Key examples include:

- **LignoValue Pilot:** The first and only pilot facility in Europe that extracts bio-molecules from **grass and wood waste** as an alternative to petroleum-based chemicals.
- **Characterise-to-Sort:** An AI-driven system for inline characterization and valuation of waste, improving recycling efficiency.
- **Flash Calciner:** A pilot facility developing cement alternatives, converting clay-rich residual materials into sustainable cement substitutes.

The **EARTH building** marks a major step forward, following the geothermal power plant and the initial demo hall for circular materials research, as part of VITO's broader vision for the **VITO Sustainability Park**. This integrated approach will enhance collaboration—both within VITO and with **external researchers and businesses** working on sustainability challenges.

Since 2018, VITO has been actively enhancing **biodiversity** across its sites. Over the years, numerous initiatives have been implemented, and in 2024, VITO launched a **monitoring programme** to track various plant species and wildlife. These efforts are already showing results, with the **endangered Grayling Butterfly** spotted on-site—an encouraging sign that VITO's commitment to biodiversity is making a real impact.





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Cleaner Mobility and Business Travel

In line with our commitment to reducing environmental impact, VITO is actively working to **cut emissions from mobility and business travel**, including our **company fleet, employee commuting, and business trips**.

TRANSITION TO ELECTRIC VEHICLES

- In 2023, emissions from **company cars (non-electric)** accounted for 2% of Scope 1 emissions
 - More than 80% of VITO's fleet is now electric. However, transitioning the remaining vehicles—especially light to heavy commercial ones—remains a challenge due to limited low-emission alternatives.
- Employee commuting contributed 8% of Scope 3 emissions, with non-electric vehicles as the primary source.
 - To support EV adoption, VITO has installed 52 charging stations at its Mol headquarters, with 150 more planned.

ENCOURAGING SUSTAINABLE COMMUTING

In 2024, we conducted a detailed survey on employee commuting habits to identify **opportunities for greener travel**. This is part of a broader strategy to **lower commuting emissions** and make **sustainable mobility more accessible** to employees.

REDUCING BUSINESS TRAVEL EMISSIONS

- In 2024, business travel accounted for 3% of Scope 3 emissions, with flights as the main contributor.
- VITO's travel policy prioritises train travel for both national and international journeys. First-class train travel is allowed to encourage adoption.
- For trips over 500 km, flights are offered, but economy class is the standard, with business class requiring explicit approval.
- Employees are encouraged to evaluate whether travel is necessary and consider virtual participation instead.

As part of VITO's sustainable mobility policy, we are committed to measures that support sustainable mobility and business travel, encouraging our employees to make eco-friendly choices. This includes offering a bike leasing program for employees and encouraging them to consider if physical attendance is necessary or if events can be attended or hosted online.





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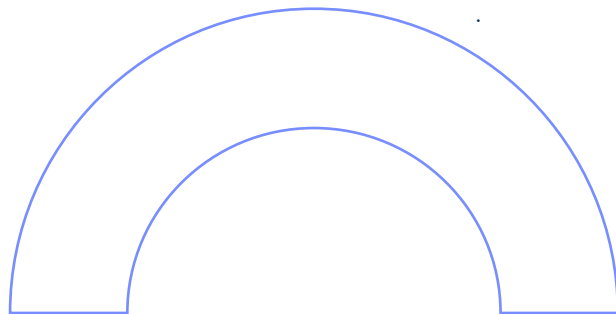
03. VITO's footprint → Our Operations → Climate change mitigation

Sustainable Workspaces: Labs and Offices for the future

We are committed to reducing our environmental footprint through **efficient and responsible resource use and digital innovation** in our labs and offices. In 2023, a Track and Trace system was introduced to monitor chemicals from delivery to disposal, enhancing stock control, reducing waste, and ensuring regulatory compliance. An upgraded dashboard, expected in 2025, will provide real-time data for better decision-making. Additionally, the DigiLab program is modernising labs and offices by digitising lab activities, streamlining processes, and improving efficiency, with a full rollout plan in the making. VITO also advanced water management in 2024 by digitising water meters for real-time monitoring of inflow and outflow.

OUR AMBITIONS

The in-depth analysis of our greenhouse gas (GHG) emissions we conducted in 2024 has provided valuable insights into key drivers. Over the next year, efforts will focus on improving data quality and refining emission factors with in-house scientific expertise and Life Cycle Assessment (LCA) methodologies. This will enable a more precise understanding of VITO's environmental impact and support the development of a detailed transition plan for all sites. Looking ahead, we aim to go beyond Scope 1, 2, and 3 emissions by also quantifying the broader indirect environmental impact of our 'handprint' activities





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03. VITO's footprint → Our People → Our vision on talent

Our People

OUR VISION ON TALENT

VITO Visioneers are the heartbeat of innovation. Their wonder and curiosity drive VITO's core mission: turning scientific insights into ground-breaking technological innovations, AI solutions and policy advice. Through our research activities, we can create value for society and help our world thrive for at least 1,000 more years. This is why it is essential for us, as a research and technology institution, to continuously invest in attracting and retaining talent. That's how we can grow as individuals, teams, units, and as a company.

We will elaborate in this chapter on three ways we do this:

1. **Creating a culture where employees feel valued** in the broadest sense of the word. By taking a holistic approach to wellbeing, we aim to be an employer where colleagues flourish in a sustainable and supportive environment.
2. **Investing in personal and team development and growth**, ensuring that our knowledge and perspectives remain sharp and that curiosity and innovation are continuously encouraged.
3. **Striving to be a workplace where everyone feels included.** A place where departments collaborate synergistically, and where talent from diverse perspectives strengthens one another. This diversity is what makes our Visioneers unique.

Through this vision on our 'human capital', we foster a culture where colleagues look at the world with an open mind, motivated to contribute to a sustainable future. That's how we see things differently. In the following paragraphs, we will highlight VITO's investments over the past year and the actions we plan to continue in the year ahead.



MARIANNE WENS

Human Capital Manager



**Visioneers see things differently.
They see solutions while others see challenges.
Together, we're on a mission
towards sustainable transformation.**



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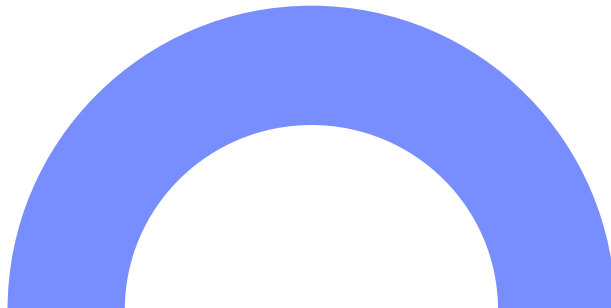
EMPLOYEE WELLBEING THROUGH FIT@VITO

FIT@VITO

To safeguard the wellbeing of our more than 1,300 colleagues, we strive to create attractive and secure workplaces, activity-based working, and pleasant surroundings. Contributing to solutions for societal challenges is integral to our daily work at VITO, fostering strong intrinsic motivation among our (future) employees. This results in high levels of engagement and a profound sense of purpose in their work.

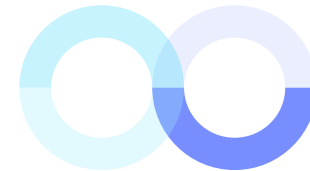
We invest in a sustainable human capital strategy to guarantee continuous flow of talent to keep VITO a healthy organisation.

The "FIT@VITO" framework, situated in the broader employee lifecycle, is one of our holistic approaches to emphasise different "FIT" wellbeing topics we focus on.



OUR PEOPLE

6. EMPLOYEE WELLBEING



This topic addresses working conditions and physical and mental wellbeing of employees: fostering secure employment, reasonable working hours, fair compensation, collective bargaining and social protection. Our commitment to employee well-being directly impacts over 1,300 colleagues. Contributing to solutions for societal challenges is integral to our daily work at VITO, fostering strong intrinsic motivation among our (future) employees. This results in high levels of engagement and a profound sense of purpose in their work.

However, labour shortages can present a risk to our strategic execution. Additionally, high personnel costs can lead to elevated expectations and work pressure for employees and pose a risk to VITO's long-term financial sustainability. The complex and demanding nature of our project work might result in overtime, stress, excessive workload, and potential mental or physical health issues.





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03. VITO's footprint → Our People → Employee wellbeing





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03. VITO's footprint → Our People → Employee wellbeing

ANALYTICS: RESULTS FIT@VITO 2024

VITO conducts **regular FIT@VITO surveys to measure the wellbeing** experience, identify areas of improvement and define relevant actions. We look at this on a company level – while every team discusses their team outcome of the FIT@VITO survey to define actions on a team level. Individual employees also receive a direct feedback report with suggestions on possible actions.

The most recent survey was the FIT barometer conducted in June 2024, a 'pulse check' as a follow-up of the extended survey in 2022. It got a high response rate of 77%. The results were mostly in line with 2022 – wellbeing scores were largely unchanged and comparable to external benchmarks. A good result was the positive **Net Promotor Score of 14**, which is above the standard of benchmark organisations. This indicates the ambassadorship of our community. Overall:

- We have an engaged, loyal and committed community, with good job satisfaction.
- Stress is a point of attention.
- In our ever-evolving context, our employees report a willingness to change, however, they would like more participation and support during the change.
- Manager support, meaningful work and challenging projects all have a positive impact on their wellbeing.

For 2025, we have already defined several actions on different levels. To improve results, the teams also defined actions on a team level. Initiatives like workshops and training are planned to take place in the next year (communication training, team and individual guidance, mindfulness@work, initiatives via de working group 'workable work', etc.). At a corporate level we will actively monitor the progress of the action plans through our Impact Scorecard. FIT@VITO is one of the KPIs in our scorecard, that emphasises the importance of wellbeing.



The Net Promotor Score of 14 largely exceeds the standard of benchmark organisations, indicating the impressive ambassadorship of our community.



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WORK ENVIRONMENT

The workplace (and all aspects related to it) is an important differentiator contributing to the employee experience and relates to physical and mental wellbeing. Regulations that contribute to a healthy work environment are:

- The **Committee for Prevention and Protection at Work**: a group actively contributing to the wellbeing of employees. The committee is responsible for drafting, implementing, and evaluating prevention policies at VITO.
- The **quality, health and safety and environment policy**: guiding VITO towards the continuous improvement of its quality, health and safety and environmental performances through measurable objectives and management regulations.
- **Our infrastructure-as-a-service**: for workplaces and labs. This means workplaces are utilised according to the principles of activity-based working, a recent way of working that is explained below. Our commitments defined in the HR Excellence for Researcher label also highlight the importance of our work environment. This broader perspective on the work environment includes aspects necessary for a researcher to perform their work effectively.

ACTIVITY-BASED WORKING

The Activity-Based Working model contributes to model contributes to the flexibility of the work environment for Visioneers, enhancing their overall wellbeing. Visioneers work within a flexible framework. They can choose their work format, opting for either the classic time registration framework or an activity-based system. With the latter, employees can perform their working activities during the normal working hours based on the need of the activities:

- at home
- from a fixed work location
- at one of our satellite offices
- at the client's premises
- other locations depending on the activities and interactions of the employee

With this model, our colleagues can perform their work as optimally as possible, according to the agreements made at the team level to continue ensuring collaboration and strong team connectivity. Of course, given the nature of our activities, it is immensely important that our Visioneers connect sufficiently with each other, even in our offices. We provide pleasant workspaces and connection areas with nice coffee and healthy fruit.





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FUN@WORK

With “Fun@Work” we want to stimulate fun, informal connection between our Visioneers and contributions to society via social impact activities.

The employee-driven community **Activito** organises ‘fun’ after work activities, company competition activities like a ‘Run and Freeze’ event and events for charity like VITO's yearly Quiz and participation in Kom Op Tegen Kanker events such as the 1,000 km bike tour and 100 km Run Against Cancer.

During corporate initiatives such as the ‘VITO Day’, where we engage in charitable activities like cleaning rivers, or the annual summer party, we bring our community together in an informal and fun way.



EMPOWERMENT

Empowerment is a key driver for a long-term person/organisation “FIT” in the employment lifecycle. We place great importance on involvement, participation, and consultation. We are committed to participation with various stakeholders and have several bodies in place, dedicated to engaging and representing employees.

- The **Works Council** is a formal consultative body within the company, consisting of employees and employer, whose task it is to represent the interests of both the organisation and the employees. Periodic meetings take place and the minutes from these meetings are published on our intranet. Often environmental, social or governance topics make up a key part of the agenda.
- VITO's **Young Advisory Board (YAB)** consists of 14 young VITO employees who help shape the future of our organisation. Every Month, the Young Advisory Board meets with the CEO, Human Capital Manager and other representatives from the management team to provide input and feedback on the corporate policies and guidelines, and initiating and providing feedback on progress of corporate and YAB-led initiatives.
- VITO's **OnePlanet team** is a bottom-up initiative that aims to advance VITO's internal sustainability. The team has a double role:
 1. provide bottom-up advice to management and the broader VITO organisation on ESG related themes
 2. capture, enable and accelerate employee-led initiatives in the sustainability field.
- **HR business partners** serve as low-key and direct points of contact with employees.



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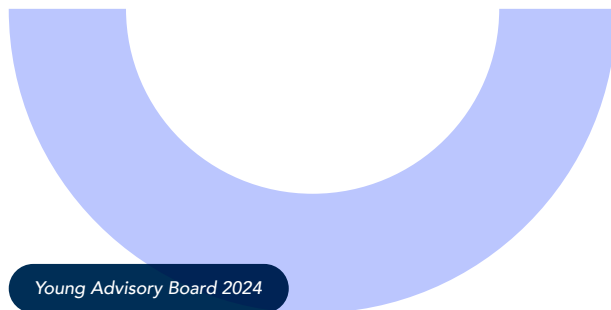
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With these actions, we create (social) dialogue and stimulate participation so our Visioneers can provide input to strategy and policies.

At our organisation, empowerment is a fundamental value that drives our success. We maintain a flat management structure that fosters open communication and connection between employees and management. Regular interactions are facilitated through team meetings as well as leadership team meetings and offsite events. This approach ensures that everyone is aligned with our goals and can contribute effectively to our mission.



Young Advisory Board 2024



OnePlanet VeggieChallenge



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FIT4ALL

"FIT4All" refers to VITO's role in society and our corporate social responsibility. Contributing to solutions for societal challenges is integral to our daily work, fostering strong intrinsic motivation among our (future) employees. The results of the FIT@VITO survey confirm this as Visioneers report very good scores in terms of motivation in their job (challenging and meaningful jobs). Examples of actions related to this topic are:

- **Sustainability@work**
Sustainability is explicitly embedded in VITO's activities, policies and values. In the VITO living lab experience, for example, we use the innovative technologies developed by VITO experts in the design of future buildings, infrastructure and work environments to inspire industry and interested stakeholders.
- **VITOpolis**
In collaboration with key partners, VITO built an interactive experience to inspire both young and old to invest in sustainability either through their future education or their daily activities.
- **Internationalisation**
The international community at VITO plays a crucial role in its internationalisation efforts. VITO is renowned for its diversity and talent drawn from various corners of the world, boasting **over 300 international colleagues from 69 different nationalities**. This offers us a necessary, wide range of perspectives. We make significant efforts to promote international exchanges for local talent and attract global talent. Specifically, we offer support to internationals in areas such as finding housing, mobility, documentation, and language lessons.





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03. VITO's footprint → Our People → Employee wellbeing

MENTAL FIT AND HEALTH

Within "Mental Fit and Health" we provide preventive information and training on a healthy lifestyle. Based on the results of the survey, the work complexity at VITO and the organisational changes specifically deserve extra attention.

VITO focusses on these aspects by:

- **Providing support and training sessions**
One of which is our **mindful@work training**, focusing on present-moment awareness, stress reduction and building resilience.
- **Building in policies to protect mental health**
Take our **right to disconnect policy**. This policy grants employees the right to refrain from connecting to professional digital tools, such as email, smartphones, or computers, outside of working hours. It also means they are not required to respond to work-related messages or calls. The purpose of the right to disconnect is to respect employees' rest periods, vacation time and family life – while also preventing stress, burnout and other negative effects of excessive use of digital tools.
- **Policies related to general wellbeing**
 - 1. Code of conduct:** The VITO Code of conduct provides an ethical and behavioural framework for all VITO employees and, together with the mission and values, forms an essential part of our VITO culture. The code is based on main VITO values: scientific ethics and integrity, diversity and equal opportunities, and quality, environment, health and safety.
 - 2. Grievance:** VITO provides a reporting channel for whistleblowers to highlight breaches. This includes both VITO's employees as well as third parties: contractors, shareholders, directors, volunteers, interns, anyone working under the supervision and direction of subcontractors and suppliers, former employees, and applicants. In addition, VITO has 3 internal confidential advisors for psychosocial aspects. Furthermore, there is an external prevention advisor from IDEWE vzw. In 2024 there were 7 informal psychosocial interventions at a trust person of VITO. There were no formal psychosocial interventions and no registrations of physical or psychological violence, bullying or sexual harassment.
 - 3. Diversity, equity and inclusion policy:** Also, our D&I policy fosters a supportive and respectful work environment, enhancing employees' wellbeing. By valuing diverse perspectives, it promotes a sense of belonging and reduces stress.

EMPLOYABILITY

Employability is all about the alignment between the employee and VITO, focusing on how both parties can create and sustain value. Continuous learning, creating growth opportunities, and other investments in employee development contribute to employability throughout the entire career. We will discuss this topic in detail in the next chapter.





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03. VITO's footprint → Our People → Employee development

EMPLOYEE DEVELOPMENT

GROW

Knowledge is at the core of VITO as an organisation. As a knowledge centre, it is essential to continually invest in **targeted training programs** and knowledge development in an ever-accelerating world. We value both professional development as well as personal growth of our Visioneers, as both areas are crucial for career advancement.

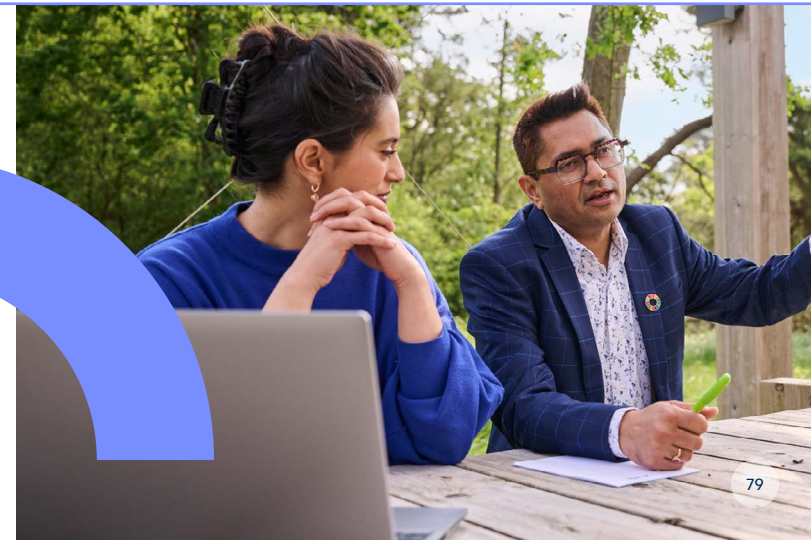
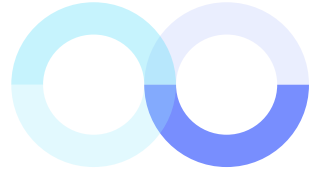
In doing so, the risk of **losing valuable know-how** when colleagues retire or leave arises. We actively manage our skills and critical knowledge by sharing them within the organisation. The organized internal learning moments are important in this context, e.g. lunchtalks, internal conferences, digital snacks, etc.

We value both professional development and personal growth of our Visioneers, as these areas are crucial for career advancement.

OUR PEOPLE

7. EMPLOYEE DEVELOPMENT

VITO's talent management lifecycle approach is designed to elevate employee excellence. This approach focuses on advancing the knowledge and skills of current and future employees through training, performance evaluations, and coaching. By doing so, we promote employability and career growth which positively impacts the wellbeing of our employees and their communities. Investing in targeted training programs is crucial for maintaining and enhancing the excellence of our researchers. By identifying and developing future competencies in fields like data science and AI, we design corporate development plans. Also, within our scientific communities we detect evolutions and new technologies to ensure our workforce remains at the forefront of innovation. This not only improves individual skills but also fortifies VITO's overall capabilities and performance. Simultaneously, VITO must actively manage the risk of losing valuable know-how when experienced colleagues retires or leaves, ensuring that critical knowledge is retained and shared within the organization.





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03. VITO's footprint → Our People → Employee development

Development is an integral part of our performance cycle. During the annual Development and Performance Management cycle (DPM), **employees and managers discuss development, address needs and ambitions and set development goals.** Twice a year each employee has a conversation to review performance and discuss these targets and career goals. We base our learning activities on the development goals. In 2024, the average employee followed 14 hours of training. We know that not all learning activities are being registered today. A key action point towards 2025 is to continue focusing on this and increasing the number of registered training hours.

Learning formats include:

- individual learning
- team-oriented learning
- classroom-based learning
- blended learning
- digital formats (e.g. webinars, e-learning)

We review our development offers annually and update, expand or remove accordingly. Besides internally and externally organised training, internal knowledge exchange sessions are also held. Employees discuss their development needs with their managers. The internal training offer is available for all employees in the training tool Empower.

PERFORM AND REWARD

It's undeniable that remuneration has a direct effect on attracting and retaining talent. VITO reviews and finetunes its compensation and benefits packages periodically, factoring in inflation rates and benchmark data. In doing so, we aim to achieve a fair, competitive salary compared to the external market and fairness and equity within our organisation.



COACH

VITO takes on **a modern approach towards leadership and coaching teams**, starting from the premise that Visioneers are autonomous but also accountable employees. Our managers' roles change over time towards a new kind of "leader/coach" for self-steering teams, active in various communities. The job of these leaders is to create the right context for talent to grow and stimulate collaborations. They distribute aspects of leadership in the organisation, empowering their teams to act responsibly and contribute to the corporate direction. The distributed leadership format is introduced as a new concept within VITO, linked to the renewed strategy.

Furthermore, various roles and functions contribute to the growth of employees, such as promoters, mentors, reversed mentors (a new concept introduced by the Young Advisory Board), and RandD team leaders. It is crucial to invest in such initiatives to prepare our next generation leaders and to ensure the overall growth of the organisation.

ATTRACT

At VITO, attracting top talent is crucial to deliver our mission of driving innovation and sustainable transformation. With our Visioneer campaign we aim to attract the best and brightest minds in R&D, ICT, Commercial, Management, and other expert fields. By bringing in top talents, we ensure that VITO remains at the forefront of scientific and technological advancements. On a yearly base more than 150 diverse talents join our VITO community.



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03. VITO's footprint → Our People → Diversity, equity and inclusion

DIVERSITY, EQUITY AND INCLUSION

We focus on diversity, equity and inclusion in various ways and recognize that each person is unique in terms of gender, skin colour, nationality, beliefs, etc. The power of our diverse and open-minded workforce will help us make a real difference and provide innovative solutions that impact society. We support positive actions throughout the entire employment lifecycle (recruitment and selection, learning and development, reward and benefits, access to facilities, etc) to ensure that opportunities are equal for all, and everyone is treated in a fair way. Concrete actions in this context are for example:

- the installation of the Diversity, equity and inclusion working group
- the way we support our international new hires (culture and language trainings, house search support, support with employment documents etc.).
- the Young Advisory Board (YAB) to give a voice to young employees
- the way we trigger awareness on the broader gender perspective by organising sessions like 'gender neutral communication' etc

We want to create an inclusive work environment for all. Specific policies in this context support this vision. In addition to the general Diversity, equity and inclusion Policy, VITO is committed to the Gender Equality Plan and OTMR (Open Transparent and merit-based recruitment, linked to the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers). Below, we will discuss how our Diversity, equity and inclusion policy affects selection and gender equality and how we turn policy into action.

VITO recognises diversity as a driver for innovation and productivity, enhancing our employees' sense of empowerment and belonging.

OUR PEOPLE

8. DIVERSITY, EQUITY AND INCLUSION

VITO is committed to fostering a fair and inclusive workplace with a diverse workforce. VITO's culture, values and business operations support a positive approach to diversity, recognising it as a driver for innovation and productivity and enhancing our employees' sense of empowerment and belonging. Inclusive policies also improve talent acquisition, ensure a fair talent management process and reduce turnover – positively affecting VITO's performance and operational capabilities. Moreover, meeting the explicit diversity, equity and inclusion expectations of EU Horizon and other funding schemes is crucial. Failure to do so could result in lost opportunities to compete for projects within these funding schemes. Our commitment to diversity, equity and inclusion is not only a moral imperative but also a strategic necessity for VITO's long-term success.





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03. VITO's footprint → Our People → Diversity, equity and inclusion

SELECTION

VITO's Diversity, equity and inclusion policy is fully endorsed by directors, line managers, and employee representatives. Managers play a key role in creating a fair and inclusive work environment. Training programs, such as 'objective selection,' ensure that managers are equipped to recognise biases and conduct structured interviews using the STARR (Situation, Task, Action, Result and Reflection) methodology. When selecting for employment, promotion, training or any other business practices, **VITO will solely base this decision on the individual's own merits** (= aptitude and ability). VITO also ensures equal opportunities and access for all groups both in employment and to goods and services.

GENDER

VITO has earned recognition for its Diversity, equity and inclusion policy and efforts, including receiving **the 'HR Excellence in research' label**. Within this framework, the Gender Equality Plan (GEP) is integrated, reinforcing VITO's support for the European Commission's Gender Equality Strategy 2020-2025. The focus on gender is part of VITO's broader commitment to diversity, equity and inclusion, which also extends to implementing **gender-sensitive approaches in research** and maintaining **gender-neutral job descriptions**. An example of such a gender-sensitive approach is that VITO chooses to give extra attention to our female inventors and highlight them when a patent is granted.

GEP is a strategic document that helps organisations promote gender equality.

It encompasses five pillars:

1. objectives and actions
2. analysis of the current situation
3. implementation
4. monitoring and evaluation
5. sustainability

If we look at the statistics, the ratio of men to women is roughly 60/40 among VITO employees. In top management, the ratio switches to 50/50. On pay gap ratios VITO has made efforts in achieving gender pay equity, however there is still some work to be done in achieving even more balance and pay equity in the future.

Finally, as part of the Flemish government, VITO complies with the governance decree which mandates balanced gender representation on its board of directors.

The focus on gender is part of VITO's broader commitment to diversity, equity and inclusion, which also extends to implementing gender-sensitive approaches in research and maintaining gender-neutral job descriptions.

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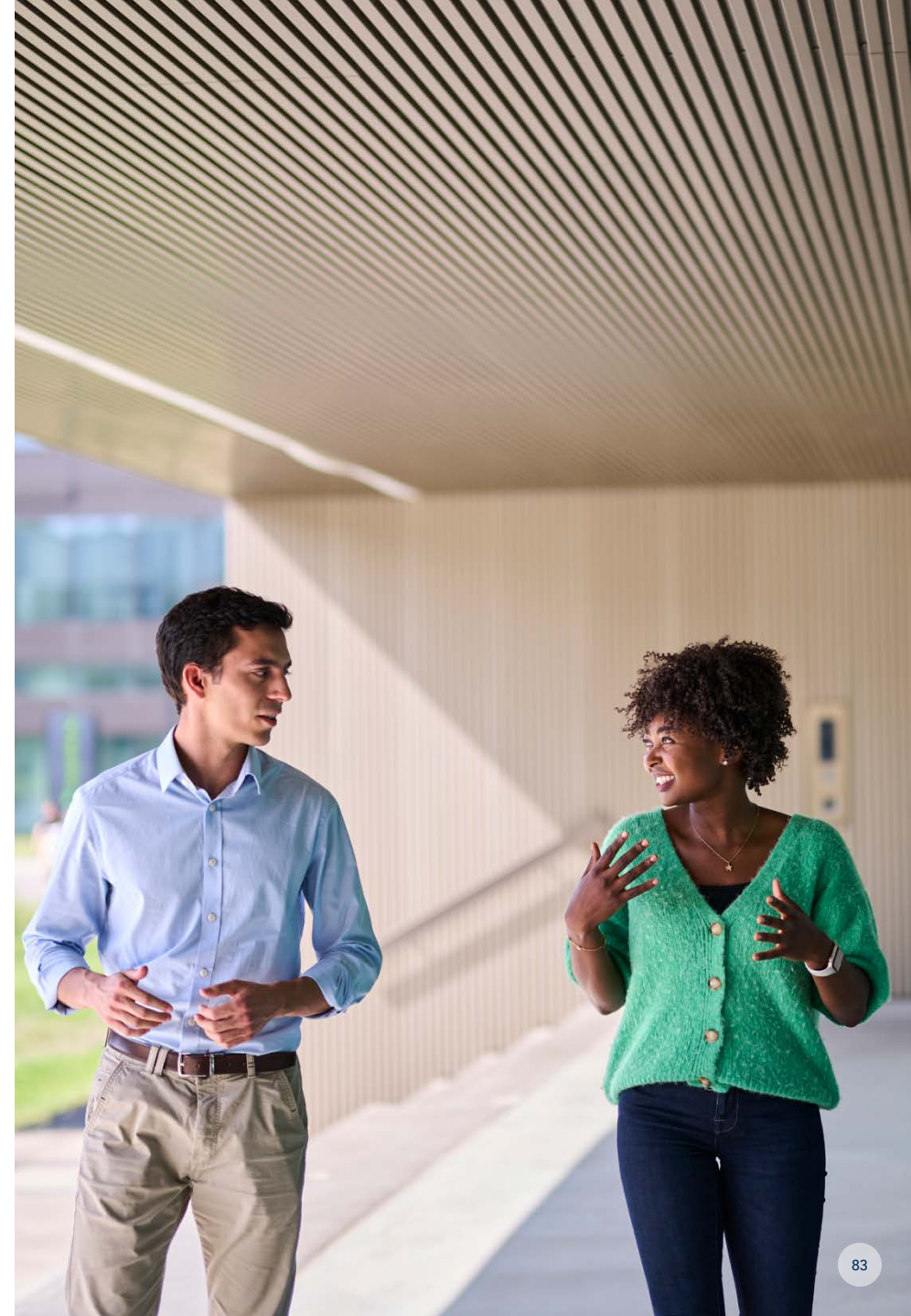
FROM POLICY TO ACTION

We monitor and review our diversity, equity and inclusion policy biannually to make sure equality, diversity, equity and inclusion are continually promoted in the workplace. Each year, we also set up an action plan with a focus on

- **training** (knowledge creation, e.g. the course 'Gender in research, the why and how')
- **actions** (e.g. organising a think tank and Lunch Talk on D&I),
- **communication that raises awareness** (e.g. attention to International Women's Day)
- **process integration** (the 'Gender in Research' dashboard)
- and **monitoring** (D&I and Gender dashboard in HR reportings).

This action plan is published on [the VITO website](#). VITO has also appointed an HR business partner as diversity, equity and inclusion officer. This diversity, equity and inclusion officer is responsible for monitoring KPIs, reviewing our policy and actions, training and setting up positive actions and handle questions.

For our detailed HR metrics: see [appendix](#)





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EMPLOYEES IN THE SPOTLIGHT



MURIH PUSPARUM

PhD perspective



"I wanted to develop statistical methods to help doctors interpret lab results for more personalised patient care. This passion even led to a patent application!"

From research to (medical) practice: patent is pending

My PhD was a VITO pilot project where one of the goals was to develop statistical methods to help clinical doctors interpret laboratory test results of their patients in a more personalised way. To do this, we collected longitudinal data from healthy individuals. Then, when a doctor receives test results from the laboratory for example, the method we developed can put those results alongside other data from that patient, such as age, gender or previous test results, for example. We can then combine all that data to achieve a personalised patient-level normal value. The algorithm I developed together with my promoters for this has even led to a patent application, and now our business developer is actively assisting in its valorisation. Hopefully it will be approved and I will soon be able to see my research work translated into practice. That is one of the things I like about VITO: there is a real focus on practical applications and valorisation of research and that motivates me even more.

Impact on personalised medicine

Hence, I am also very happy with the opportunity to continue my PhD research at VITO. I am currently doing a Postdoc that builds on the earlier research of my PhD. While that mainly involved clinical data from laboratory tests (glucose, cholesterol, etc.), I am now focusing more on the molecular level, more specifically proteins or as it is called "proteomics research". Proteomics is the large-scale study of proteins. This type of data continues to grow and many researchers now want to extract insights from it.

We are now examining data from biobanks, which contain a lot of data from both healthy people and people with diseases or immune disorders. We examine their proteomics profiles and try to mine and model information from them. Proteomics data is huge and complex, it has many dimensions and there is still a lot of 'noise'. Here we are trying to find out information through data mining that can help convert the proteomics data into real clinical interpretations and diagnoses. With this Postdoc, I hope to make an impact in the field of personalised medicine.

Stimulating environment for researchers at VITO

VITO offers a dynamic and collaborative research environment. My Postdoc will continue for another two years, and I see a future here. I enjoy connecting with colleagues across teams, sharing ideas, and exploring a wide range of research topics. The supportive, multidisciplinary culture makes VITO an inspiring place to grow as a researcher—there is still so much to discover.



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EMPLOYEES IN THE SPOTLIGHT



WALDO GALLE

Change maker at VITO Nexus



“By capturing what we learn, turning this into actions, and innovating methodologically, VITO Nexus’s mission is to increase our personal and organisational capacity to accelerate sustainability transitions.”

Waldo Galle: knowledge connector and architect of transition thinking

Waldo Galle has been working for VITO since 2018. First as a postdoctoral researcher in collaboration with VUB Architectural Engineering (Prof. Niels De Temmerman) and EIT Climate KIC (Dr Cristian Matti), and from 2022 as a researcher at VITO Nexus.

When I began my studies in Architectural Engineering, I aspired to become an architect. But over time, I realised how damaging the construction industry is to the planet, and my focus shifted toward the circular construction economy. The basis of circular construction is the smart use of building materials, allowing them to be infinitely reused. The solutions are well-known: replace polluting materials with more sustainable alternatives and make them multifunctional and dismountable. But a real transition failed to materialise because affordability was always in question. For my doctorate, I developed a method to calculate the life cycle cost of a building, demonstrating that in the long run, the savings could be as much as 10 to 20 percent. Since starting my research, awareness around sustainability has grown significantly. More policy makers and construction partners now recognise its importance. Now, the main challenge is to move faster so we can meet the 2050 energy targets. As a part-time professor at Vrije Universiteit Brussel, I continue to focus on advancing the circular construction economy and have built a small team around this effort.

VITO Nexus: a match in ambitions

I also work at VITO Nexus, where the focus is on transitions and an integrated approach to sustainability. The Nexus team supports colleagues and partners, not only in sustainable construction but for all sustainability issues we are working on at VITO. As a liaison for transformational capacity building, I am building the learning platform NexusLearn and designing various training and coaching programs. The methods of systems thinking and transition management are versatile and can be applied in many ways.

At VITO Nexus, we are tackling major challenges like the circular construction economy, affordable housing, and resilient urban and agricultural environments. Sustainable development is central to VITO's mission and is a natural match for my ambitions, but above all, it is the conviction that things can be done differently, the will to change structurally, and not just optimise some things, that makes me feel at home. Radical thinking can be done here. My goal is to familiarise everyone with transition thinking and collaborate on creating meaningful change.



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Good governance

VITO'S GOVERNANCE FRAMEWORK

VITO is one of Flanders' four Strategic Research Centres (SOC) and operates under a five-year management agreement or 'covenant' with the **Flemish government**, its controlling shareholder. The current covenant runs from 2024 to 2028.

Governance at VITO is a joint effort between the **Board of Directors** and the **Directors Team**, ensuring strategic direction, operational oversight, and regulatory compliance.

Several key consultation bodies support the Board of Directors in its governance, including the **Audit Committee**, which oversees financial and internal processes, and the **Remuneration Committee**, which advises on salaries and working conditions. The **Scientific Advisory Board** provides guidance on research strategy, while the **Valorisation Board** focuses on valorisation projects such as spin-offs and larger technology transfers. Additional advisory committees are formed as needed to address specific topics.

VITO's Corporate Governance Charter defines the governance principles guiding the organisation. It details the roles, composition, and responsibilities of the Board and Executive Committee, as well as VITO's relationship with its shareholder, the Flemish Region. The charter also includes references to the Employee Code of Conduct (see section 'Responsible conduct') and Scientific Integrity Policy (see section 'Scientific integrity'). To ensure independence and impartiality, VITO follows strict agreements and adheres to evidence-based practice and complies with European and Belgian scientific research codes.



PETER VERCAEMST

Deputy CEO



Good governance is not just about making the right decisions - it is also about ensuring transparency, accountability and integrity in how our decisions are made. I am particularly proud that in 2024 we were able to expand our Committee for Scientific Integrity to include ethics, allowing us to better address ethical issues within VITO.

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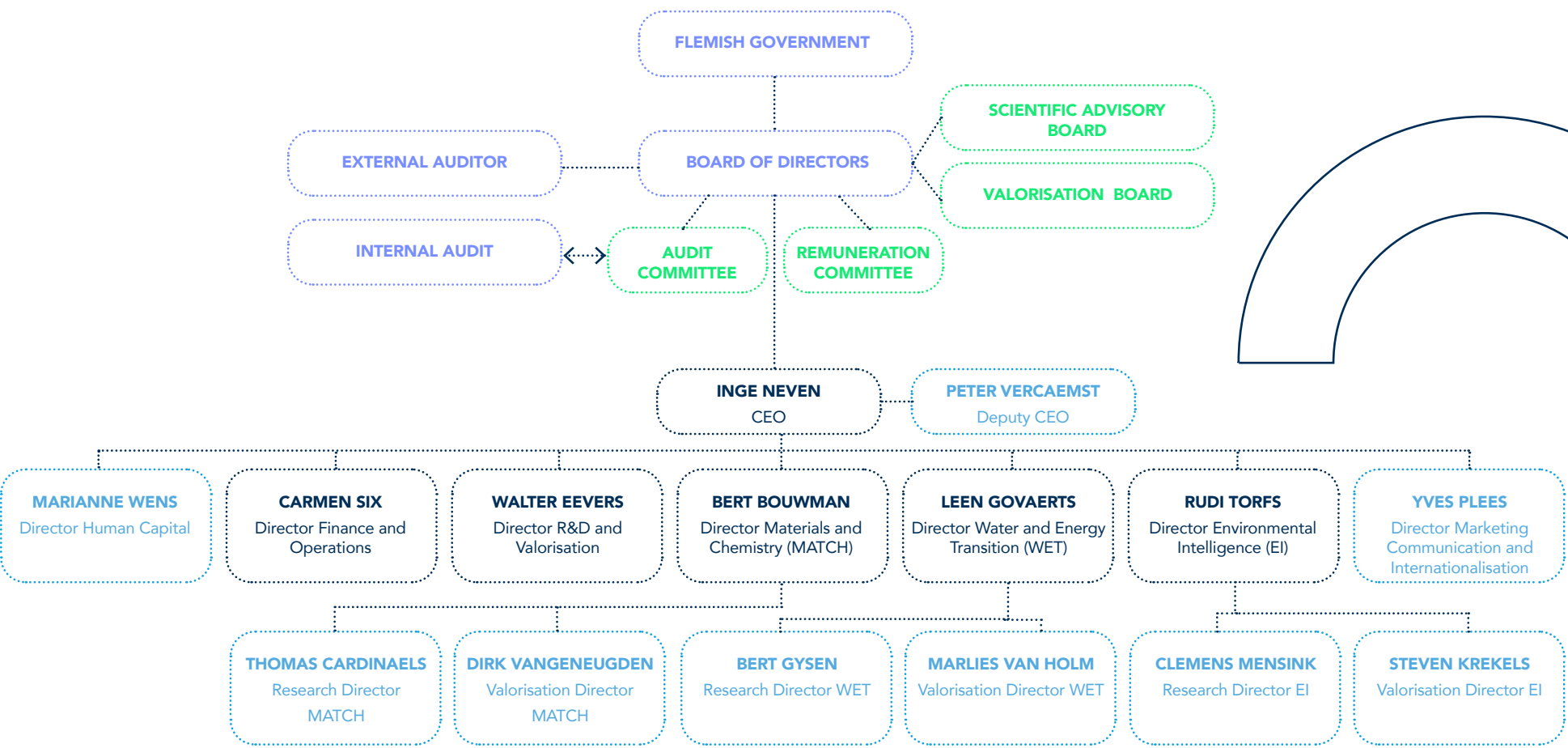
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04. Good Governance → VITO's governance Framework

BOARD OF DIRECTORS AND DIRECTORS TEAM

VITO's Board of Directors is composed with a focus on democratic representation, diversity, and a balance of skills, experience, and knowledge. At least one-third of voting members are independent directors. The Corporate Governance Charter ensures that all Directors make decisions based on independent and objective judgment, free from personal or professional biases. They are expected to avoid conflicts of interest, ensuring their roles at VITO remain impartial and unaffected by private or professional engagements in other entities or associations.



Board of Directors

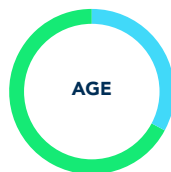
From left to right: Robert Malina – Wim Van den Abbeele – Danielle Vermaelen – Ingrid Vanden Berghe – Jan Delcour – Christiane Malcorps – Inge Neven – Katrien Bonneux – Michel Meeus – Bob Van den Broeck

Missing on the picture: Eric Vermeylen – Elke Van De Walle - Francis De Meyere - Isabel Van Driessche



33%
INDEPENDENT
BOARD MEMBERS

67%
BOARD MEMBERS



33%
30-50 YEAR

67%
50+ YEAR



50%
MALE

50%
FEMALE



11
BELGIAN

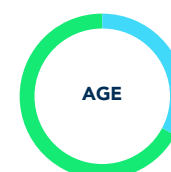


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GERMAN



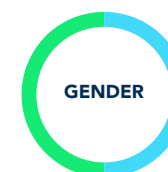
Directors Team

From left to right: Leen Govaerts (Water and Energy Transition), Carmen Six (Finance and Operations), Bert Bouwman (Materials and Chemistry), Walter Eevers (R&D and Valorisation), Rudi Torfs (Environmental Intelligence), Inge Neven (CEO)



33%
30-50 YEAR

67%
50+ YEAR



50%
MALE

50%
FEMALE



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DUTCH



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Board of Directors

INGRID VANDEN BERGHE

Board member since: 1997-08

Occupation: Administrateur-general National Geographic Institute

Education: M. Sc. Bio-engineering

Internal positions: Chair of the Board, Member of the Remuneration committee

External positions: Co-Chair of the UN committee of experts on global geospatial information management, UN-GGIM member of the ExCom, Chair of the G-Cloud Strategic Board

DANIELLE VERMAELEN

Board member since: 2023-09

Occupation: Independent Director, Honorary Chartered Accountant

Education: M.Sc. Business and Information Systems Engineering

Internal positions: Member of the Board, Member of the Audit Committee

External positions: Directorships, amongst others at EOS Wetenschap, Belgium Japan Association and Chamber of Commerce

WIM VANDEN ABEEL

Board member since: 2016-04

Occupation: CEO WATERZANDE and HAZ

Education: M. Sc. Law

Internal positions: Member of the Board

External Positions: Member of the Board DE NIL VLEESWAREN, President of the Board Zingametal

FRANCIS DE MEYERE

Board member since: 2022-10

Occupation: Policy Advisor to the Prime Minister

Education: M. Sc. Business Engineering

Internal positions: Member of the Board

ERIC VERMEYLEN

Board member since: 2016-04

Occupation: Secretary General – Flemish Council of Universities of Applied Sciences and Arts

Education: M. Sc. Engineering

Internal positions: Member of the Board, Member of the Remuneration committee

KATRIEN BONNEUX

Board member since: 2022-04

Occupation: Inspector-general Flemish Education Inspectorate

Education: M. Sc. Educational Sciences

Internal positions: Member of the Board
External positions: Member of the Board VVOB

JAN DELCOUR

Board member since: 2022-12

Occupation: Emeritus professor with duties at KU Leuven

Education: M. Sc. Food Science and Technology, PhD Bioscience Engineering

Internal positions: Member of the Board, Member of the Remuneration committee
External positions: Chair of the Board of NV Lindemans Brewery, NV Tilia, NV Bio-Incubator, and the not for profit association Bread & Health; Member of the Board of FWO, NV Foodport, and NV Better3Fruit

ISABEL VAN DRIESCHÉ

Board member since: 2017-03

Occupation: Dean of the Faculty of Sciences Ghent University

Education: PhD in Chemistry

Internal positions: Member of the Board
External positions: Member of the Board of Governors Ostend Science Park, Team lead Research group SCRIPTS

MICHEL MEEUS

Board member since: 2010-04

Occupation: Alderman for the Municipality of Dessel, Director Supporting Services Elegast vzw

Education: M. Sc. Medical Social Sciences and Hospital Policy

Internal positions: Member of the Board, Chair of the Audit Committee

External Positions: Member of the Board of KSOM, Member of the Board Welzijnszorg Kempen

ROBERT MALINA

Board member since: 2023-09

Occupation: Institute Director and Professor for Environmental Economics, Hasselt University

Education: PhD Economics

Internal positions: Member of the Board
External Positions: Member of the Scientific Advisory Body Clean Aviation, Subgroup Lead for core life-cycle emissions, ICAO CAEP Fuels Task Group L, Member of the Research Board at Hasselt University

CHRISTIANE MALCORPS

Board member since: 2022-10

Occupation: Independent Director, Investor-Founder, Innovative & Sustainable Transformation Strategist, Global Director ex-Solvay

Education: M.Sc. Chemical Engineering (Belgium), M.Sc. Biomedical Engineering (USA), PhD in Veterinary Science (USA)

Internal positions: Member of the Board, Member of the Audit Committee

External positions: President General Assembly Mentes, Member of the Board ASATT, Genius Forum, ImpaktEU, KVAB, TfB, Member of RvA Ariadne Innovation, ESG, Sustainable Stories, Mentorship YL/IM, ASATT, BeWiSe, GDA Incubator

ELKE VAN DE WALLE

(Representative PMV)

Board member since: 2016-04

Occupation: Executive Committee Member, Legal Affairs and Audit

Education: M. Sc. Law

Internal positions: Member of the Board, Member of the Remuneration committee

External Positions: Member of the Board at Welvaartsfonds, Member of the Board of Blue Gate Antwerp Public Holding, Member of the Board of Blue Gate Antwerp Development, Member of the Investment committee fundinvestments of PMV

BOB VAN DEN BROECK

(Government commissioner)

Board member since: 2022-04

Occupation: Administrator-General of the Agency for Justice and Enforcement

Education: M. Sc. Law, LL.M. in International and European Law

Internal positions: Government commissioner

External Positions: Guest lecturer Antwerp University, Member of the High Council of Justice



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Directors Team

INGE NEVEN

Position: CEO
Directors team member since: 23.05.2023
Education: M. Sc. Bio engineering, Master Precision Agriculture ENSAM, MBA Vlerick
External Positions: Member of the Supervisory Board Stichting tegen Kanker, Member of the Audit committee and Supervisory Board of P&V Group, Member of the Business Board of Women ProLeague, Earth+

CARMEN SIX

Position: Director, Finance and Operations
Directors team member since: 15.11.2023
Education: M. Sc. Applied Economics, MBA Hasselt University, Msc. Corporate Finance Vlerick Management School

LEEN GOVAERTS

Position: Director, Water and Energy Transition
Directors team member since: 01.01.2024
Education: Masters Degree Business Engineering, MBA
External Positions: Member of the Board EnergyVille, Vice President EERA (European Energy Research, Chair BERA (Belgian Energy Research Alliance), Chair Open Thor cv

BERT BOUWMAN

Position: Director, Materials and Chemistry
Directors team member since: 01.01.2024
Education: M. Sc. Electronics – semiconductors
External Positions: Member of the Focus Group Catalisti, Member of the HYVE board

RUDI TORFS

Position: Director, Environmental Intelligence
Directors team member since: 01.01.2024
Education: M. Sc. Engineering Physics, M. Sc. Physics
External Positions: Member of the Innovation board Medvia, Member of the steering group Flanders AI

WALTER EEVERS

Position: Director, Research and Valorisation
Directors team member since: 01.09.2013
Education: PhD Chemistry
External Positions: Visiting Professor at Antwerp University, Chair Supervisory Board EnergyVille, Chair of the Board of Directors CO₂ Value Europe, Member of the Scientific Advisory Board of Roquette, Independent Expert and Vice Chair European Commission, Member of the Missions International Advisory Board for Innovation Fund Denmark, Member of the Board at Catalisti, Member of the Scientific Board at Blauwe Cluster (Blue Cluster) vzw, Member of the Board at CAPTURE

Extended Directors Team

PETER VERCAEMST

Position: Deputy-CEO
Directors team member since: 01.01.2024
Education: Master's Degree Commercial engineer, Master's Degree Environmental Sciences
External Positions: Member of the Board VIL (Flanders Innovation Cluster for Logistics)

MARIANNE WENS

Position: Director, Human Capital
Directors team member since: 01.01.2024
Education: B. Social Sciences

STEVEN KREKELS

Position: Valorisation Director Environmental Intelligence
Directors team member since: 01.01.2024
Education: Master's Degree in Applied Engineering Electronics
External Positions: Member of the Board Vlaamse Ruimtevaart Industrie vzw and Flanders Space, Member of the Board Agrolink Vlaanderen vzw, Member of Commission Expert Group on Policies and Programmes for the EU Space, Defence and Aeronautics Industry (DG DEFIS EC), Member of the Discussion Group on Safety and Defence (dept WEWIS Flemish Government), Member of the Advisory Board Passwerk CVBA, Member of the Board (Oog voor) Detail vzw, Co-founder iOrganise VOF

YVES PLEES

Position: Director Marketing and Internationalisation
Directors team member since: 01.06.2024
Education: Master's Degree, Communication Sociology, MBA Business Administration
External Positions: Member of the Advisory Board Engage 4, Member of the Advisory Board IndiGov, General management and marketing positions at Thomas More, SD Worx, Agfa Gevaert and Swift

THOMAS CARDINAELS

Position: Research Director Materials and Chemistry
Directors team member since: 15.08.2024
Education: PhD in Chemistry
External Positions: Associate Professor of Chemistry at KU Leuven

CLEMENS MENSINK

Position: Research Director Environmental Intelligence
Directors team member since: 01.01.2024
Education: Master in Mechanical Engineering, PhD in Applied Sciences
External Positions: President of the International Technical Meeting on Air Pollution Modelling and its Applications, Professor Atmospheric Modelling at Ghent University

DIRK VANGENEUGDEN

Position: Valorisation Director Materials and Chemistry
Directors team member since: 01.04.2024
Education: PhD in Chemistry

BERT GYSEN

Position: Research Director Water and Energy Transition
Directors team member since: 01.01.2024
Education: Master's Degree Electromechanical engineering
External Positions: Chair IEA Energy Storage TCP, Member of the Management Board EnergyVille, Member of the Board KIC InnoEnergy Benelux, Member of the Board Flux 50, Member of the Board Campus EnergyVille, Member of the Board Thor park

MARLIES VAN HOLM

Position: Valorisation Director Water and Energy Transition
Directors team member since: 01.05.2024
Education: MBA, Advanced Master in Cultural sciences, M.Sc. in Engineering and Architecture
External Positions: CMO EnergyVille, Member of the Board (Observer) Enperas



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04. Good Governance → VITO's governance Framework

Management remuneration

VITO's Board members and advisory committee members receive remuneration for their mandates, with fees set by the General Assembly. The Board of Directors determines grants, attendance fees, and advisory council remuneration. The Directors Team's salary package, set by the Board, includes a fixed salary and a variable component based on achieving VITO's strategic goals. Performance is assessed using financial and societal impact KPIs informed by VITO's management agreement with the Flemish government. All other employees are remunerated according to VITO's collective labour agreement.

Governance of sustainability

VITO's Sustainability Manager leads the development and coordination of the organisation's sustainability strategy, reporting to the Sustainability Steering Committee, which includes the CEO, deputy-CEO, and Finance and Operations Director. Following the 2024 Double Materiality Assessment, a revised sustainability strategy and targets will be set in 2025. The Extended Directors Team will oversee implementation within their respective areas, ensuring progress towards sustainability goals. The Board receives regular updates and key sustainability outcomes or issues are discussed and approved. This structure ensures sustainability remains a core focus across VITO's leadership.

Risk assessment

In 2024, VITO conducted a **revised enterprise risk assessment** to identify potential risks that could impact the achievement of its strategic objectives. With input from the Directors Team and risk and compliance experts, risks were ranked by impact and likelihood and visualised on a risk heat map. This analysis, supplemented by feedback from the Audit Committee and the Board of Directors, helped to prioritise additional control measures. The results also informed the audit plan for 2024-2027, with internal audit observations driving new mitigation measures to strengthen oversight and governance. In 2025, VITO will further refine its risk management approach by integrating the findings from its double materiality assessment.





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04. Good Governance → Business conduct, corporate values and research ethics

BUSINESS CONDUCT, CORPORATE VALUES AND RESEARCH ETHICS

RESPONSIBLE CONDUCT

VITO upholds ethical and responsible behaviour among all employees through a clear Code of Conduct. This framework ensures compliance with external laws, internal policies and ethical standards, leaving no room for bribery or corruption. It covers issues such as bans on gifts and commissions, confidentiality and conflicts of interest. The Code also reflects VITO's core values: Sustainability, Fair Cooperation, Excellence, Innovation, and Customer Focus. The Directors Team promotes awareness of and adherence to these principles through ongoing education and training, ensuring that integrity remains central to VITO's culture.

Through our grievance mechanism and our whistleblowing policy, VITO enables any stakeholder or (business) partner to report any observed unethical or irresponsible behaviour. To prevent misuse or errors, VITO applies clear delegation rules and the four-eyes principle for key processes. In 2024, there were no convictions or fines related to anti-corruption or anti-bribery violations.



Website →

GOOD GOVERNANCE

9. BUSINESS CONDUCT, CORPORATE VALUES AND RESEARCH ETHICS

VITO is committed to integrity, independence, and excellence, ensuring ethical and responsible conduct in all operations and research. Strong scientific integrity and corporate values unite our employees and impact our business and research partners. Our policy advice has the potential to drive positive societal and environmental change. A major risk for VITO is that it is not perceived as an ethical organisation that builds its technology, advice and decision-making on honest, transparent and independent research.





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04. Good Governance → Business conduct, corporate values and research ethics

SCIENTIFIC INTEGRITY

Our research institute attaches great importance to scientific ethics and integrity. The principles that guide us in our research and valorisation activities are:

- meticulousness and carefulness
- reliability and verifiability
- independence and impartiality
- responsibility

VITO upholds high standards of scientific integrity by endorsing the **Ethical Code of Scientific Research in Belgium** and the **European Code of Scientific Integrity**, an initiative from ALLEA. To reinforce this commitment, VITO has appointed a contact person for scientific integrity and formally recognises the Flemish Commission for Scientific Integrity (VCWI) as an advisory body. When seeking guidance, VITO commits to considering the committee's advice, ensuring transparency, accountability, and ethical excellence in its research.

In addition, an ethical assessment of each new project (at the proposal stage) is required and included in the project 'risk log'.

In 2024, VITO expanded its Committee for Scientific Integrity to include an advisory role on ethical issues, forming the new **Committee for Ethics and Scientific Integrity (CESI)**. Chaired by the deputy-CEO, CESI includes representatives from the Research Office, various units, and the legal team. It provides internal guidelines on ethical aspects of research, including human-related studies, GDPR, dual use, and AI.

VITO prioritises animal-free research in studies whenever possible and actively contributes to the development of techniques that support this approach. In 2024, an internal policy on the responsible use of generative AI in research was introduced, and CESI identified the need for further ethical guidance on dual use, non-EU partnerships, and trustworthy AI. Alleged violations of scientific integrity can be reported to the VITO central contact point, with the possibility of an external second opinion from VCWI. No reports were submitted in 2024.





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04. Good Governance → Business conduct, corporate values and research ethics

WHISTLEBLOWERS' POLICY

VITO provides an internal reporting channel for whistleblowers to highlight violations of the European regulations set out in EU Directive 2019/1937 and the Administrative Decree of 7 December 2018 regarding the protection of individuals reporting violations of Union or national law within the Flemish government and Flemish public institutions.

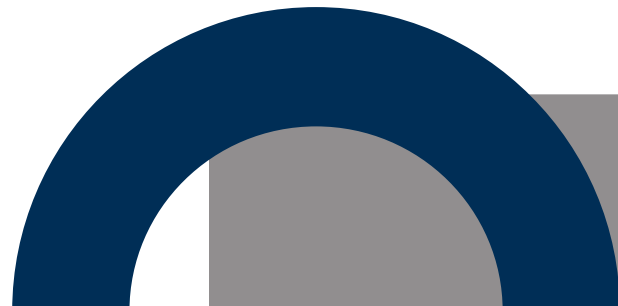
VITO ensures that all investigations into reported concerns are conducted neutrally and impartially, with strict confidentiality for the reporter. Whistleblowers using this channel in good faith are protected from any unjustified disadvantages. In addition to VITO's internal reporting system, concerns can also be reported through the external channel managed by the office of the Flemish Ombudsman or via public disclosure.



POLITICAL ENGAGEMENT AND INFLUENCE

As a research institute, VITO plays a key role in the scientific underpinning of influential policy and regulation at the Flemish, Belgian, and European level, supporting the green transition and driving positive societal impact. In 2024, for the first time, VITO actively engaged with Flemish politicians during the formation of the Flemish coalition agreement and the development of policy briefs, with the aim of raising sustainability on the political agenda. VITO is registered in the [EU Transparency Register](#).

VITO does not offer or provide financial contributions to political parties.





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04. Good Governance → Privacy and data security

PRIVACY AND DATA SECURITY

PRIVACY

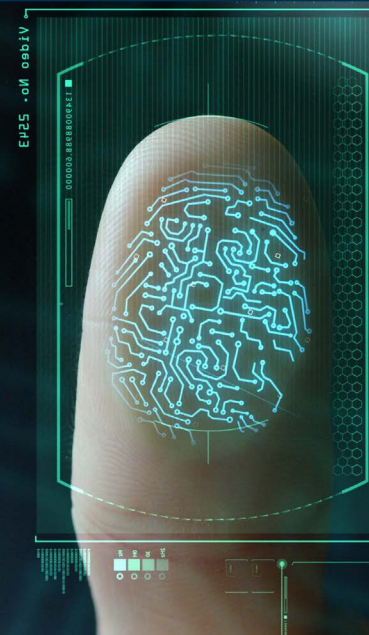
VITO upholds strict information security and privacy policies to comply with legislation and stakeholder expectations, implementing measures in line with applicable regulations such as the GDPR. Following an internal GDPR audit in 2022, updated in 2024, key guidelines and procedures were revised. The Data Protection Officer will develop an annual action plan outlining GDPR-related initiatives, with progress documented in an end-of-year report to ensure continuous improvement in data protection practices. VITO will continue to focus on aligning responsibilities with the GDPR ambassadors across its units and support services.

GOOD GOVERNANCE

10. PRIVACY AND DATA SECURITY

This topic addresses impacts, risks, and opportunities related to the collection, retention, and use of sensitive, confidential, and/or proprietary employee, client, citizen, or partner data. Poor data security management can lead to personal data breaches, resulting in the violation of privacy rights, identity theft and fraudulent activities.

Computer crashes, cyber-attacks, and phishing can disrupt operations or lead to ransomware payments. Data breaches may harm VITO's reputation, affecting its ability to attract and retain partners. However, VITO, as an independent research organisation, has the opportunity to take up a larger role as trustworthy partner in storing, managing and dealing with customer and citizen data.





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04. Good Governance → Privacy and data security

INFORMATION SECURITY

VITO has strengthened its information security through organisational and technical measures, with regular audits driving continuous improvement. In 2024, an internal Information Security Officer was appointed to prepare for the NIS2 Directive and we conducted a comprehensive assessment based on the NIS2 CyFun framework, enabling us to refine our policies and set clear targets and metrics for 2025. VITO's existing measures have proven effective, with no substantial breaches reported this year. Nevertheless, our goal is to continuously improve our cyber resilience by further implementing the NIS2 CyFun framework and establishing the necessary governance. As an independent research organisation, we classify ourselves as an 'Essential' entity under the Belgian NIS2 Cybersecurity law. Our aim is to achieve compliance with the highest assurance level and obtain certification by April 18, 2027.

Compliance with these stricter standards will reinforce trust among customers, partners, and government agencies while storing, managing and handling data, such as health data pods geo-intelligence data and material passports.

In terms of transparency and reporting within the domain of cybersecurity, we focus on openness in reporting data breaches or security incidents to:

- Internal stakeholders
- National CSIRT
- Data protection authorities (federal GBA and regional VTC)
- Impacted data subjects.

Another key step in strengthening VITO's cyber resilience is the integration of its Cybersecurity Awareness program into tailored corporate training and HR evaluation processes. This ensures that all employees are equipped with the knowledge and skills needed to uphold the highest security standards, further embedding cybersecurity into the organisation's culture and daily operations.





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04. Good Governance → Financial health

FINANCIAL HEALTH

Business revenue has grown with 19%. Our new management agreement with the Flemish government for 2024–2028 has been concluded and includes an 8 million EUR increase in 2024. Furthermore, the development of pilot infrastructure has progressed, with an additional 6 million EUR investment. Our operating costs have risen by 7 million EUR, primarily due to this growth and expansion.



BUSINESS REVENUE	141,107 kEUR
ACTIVATION R&D	90,000 kEUR
GRANTS	65,949 kEUR



PERSONNEL COSTS	-128,539 kEUR
DEPRECIATION R&D	-90,000 kEUR
OPERATING COSTS	-72,256 kEUR
DEPRECIATION	-6,620 kEUR
OTHERS	-2,251 kEUR



Our workforce has seen consistent growth throughout the year, with an average increase of 66 full-time equivalents (+8%) in 2024. This growth is also reflected in the increase of our personnel costs.



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LIST OF ABBREVIATIONS

IROs	Impacts, risks and opportunities
DMA	Double Materiality Assessment
ESG	Environment, Social and Governance
ESRS	European Sustainability Reporting Standards
EFRAG	European Financial Reporting Advisory Group
FTE	Full-time equivalent
GHG	Greenhouse gas
SME	Small and Medium sized Enterprises
CSRD	Corporate Sustainability Reporting Directive
EDIH-EBE	European Digital Innovation Hub Energy in the Built Environment
SDGs	Sustainable Development Goals
COP	Conference of the Parties
G-STIC	Global Sustainable Technology and Innovation Community
ESA	European Space Agency
GEO	Group on Earth Observations
SSBD	Safe And Sustainable By Design
R&D	Research & Development
FTI	Flanders Technology and Innovation
STEM	Science, Technology, Engineering, and Mathematics
FRDN	Flanders Research Data Network
FAIR	Findable, Accessible, Interoperable, and Reusable
DMP	Data Management Plan
FOSB	Flanders Open Science Board
SOCs	Strategic Research Centres

EARTO	European association of RTOs
WEWIS	Werk, Economie, Wetenschap, Innovatie en Sociale Economie
KPI	Key Performance Indicator
YAB	Young Advisory Board
DPM	Development and Performance Management cycle
OTMR	Open Transparent and Merit-based Recruitment
GEP	Gender Equality Plan
ATES	Aquifer Thermal Energy Storage
LCA	Life Cycle Assessment
MATCH	Materials and Chemistry
WET	Water and Energy Transition
EI	Environmental Intelligence
CESI	Committee for Ethics and Scientific Integrity
GDPR	General Data Protection Regulation





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ESRS DISCLOSURE REQUIREMENTS OVERVIEW

STATUS	Advanced progress	Moderate progress	Internal work initiated	Not for 2024	Under materiality threshold
Status	Disclosure requirement		Reference		
	ESRS 2 BP-1	General basis for preparation of sustainability statements		102	
	ESRS 2 BP-2	Disclosures in relation to specific circumstances		102	
	ESRS 2 GOV-1	The role of the administrative, management and supervisory bodies		86-91	
	ESRS 2 GOV-2	Information provided to and sustainability matters addressed by the undertaking's administrative, management and supervisory bodies		91, 103, 104	
	ESRS 2 GOV-3	Integration of sustainability-related performance in incentive schemes		91	
	ESRS 2 GOV-4	Statement on due diligence		1) Embedding due diligence in governance, strategy and business model 91 2) Engaging with stakeholders 104 3) Identifying and assessing negative impacts on people and the environment 103 4) Taking action to address negative impacts on people and the environment 59-96	
	ESRS 2 GOV-5	Risk management and internal controls over sustainability reporting		91	
	ESRS 2 SBM-1	Strategy, business model and value chain		4-7, 12, 103, 104	
	ESRS 2 SBM-2	Interests and views of stakeholders		104	
	ESRS 2 SBM-3	Material impacts, risks and opportunities and their interaction with strategy and business mode		10, 45, 49, 53, 55, 60, 68, 70, 77, 92, 95	
	ESRS 2 IRO-1	Description of the processes to identify and assess material impacts, risks and opportunities		103	
	ESRS 2 IRO-2	Disclosure requirements in ESRS covered by the undertaking's sustainability statement		99	
	ESRS E1-1*	Transition plan for climate change mitigation		66-69	
	ESRS E1-2	Policies related to climate change mitigation and adaptation		66-69	
	ESRS E1-3	Actions and resources in relation to climate change policies		66-69	

*For 2024, we will not yet report on our EU Taxonomy alignment due to existing unclarities and challenges specific for Research and Technology Organisations (RTOs). These challenges make implementation complex in our context.



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	ESRS E1-4	Targets related to climate change mitigation and adaptation	66
	ESRS E1-5	Energy consumption and mix	
	ESRS E1-6	Gross Scopes 1, 2, 3 and Total GHG emissions	61-64, 110
	ESRS E1-7	GHG removals and GHG mitigation projects financed through carbon credits	Not applicable
	ESRS E1-8	Internal carbon pricing	Not applicable
	ESRS E1-9	Anticipated financial effects from material physical and transition risks and potential climate-related opportunities	
	ESRS E2	Pollution	
	ESRS E3	Water and marine resources	
	ESRS E4	Biodiversity and ecosystems	
	ESRS E5	Resource use and circular economy	
	ESRS S1-1	Policies related to own workforce	71-83
	ESRS S1-2	Processes for engaging with own workers and workers' representatives about impacts	104
	ESRS S1-3	Processes to remediate negative impacts and channels for own workers to raise concerns	78
	ESRS S1-4	Taking action on material impacts on own workforce, and approaches to mitigating material risks and pursuing material opportunities related to own workforce, and effectiveness of those actions	73, 75, 78, 80, 83
	ESRS S1-5	Targets related to managing material negative impacts, advancing positive impacts, and managing material risks and opportunities	
	ESRS S1-6	Characteristics of the undertaking's employees	107-109
	ESRS S1-7	Characteristics of non-employee workers in the undertaking's own workforce	107-109
	ESRS S1-8	Collective bargaining coverage and social dialogue	107-109
	ESRS S1-9	Diversity metrics	107-109
	ESRS S1-10	Adequate wages	
	ESRS S1-11	Social protection	
	ESRS S1-12	Persons with disabilities	
	ESRS S1-13	Training and skills development metrics	107-109



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ESRS S1-14	Health and safety metrics	
ESRS S1-15	Work-life balance metrics	
ESRS S1-16	Compensation metrics (only pay gap included)	109
ESRS S1-17	Incidents, complaints and severe human rights impacts	78
ESRS S2		
ESRS S3		
ESRS S4		Note: Material topic 'Client inclusion and safe, sustainable and accessible innovation' shows similarities to the ESRS topic 'S4 Consumers and End-users' however, VITO does not engage in B2C or routine commercial activities. In 2025, we will further explore how to accurately report on 'Client inclusion and safe, sustainable and accessible innovation'.
ESRS G1 GOV-1	The role of the administrative, supervisory and management bodies	86-91
ESRS G1-1	Corporate culture and business conduct policies	86, 92-93
ESRS G1-2	Management of relationships with suppliers	
ESRS G1-3	Prevention and detection of corruption and bribery	92, 94
ESRS G1-4	Confirmed incidents of corruption or bribery	92
ESRS G1-5	Political influence and lobbying activities	94
ESRS G1-6	Payment practices	
Innovation and valorisation	MDR-P	12
	MDR-A	45-48
	MDR-M and MDR-T	57
Citizen engagement and science communication	MDR-P	12
	MDR-A	53 - 54
	MDR-M and MDR-T	57
Thought leadership and scientific excellence	MDR-P	12
	MDR-A	55-56
	MDR-M and MDR-T	57
Privacy and data security	MDR-P	95-96
	MDR-A	95-96
	MDR-M and MDR-T	96



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BASIS FOR PREPARATION

Name: VITO NV (Enterprise number KBO: 0244.195.916)

Head office: Boeretang 200, 2400 Mol, Belgium

Reporting period: 1 January 2024 – 31 December 2024

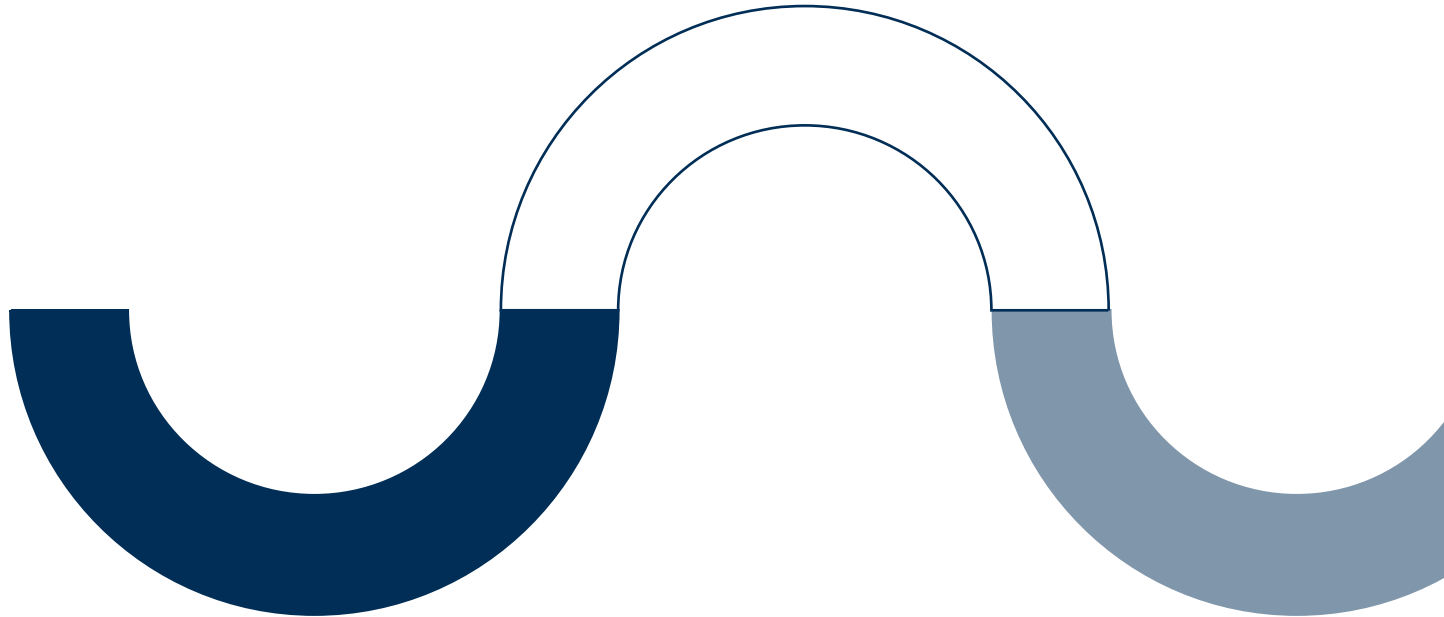
Time horizons

In this report and in VITO's double materiality assessment, time horizons are defined as follows:

- Short-term time horizon: up to one year,
- Medium-term time horizon: one to five years
- Long-term time horizon: more than five years.

Sources of estimation and outcome uncertainty

VITO aims to disclose data as correctly and accurately as possible, using primary data where available. For the calculation of value chain emissions (scope 2 / 3), VITO also uses spend-based emission factors (see carbon footprint methodology). Any further information on definition, methodology or potential assumptions or uncertainty are described in the accounting principles of the respective disclosure point.





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VITO'S DOUBLE MATERIALITY ASSESSMENT

Double Materiality assessment process

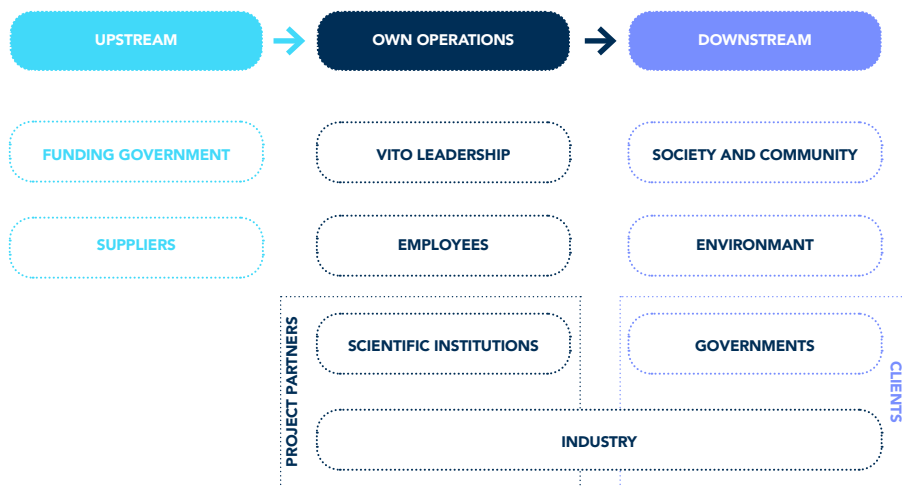
From May to September 2024, VITO conducted its double materiality assessment following the EFRAG guidelines. It encompasses the following steps:

- Preparation
- Identification of relevant ESG topics and corresponding IROs
- Assessing IROs on impact and financial materiality

Consolidation and validation of the final list of material ESG topics.

Preparation

A first step was to map VITO's main activities and corresponding value chain and key stakeholders to ensure a solid materiality assessment process with a broadly informed outcome. As a knowledge institute, VITO relies on its unique human capital, infrastructure and processes to create knowledge in the form of demonstrators and pilots, tools and solutions, policy recommendations and scientific output. This is not done in isolation but through strong interaction with the quintuple helix (industry, government, scientific partners, society and environment). Based on this value chain mapping, 9 key stakeholder groups were identified, both within the organization and across the value chain: clients, leadership, employees, suppliers, scientific partners, neighbouring communities, funding government, society and environment. For each stakeholder group, we defined the mode of engagement and at which stage of the materiality assessment process engagement would be most appropriate (see also section Stakeholder engagement in appendix).



VITO's value chain

Identification of relevant ESG topics and corresponding IROs

In the identification phase, we identified the relevant (= potentially material) ESG topics and corresponding list of impacts, risks, and opportunities (IROs) for VITO, deploying an objective evidence-based approach whenever possible. This list was prepared based on:

- ESRS and other internationally recognized ESG standards
- Existing internal documentation and data and stakeholder engagement documents
- Peer analysis
- Third-party data and research (such as scientific papers)
- External and internal stakeholder interviews
- Review, validation and addition by stakeholders from across the organization.

This resulted in a longlist of 22 relevant ESG topics and 147 IROs. While our base is still the topics as defined by ESRS, we noticed in this phase the need to adapt based on the specificities of a research institute and research activities. Consequently, we split some of the ESRS defined topics into its subtopics (for example, S1 Own workforce was split into topics 'Employee wellbeing', 'Employee development', 'Diversity, equity and inclusion' and 'Health and safety') to evaluate materiality on a subtopic level and allow for more precise scoping in and out. We also introduced entity-specific topics to cover the impacts, risks and opportunities that were not covered by the topical standards. We made the conscious decision to capture the impacts, risks and opportunities related to VITO's innovation, technology development and policy advice to clients in a separate entity-specific topic 'Innovation and valorisation'. VITO is active across the ESRS environmental topical standards. Including the impact made through client work on each of these subtopics would dilute VITO's own impact through its (value chain) operations and lead to difficult discussions on the relative importance of the different business units during financial and impact materiality scoring.

Assessing IROs on impact and financial materiality

The IROs identified in the previous phase were then scored according to ESRS guidelines in three separate workshops with broad internal representation and expertise according to the themes that were discussed. In these workshops insights from the desk research and interviews were taken into account. Each workshop consisted of introducing the ESG topics and corresponding IROs, ensuring a common understanding and then individual scoring of the IROs. During the workshop, it was possible to add additional topics or IROs.

Consolidation and validation of the final list of material ESG topics

The scores from the materiality workshops were then consolidated into a materiality matrix showing impact and financial materiality on the axes. In a workshop with representatives from the Directors' Team, these results were discussed and validated and thresholds for materiality were decided on. The outcome of the double materiality assessment was validated by the Directors Team, the Board and by an external auditor in pre-assurance. The outcome of the materiality assessment will be thoroughly reviewed in 2025. Afterwards, VITO's Directors Team will assess the need for revision annually.



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Double Materiality Assessment outcome

We carried out a diligent evaluation of our impacts on the environment and society (impact materiality) as well as the sustainability-related risks and opportunities for VITO (financial materiality). We have summarized the outcome showing the ten topics that are most important to our organization and that stakeholders expect us to take action on. The topics are clustered according to VITO's sustainability focus areas.

9 topics are identified as material and hence form the focus of VITO's sustainability reporting for 2024. In addition, given the strong match with our VITO values and culture, we choose to voluntarily report on 'diversity, equity and inclusion'.

For the topics that fell under our materiality threshold in 2024, we still recognize our existing footprint and impact. We will therefore aim to, in the future, also include disclosures on the key impacts and actions relevant to our stakeholders where applicable.

VALUE CHAIN AND STAKEHOLDER ENGAGEMENT

Through its research and valorisation activities, VITO aims to create positive societal impact across its three impact domains. This is achieved not in isolation but through strong interaction with industry, governments, scientific partners, society and the environment (the quintuple helix). Collaborating with and considering the needs of this broad group of stakeholders ensures that our research is relevant, capable of addressing complex challenges and creating lasting societal impact.

The Impact pathway framework can thus be regarded as VITO's value chain. This value chain is not linear but involves multiple feedback loops and interactions among various stakeholders. Throughout the value chain, VITO identifies nine key stakeholder groups. These groups and the engagement model for each are described in table below.

Stakeholder group	Key material ESG topics	Involvement in double materiality assessment	Modes of engagement		
			Mode	Outcomes	Directors Team / Board involvement
Clients and partners	<ul style="list-style-type: none">• Innovation and valorisation• Client inclusion and safe, sustainable and accessible innovation• Business conduct, corporate values and research ethics• Privacy and data security	<ul style="list-style-type: none">• Interviews (both industry and government clients)• Internal documentation (stakeholder survey, client satisfaction surveys)• Representation from across VITO's units and leadership team in the identification and scoring workshops	<ul style="list-style-type: none">• Direct engagement in projects and ongoing relationship management• Client satisfaction survey• Social media• Events (Love tomorrow, FTI, CVS...)• Structural discussions in the context of spearhead clusters, reference tasks...• Dedicated contact person for key accounts	<ul style="list-style-type: none">• Feeds research and valorisation roadmaps to better meet client needs• Client relationship management• Input from engagements is used to evaluate if further actions or changes in policy need to be implemented	<ul style="list-style-type: none">• CEO, Unit, Valorisation and Research directors• Discussed at the Board on an ad hoc basis



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Employees	<ul style="list-style-type: none">• Innovation and valorisation• Employee wellbeing• Employee development• Diversity, equity and inclusion• Business conduct, corporate values and research ethics• Privacy and data security	<ul style="list-style-type: none">• Interview with union representatives• Human Capital representation in identification and scoring workshop	<ul style="list-style-type: none">• Regular Works council consultations• Engagement survey (FIT@VITO)• Intranet + daily / weekly newsletter• Townhalls• HR Business partners• Goal and development conversation• Whistleblower's channel, confidential counselor	<ul style="list-style-type: none">• Feeds HR strategy• Input from engagements is used to evaluate if further actions or changes in policy need to be implemented	<ul style="list-style-type: none">• Human Capital director• FIT@VITO one of the VITO targets, progress discussed with the Board on a quarterly
Society	<ul style="list-style-type: none">• Innovation and valorisation• Client inclusion and safe, sustainable and accessible innovation• Citizen engagement and science communication• Climate change	<ul style="list-style-type: none">• Interview with Flemish government as key shareholder and representative of (Flemish) society• Internal experts present in identification and scoring workshops	<ul style="list-style-type: none">• Events• Social media• News articles• Citizen science projects	<ul style="list-style-type: none">• Feeds communication strategy• Input from engagements is used to evaluate if further actions or changes in policy need to be implemented	<ul style="list-style-type: none">• Director Marketing, Communication and International Affairs• Discussed at the Board on an ad hoc basis
Local community	<ul style="list-style-type: none">• Innovation and valorisation• Climate change• Citizen engagement and science communication• Employee wellbeing	<ul style="list-style-type: none">• Interview with VITO spokesperson for Mol area• Presence of environmental coordinator and facility and technical services in identification and scoring workshops	<ul style="list-style-type: none">• Regular consultations with local authorities and neighbouring companies• Regular consultations with local advisory boards (e.g. MONA)• Information sessions for the neighbourhood• Direct contact point via vito.be and email for citizen inquiries• VITO spokesperson for the Mol neighbourhood	<ul style="list-style-type: none">• Input from consultations are used to evaluate if further actions need to be implemented	<ul style="list-style-type: none">• Alderman of local municipality in Board
Suppliers	<ul style="list-style-type: none">• Climate change• Business conduct, corporate values and research ethics• Privacy and data security	<ul style="list-style-type: none">• Representation from Procurement present in identification and scoring workshops	<ul style="list-style-type: none">• Direct engagement via procurement and/or in project context• Supplier evaluations	<ul style="list-style-type: none">• Input from engagements and evaluations is used to evaluate if further actions or changes in policy need to be implemented	<ul style="list-style-type: none">• Director Finance and Operations
Scientific partners	<ul style="list-style-type: none">• Thought leadership and scientific excellence• Innovation and valorisation• Business conduct, corporate values and research ethics• Privacy and data security	<ul style="list-style-type: none">• Interview with VITO's Research Office• Academic representation during identification and scoring	<ul style="list-style-type: none">• Conferences• Publications• Structural collaborations• Participation in common projects, forums, and associations	<ul style="list-style-type: none">• Feeds into research strategy• Input from engagements is used to evaluate if further actions or changes in policy need to be implemented	<ul style="list-style-type: none">• Research and Valorisation director and unit research directors• Board members from academic community• Scientific Advisory Council as advising committee to the Board



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Shareholder (Flemish government)	<ul style="list-style-type: none">• All	<ul style="list-style-type: none">• Interview with responsible policy officer for VITO• Internal documents consulted (e.g. covenant 2024-2028, evaluation of covenant 2019-2023) to feed identification and scoring workshops	<ul style="list-style-type: none">• Attendance in Board meetings• Regular consultations with Directors Team• Yearly reporting on covenant requirements	<ul style="list-style-type: none">• Input feeds into corporate strategy	Regular interactions with full Directors Team and Board
Environment	<ul style="list-style-type: none">• Climate change• Client inclusion and safe, sustainable and accessible by design• Innovation and valorisation	<ul style="list-style-type: none">• Environmental coordinator and environmental and impact assessment experts present during identification and scoring workshop	Silent stakeholder		
VITO leadership	<ul style="list-style-type: none">• All	<ul style="list-style-type: none">• Directors Team members present in every workshop• Setting of thresholds by Sustainability SteerCo	Not applicable		

REFLECTIONS AND LESSONS LEARNED

At VITO, our innovation and research are guided by a commitment to continuous learning and improvement. Each project we undertake provides valuable insights that help us refine our approaches and enhance our impact. This section, “Reflections and lessons learned,” captures the key takeaways from our own journey towards CSRD compliancy. By sharing these lessons, we aim to foster transparency and collaboration across company boundaries, ensuring that our experiences contribute to the broader knowledge base and drive future advancements. As we too have gained insights from observing frontrunners who were already working towards CSRD compliance in 2023, as well as RTOs and other impact-oriented organizations that are striving to make their societal impact more tangible in their annual reporting.

- **Introducing entity-specific topics to capture our handprint:** VITO is a research institute with a not-for-profit, societal impact goal that is engaged in research and client work across the environmental themes covered by CSRD. Therefore, we decided to separate the impact of our innovation, research and citizen engagement activities (= our handprint impact) from the (environmental) impact that follows from how we do those activities (such as facilities, materials purchased etc.). This approach seemed most optimal because:
 1. It prevents dilution of our own footprint impact across environmental CSRD themes (e.g. separating the impact of our innovation and client work on climate change mitigation and our own carbon footprint allows for a more targeted discussion on both topics)
 2. The policies, actions and metrics that guide the maximization of our handprint impact are typically organized across different environmental topics (e.g. impact pathway framework holds for the work we do on circular economy, climate change adaptation, natural capital accounting...) while policies, actions and metrics that guide optimization of footprint are topic specific.

3. Evaluating our innovation and client work for every environmental CSRD topic separately would require us to allocate each project and team to the relevant topic and making the trade-off both financially and from an impact perspective. An almost impossible exercise that would add limited value in reporting nor in strategy discussions.
In the next years, we'll evaluate whether this approach is still the most optimal way of prioritising VITO's sustainability impact, making strategic decisions and providing transparency to our stakeholders.
- **In-depth interviews with consciously selected stakeholders:** Rather than distributing a survey to a large group of stakeholders, we opted for in-depth interviews with a select few key stakeholders and/or their internal counterparts or representatives. First, we posed open-ended questions about what they perceived as VITO's key sustainability impacts before addressing the predefined CSRD topics. The insights gathered from these interviews were then also shared during the scoring workshops. This approach allowed interviewees to think freely without being guided towards specific topics, resulting in a wealth of valuable information for both identification and scoring.
- **Determine materiality at the right granularity:** We decided to split out certain CSRD topics to evaluate at the right level whether these were material or not and hence allow for reporting at a relevant level as well. For example, ESRS E1 was split into climate change mitigation and climate change adaptation. Climate change mitigation appeared as a material topic for VITO given the global impact of GHG emissions while climate change adaptation which is more associated with physical transition risks was evaluated as not material for VITO activities.



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OUR PEOPLE - METRICS

Number of employees (headcount)

	2024
Total number of employees over the year	1,393
Total number of employees at end of year (31/12)	1,200
Number of payroll employees	990
Number of non-payroll employees	210

Employee turnover rate (payroll only)

	2023	2024
Number of employees (head count) who left VITO	70	75
Number of employees (head count) on 31/12	927	990
Employee turnover rate	7,55%	7,58%

Number of employees (headcount) per contract type and gender

	2023				2024			
	FEMALE	MALE	OTHER OR NOT DISCLOSED	TOTAL	FEMALE	MALE	OTHER OR NOT DISCLOSED	TOTAL
Number of employees (payroll)*	367	560	0	927	384	606	0	990
Number of permanent employees*	285	448	0	733	299	484	0	783
Number of temporary employees*	82	112	0	194	85	122	0	207
Number of non-guaranteed hours employees*	0	0	0	0	0	0	0	0
Number of full-time employees*	281	489	0	770	291	535	0	826
Number of part-time employees*	86	71	0	157	93	71	0	164

*Relates to numbers in head counts on 31/12/Year



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Collective bargaining / social dialogue

	TOTAL
Share of employees covered by collective bargaining agreements	100%
Share of employees working in establishment with workers' representatives	100%

Diversity metrics

	2023				2024			
	Top management*		All employees**		Top management*		All employees**	
Gender	#	%	#	%	#	%	#	%
Male	2	40%	560	60%	3	50%	606	61%
Female	3	60%	367	40%	3	50%	384	39%
Other		0%		0%	0	0%	-	0%
Total	5	100%	927	100%	6	100%	990	100%

*Everyone with function director on 31/12/Year in head count
**Every employee on payroll on 31/12/Year in head count

Diversity metrics

	Top management*				All employees**			
	2023		2024		2023		2024	
	Numbers	%	Numbers	%	Numbers	%	Numbers	%
< 30 years old		0%		0%	101	11%	110	11%
30-50 years old	2	40%	2	33%	584	63%	635	64%
over 50 years old	3	60%	4	67%	242	26%	245	25%
Total	5	100%	6	100%	927	100%	990	100%

*Everyone with function director on 31/12/Year in head count
**Every employee on payroll on 31/12/Year in head count



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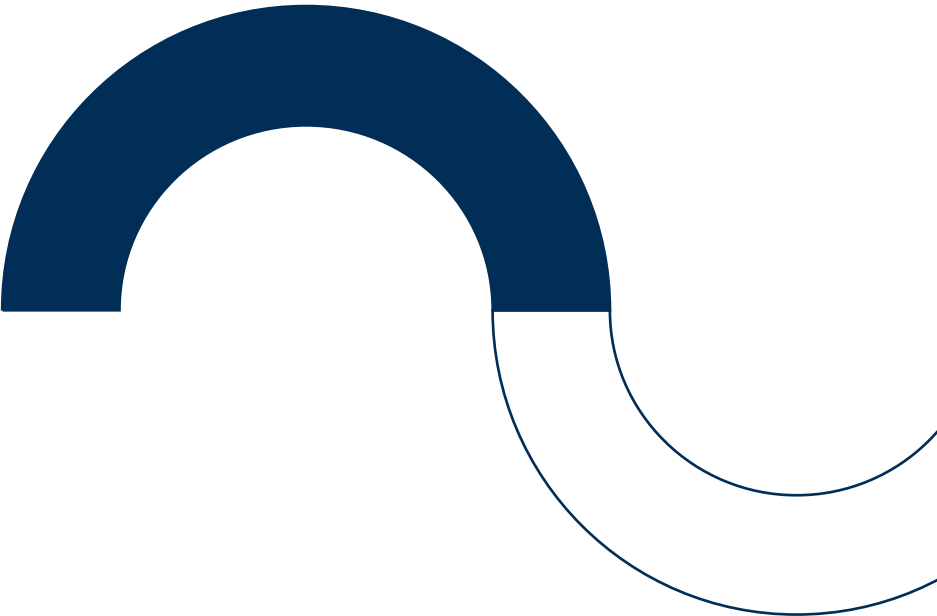
Training & skill development

	2023			2024		
	Female	Male	Total (=All employees)	Female	Male	Total (=All employees)
% of payroll employees with training in 2023	89%	88%	88%	92%	90%	91%
Number of training hours per employee	16.33	15.79	16.00	14.9	13.49	14.02

Pay gap ratios

Pay gap ratio*	
2023	103%
2024	103%

**Calculated as the average gross hourly pay level of a male employee on the average gross hourly pay level of a female employee. Every function at VITO has a pay class with a minimum and maximum salary. The pay gap ratio is calculated per pay class.*





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CARBON FOOTPRINT CALCULATION DETAIL AND METHODOLOGY

Scope 1 – Scope 3 emissions per category

GHG emissions (tCO ₂ e)		
	2023	2024
Scope 1 GHG emissions		
Gross Scope 1 greenhouse gas emissions	4,994	5,394
Scope 2 GHG emissions		
Gross location-based Scope 2 greenhouse gas emissions	749	823
Gross market-based Scope 2 greenhouse gas emissions	48	56
Scope 3 GHG emissions		
Purchased goods and services	4,661	5,575
Capital goods	7,357	12,249
... of which EARTH building	2,205	7,018
Fuel and energy-related activities	944	1,002
Waste generated in operations	124	132
Business travel	714	661
Employee commuting	1,585	1,701
Investments	179	150
Total Gross indirect (Scope 3) GHG emissions	15,564	21,470
Total GHG emissions (market-based)	20,606	26,920

METHODOLOGY

Introduction

VITO's carbon footprint covers the full year of 2023 and 2024 and is based on financial- and consumption data. Financial data covers all purchases for the year (primarily for Scope 3). Respectively consumption data applied to mainly Scope 1 and 2 emissions. Where possible, we prioritized consumption data over financial data for accuracy and deducted any overlap from the financial inputs to avoid double counting.

The assessment encompasses carbon emissions across Scopes 1–3, as outlined by the GHG Protocol. Scope 1 covers direct carbon emissions from VITO's operations, such as fuel use for vehicles and gas consumption in buildings. Scope 2 addresses indirect emissions from purchased electricity and heating, while Scope 3 accounts for emissions across VITO's value chain, including business travel, commuting, waste, and supply chain activities.

Method

The footprint is calculated by multiplying annual figures on the use of products and services with the corresponding carbon emission factor of these products and services. In alignment with the GHG Protocol we calculated for Scope 2 the location-based as well as the market-based emissions:

- Location-Based Approach: This method calculates emissions based on the average emissions intensity of the local electricity grid where the energy is consumed, without considering the company's specific energy contracts or renewable energy purchases. It is important for VITO, and as a best practice in alignment with the GHG protocol, to report a location-based emission total to understand the physical impacts of our operation without market influences being considered. However, in the total tCo2e of VITO we include the market based total emissions for Scope 2 only, see below.
- Market-Based Approach: This approach reflects the emissions from the specific electricity a company buys, considering any renewable energy certificates (RECs), power purchase agreements (PPAs), or other similar instruments. It shows the emissions linked to the company's energy purchasing choices. For this we included the total kWh consumed from grid (split out per energy type based on energy contract) and included this approach to reflect the actual energy mix tied to your energy purchases for an accurate accounting of Scope 2 emissions.





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Metrics

Calculations highlighted in graphs are all in tCO₂e (tons of CO₂ equivalents). CO₂e is a carbon dioxide equivalent and is a standard unit of measurement used to compare the emissions of various greenhouse gases (GHGs) based on their global warming potential (GWP). Since different gases have different warming effects on the planet, CO₂e expresses the impact of all greenhouse gases in terms of the equivalent amount of CO₂ that would have the same global warming effect.

The emission factors for Scope 1-3 are sourced from Base Carbone, BEIS, DEFRA, Ecoinvent, IEA, and EXIOBASE. Base Carbone is the primary source for emission factors linked to physical data, while EXIOBASE (applied via VITO's internal FIGARO platform) is used for those linked to financial data. For the factors available for Belgium, we applied the local factor. Else we applied e.g. Europe or Worldwide applicable emission factors, mostly for Scope 1 and Scope 2. Generally, we applied the most recent source years per emissions factor where possible/available.

Operational Control

We have used the 'Operational Control Approach' to establish our organizational boundaries. This approach includes all entities, such as subsidiaries, joint ventures, and operations, where we have operational control, rather than focusing only on financial ownership. By adopting this method, we ensure that emissions from all operations under our control are captured in our GHG inventory, accurately reflecting our responsibility for the environmental impact of these activities.

For our carbon footprint we included the following locations where VITO has operational control in the assessment. To maintain a cohesive calculation approach, we opted to include primary data where available. If locations were unable to provide primary data, we opted for an average per FTE approach, see explained in the following in more detail.

Included locations

- VITO Mol sites including:
 - > Mol HQ: Boeretang 200, 2400 Mol
 - > Mol TAP: Boeretang 282, 2400 Mol
 - > Mol HAL/GEO incl. EARTH building under construction): Boeretang 200, 2400 Mol
 - > Geel BIO: Industriezone Vlasmeer 7, 2400 Mol
- Genk Energyville (office): Thor Park 8300 - Poort Genk 8300, 3600 Genk
 - > (60% of sqm/usage included as not the whole building is used by VITO)
- Oostende VITO WaterKlimaatHub (office): Oostende, Bluebridge - Kantoren 2002, 2003 and 2005, Wetenschapspark 1, 8400 Oostende
- Berchem (office): Roderveldlaan 5, 2600 Berchem
- VLAKWA Kortrijk (office): Leiestraat 22, 8500 Kortrijk

Daughter company

- Clean Vision (offices on Mol site): Boeretang 200, 2400 Mol

Excluded locations

- Vito Asia: 18 Zhong Guan Cun East Road, Hai Dian District, Beijing, China (100083)
 - > The location has 2 employees which attributes to less than 1% of total employee count and impact, negligible emissions. We therefore excluded this location in the scope of the carbon footprint exercise.

Uncertainties per Scope and Category

For all data inputs we strive for a complete and accurate representation of GHG emissions/impact. However, for some offices for which no granular data was available we applied a cohesive calculation approach for missing data points by calculating for e.g. missing satellite office data for energy and water with an average of a representative location. In this case we used Genk Energyville as an exemplary site to have a coherent calculation approach. Due to more granular insights on waste data for Mol HQ, we applied the averages respectively to the satellite offices for this category. For all financial data, we take into account those categories that reflect an actual delivery of goods or services. For more details on all our assumptions and uncertainties, see below table.

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Assumptions for Scope 1- 3

Scope 1-3	Calculation assumptions and Uncertainties
Scope 1	For Scope 1 we generally have very little uncertainties due to access to consumption data of fuels. If we did not use consumption data, we used data from a representative site.
1-1 Direct emissions from stationary combustion sources	For the Mol sites, we used consumption data, hence we estimate that there are little uncertainties. For the Genk Energyville site, we used consumption data multiplied by 0.6 as only 60% of this site is being used by VITO. For some smaller VITO offices where consumption data is unavailable or incomplete, the average heating per FTE from the Genk Energyville site was used as a reference. By multiplying the Genk figures respectively by the number of FTEs at each site, we estimate the total heating for those locations where heating is not available. Genk Energyville was selected as the most conservative representative site due to its inclusion of laboratories and other facilities.
1-2 Direct emissions from mobile sources with combustion engine	We have been actively transitioning our fleet, our company cars, to electric vehicles (EVs) where possible. Currently, more than 80% of our company fleet is electric. The rest of the fleet operates on either diesel or gasoline for which we retrieved consumption data.
1-4 Direct fugitive emissions	We use primary data on the cooling fluids used in our technical installations which make up the largest share of our cooling fluids use. We have limited insights into the cooling liquids used by selected lab equipment, therefore these are currently covered under Scope 3 using spend data. These should make up only a minor fraction, but we aim to improve transparency in this area moving forward. For now, these fluids are included under purchased Goods and Services in Scope 3.
Scope 2	For Scope 2 both the location-based as well as market-based method was calculated, in alignment with Scope 2 Guidance of the GHG protocol. Included in the total for Scope 2 is the market-based approach.
2-1 Indirect emissions from electricity consumption	Calculation approach: For sites in which no electricity data is available, the average consumption per FTE for Genk Energyville was used as a reference, similarly done as to Scope 1. Multiplied with the number of FTE for each site, we get an estimation of the total electricity consumption per site. For our satellite office in Berchem, we were able to apply actual consumption data for 2023, however due to missing data availability in 2024, we applied consumption data stated in its location's electricity invoice which aligns with the location's FTE increase. Biofuel emissions: In accordance with paragraph 6.12 of the GHG protocol Scope 2 guidance, relating to the treatment of biofuel emissions, we report the emissions of CH4 and N2O under scope 2. The CO2 portion of biofuel/biomass/biogas were reported separately as biogenic GHG emissions per category.
Scope 3	For Scope 3, we primarily relied on the available financial data inputs and worked with the level of granularity available. Moving forward, we aim to enhance data granularity by making the categories more detailed, starting with our largest GHG emission drivers.
3-1 Purchased goods and services	General: Almost all data in this category is based on financial inputs, including accounts related to VITO 'working costs' as well as 'investments'. Accounts for both working costs and investments which are not included is due to the fact that they are either already included (such as purchases related to Scope 1-2) or if they are not significant <1% impact. Generally, this GHG category entails many different underlying purchases, each linked with respective emission factor from databases, mainly our internal database: FIGARO which is linked to EXIOBASE. Water data: For sites in which no water consumption data is available, the average water per FTE for Genk Energyville was used as a reference. Multiplied with the number of FTE for each site, we get an estimation of the total water usage per site including tap- and rainwater.





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3-2 Capital goods	<p>General: This category is based on financial data such as above including: 'working costs' and 'investments', such as the construction costs associated to our EARTH building as well as e.g. laboratory machines and IT-equipment.</p> <p>Note: Construction costs are related to the construction of the new EARTH building and are hence considered non-recurring.</p>
3-3 Emissions related to fuels and energy	<p>General: This category includes emissions from e.g. the mining and extraction of fuels, energy loss during the transmission and distribution of electricity or heat purchased by the company (i.e., not directly part of Scope 2). Calculations are based the actual consumption data from Scope 1-2.</p>
3-5 Waste generated during production or distribution activities at the VITO sites	<p>General: The waste generated during production or distribution activities at VITO Mol sites come from internal waste register based on actual consumption data. Waste data includes a variety of different waste types such as: hazardous and non-hazardous waste.</p> <p>Missing data: For the other sites, waste data was not yet available or complete. Hence office waste for Mol site (PMC, Paper/ Cardboard, and household waste) was extrapolated to other sites.</p>
3-6 Business travels	<p>Data sources: Business travel data is derived from expenditure information in our annual travel report provided by our travel agency, along with financial data covering costs for hotel rooms and restaurant expenses not booked through the agency. Additionally, private car usage for work purposes is included, based on the kilometers driven per employee/car as well as taxi, train and transfer line data.</p>
3-7 Employee commuting between home and VITO sites and teleworking	<p>Data sources: For all these data points we worked with FTE data per location of offices and assumed that the employees of VITO follow the same commuting distribution as the Flemish average based on the Study of Belgian Government . Included are calculations for: private cars (excluding company cars), train, public transport, motorcycle, normal bike, foot.</p> <p>Teleworking: We also apply the assumption data for teleworking per site. Generally, we assume 197 working days in 2024 of which 40% was done from home (teleworking). The home office percentage stems from an internal VITO survey on homeworking and reflects a conservative calculation approach.</p>
3-15 Investments	<p>General: The GHG emissions of investments are estimated by multiplying the Scope 1 and 2 emissions per VITO FTE (based on the Mol site 1-3) by the total number of FTEs and share for each investment of VITO and CleanVision respectively.</p>

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