

VISION

VITO VISION / VOLUME 2022 / ISSUE MAY



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Flood4Cast helps policymakers anticipate imminent flooding

UNIQUE TEST LAB

A dynamic test environment for batteries and thermal systems

FASHION

The fashion economy urgently needs to become more sustainable, but how?

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Dear reader,

Since 24 February 2022, we have been plunged into a new reality with Russia's invasion of Ukraine: that of a full-scale war in Europe. In the process, our dependence on Russian oil and gas has become painfully evident.

We have known for a long time, however, that we urgently need to significantly reduce our dependence on fossil fuels, and not just Russian oil. It is, after all, with good reason that the European Commission, with its ambitious Green Deal programme, wants to make Europe the first climate-neutral continent by 2050. VITO is involved in the realisation of this programme from various and very different parts of its organisation and operations. It is, therefore, not surprising that the Green Deal features prominently in the articles in this VITO Vision.

The Green Deal is not only about achieving climate neutrality by reducing greenhouse gas emissions. The programme covers sustainability in the broadest sense, and this is also reflected in the Commission's recently launched action plan for the development of a circular fashion economy. This development, in which VITO is participating, requires a veritable tour de force. In this issue, you will discover that this ambition can only succeed if the changes in the textile sector take place throughout the entire value chains. The transition will be systemic, or it won't happen at all: that could be the credo of our experts on circular economy.

Sustainability is also compatible with human comfort, with inclusiveness and accessibility, and also with beauty. In the New European Bauhaus initiative, a personal initiative of Commission President Ursula von der Leyen, these aspects come together. And they are also reflected in the thorough renovation of the site of the Joint Research Centre - our neighbours - in Geel. The work is part of a pilot project within the new Bauhaus initiative, and the result will be a model of sustainable architecture and engineering. VITO/EnergyVille is responsible for the evaluation of the various sustainability aspects.

Finally, in this issue we also touch upon the ever-advancing digitalisation. Here too, a transition is taking place in the way personal data, such as digital health data are handled. Through the creation of the We Are eco-system, VITO is working on a radically new and different approach to the management of privacy-sensitive data. In this system, citizens have total control over their data at all times, and what they are used for. This must give us renewed confidence in data applications and empower us to actually benefit from them.

Together, we are evolving into a sustainable society.

Happy reading!

Dirk Fransaer
Managing Director of VITO

CLEAN VISION SUMMIT



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COLOPHON

PUBLISHER
Dirk Fransaer
Boeretang 200
2400 Mol

TEXT
sciencejournalist.be

LAY-OUT
Kaplus

PRINTING
Drukkerij Antilope De Bie

MORE INFO
vito@vito.be - www.vito.be

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In collaboration with these partners:



COVERSTORY

Flood4Cast helps policymakers anticipate imminent flooding

Hydroscan and VITO developed a tool that allows governments, at any level, to assess the flood risks on their territory. It can also be used to simulate the impact of potential policy decisions on flood sensitivities. What started with a question from the Antwerp fire brigade has grown into an efficient water modelling tool that has the potential of being applied worldwide.



Five years ago, the city of Antwerp asked whether it was possible to quickly predict, during heavy showers, in which neighbourhoods and streets flooding would be most severe. 'The question came from the Antwerp fire brigade,' says Jan Bronders of VITO. 'They were looking for a better forecasting method than the conventional method, which was based on the number of incoming emergency calls. Because that way, of course, they were always running behind the facts.'

It led to an initial project involving the city of Antwerp (the fire brigade), the research institute imec, VITO and the Leuven water modelling company Hydroscan. The basis was laid for a tool that can predict in real time where and when flooding might occur during sudden storms, and this down to individual street level. It was the beginning of a development process that would lead to the creation of the Flood4Cast tool, which, in addition to the real-time flood warning tool for individual streets, also includes an innovative concept of area-wide water modelling. This was developed and fine-tuned as part of a separate cooperation project between Hydroscan and VITO.

Specific model construction and quick results

'Thanks to the model's semi-automatic construction and Flood4Cast's fast calculation time, it is possible to build a new model and perform real-time calculations in a short period of time,' says Guido Vaes of Hydroscan. The model was also adapted to deal with the problem of missing or insufficient data. 'We thought of a way to build a model even in areas where data are scarce and/or expensive,' explains Koen Hilgersom of Hydroscan. 'If there are no data on sewers, for example, then our tool makes a design of this based on the street plan and other local features.'

Eventually, both tracks came together, resulting in a tool with a specific model structure and with faster calculation times and model results that approximate the output of detailed models (based on extensive surveying).

The development of Flood4Cast has been very ambitious from the start. 'We aimed for a tool that would be revolutionary and would outperform all existing tools,' says Vaes. 'For example, it had to be applicable to both urban and rural settings. Until a few years ago, these were two different worlds for water modellers.'

Many of Flood4Cast's advantages can be attributed to the semi-automatic model-building process, which takes no more than a few days. With conventional modelling software, this can easily take months or even years. And perhaps the most important USP is that the models can be updated easily and quickly, because the situation (e.g. additional buildings) is constantly changing.

In order to increase the calculation speed, the level of detail was somewhat reduced, achieving an optimal balance with the accuracy of the prediction results. Another advantage of the rapid model construction and ditto calculation times is that Flood4Cast is also very useful as a simulator. Vaes: 'Policy makers can thus study the impact of future potential scenarios and spatial planning decisions on flood sensitivities simply by simulating them.'

The development of Flood4Cast is thus the culmination of a collaboration between Hydroscan and VITO. Originally the tasks were divided in such a way that Hydroscan dealt with modelling in urbanised areas, and VITO with rural ones. 'Hydroscan has long been specialised in urban water management; we could add little to that,' says Bronders. Yet during the development, the division of tasks was not strictly followed. 'It was a joint effort from start to finish.'

When it comes to marketing the tool, in other words the

commercial part of the project, things are different. Here, clear, strategic agreements were made about who does what. It was agreed that VITO will market the tool in China and India, and Hydroscan in the rest of the world.

Offering the tool as a service

In China, this marketing is done by LIBOVITO, the Chinese subsidiary of VITO. A first demonstration of the tool was completed at the end of 2021. 'That took place in Zhengzhou (in the southern province of Fujian), in a part of the city with many urban developments,' says Michel Craninx of VITO. 'The challenge we had there was to build a model with low availability of input data, but also to make real-time predictions. We have now explored both in this first demo phase. We are now looking at how we can use Flood4Cast even better in the future in regions with low data availability.'

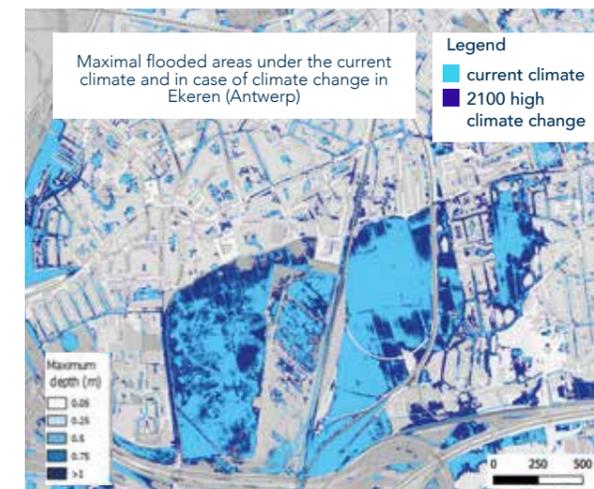
In Flanders, HydroScan offers the tool as a service under the name Flood4Cast Masterplanner. 'The model is created by us while our customers receive the flood maps with the results of planned climate adaptation and remediation measures,' says Vaes. 'Authorities, at any level, can already contact us for this. In addition, Hydroscan's Flood4Cast Real-time Alerter is a tool that supports authorities and emergency services by predicting imminent floods up to several hours in advance and down to street level. Interest is likely to be high, especially after the devastating floods in the summer of 2021. Recently, Hydroscan was asked by a Flemish city what would happen if the 'water bomb' that caused all that misery last year were to fall in Flanders. For a river near Aarschot we checked whether Flood4Cast would have predicted the same impact during the floods as actually occurred. 'We did this exercise using drone images from the Flanders Environment Agency (VMM) and precipitation data from that period. On the flood map, we saw almost the same flood impact.'

And this is how a specific request from the Antwerp fire brigade culminated in an efficient water modelling tool that has the potential to conquer Flanders and the rest of the world in the short term. 'We are currently completing the modelling with Flood4Cast for the whole of Flanders,' says Vaes, 'a huge undertaking given that more than a hundred



river basins are involved.' These modelling results will also be used by the VMM in its Climate Portal, in which climate scenarios for Flanders are calculated.

Although Hydroscan and VITO have slightly parted ways since Flood4Cast was launched, they still keep each other informed of developments. Bronders: 'We have a meeting at least every three months to share new knowledge and exchange our lessons learned.'



More info
jan.bronders@vito.be



More info
flood4cast@hydroscan.be
(Koen Hilgersom)



VITO reinforces role in monitoring Europe's environment and climate

In order to monitor the environment and climate in Europe, analyse the results and communicate new knowledge and insights, the European Environment Agency has a network of topic centres, each focusing on a specific aspect of European environment and climate policy. VITO is involved in four of these European Topic Centres (ETC), in two of them even as coordinating partner.

The European Environment Agency (EEA), based in Copenhagen, is tasked with monitoring the state of the environment and the climate in Europe and with reporting and communicating the results. The environment information that the EEA produces in the form of assessments and the new knowledge it gains from analysing the data collected are used by policy bodies, such as the European Commission, to prepare and implement new legislation or to adapt existing rules. The scope of the EEA's monitoring and reporting task is thus very broad, and is geographically even more extensive than the EU, as non-EU countries such as Norway, Turkey and Switzerland are also members.



Hans Bruyninckx, Executive Director of the EEA comments on the ETC's:

'The European Topic Centres are essential for the work of the EEA. Through the ETC partners we connect to the best available knowledge and environmental assessment capacities across the member states. This connection with knowledge institutions at the level of the member states is critical for the EEA, but also brings benefits for the partners that are involved. The exchange of knowledge, co-creating environmental assessments and the close connection to European policies is of high value to those involved. VITO is one of our key ETC partners, being in the lead of two topic centres with further involvement in two more. The experience and commitment built up over years is much appreciated by the EEA, and illustrates the strength of VITO at the European level. I have to admit that as a Belgian-Flemish director of the EEA, it also makes me proud to see such prominent role for VITO.'

Form of outsourcing

In addition to its own employees, the EEA also relies on its partners within Eionet, a pan-European network for environmental information and observation. An important part of this network are the so-called European Topic Centres, or ETCs, which are organised around specific themes, such as climate adaptation and mitigation, circular economy and human health & environment.

The ETCs, funded by the EEA, can be seen as extensions of the central agency in Copenhagen. Within Eionet, they are part of a very deliberate strategy to gather information and knowledge very close to the source - at Member State and regional level,' says Evelien Dils of VITO. 'You could call it a form of outsourcing, whereby the ETCs work with environmental and climate data provided by relevant national governments.'

VITO has been very active in the ETC operations for many years. And this will remain so. Since early 2022 and at least until 2026, VITO has been, and will be, part of four of the current eight ETCs. In two of them, it is even the lead (coordinating) partner. Thus, VITO remains very closely involved in monitoring, and reporting on, the environment and climate in Europe.

The information and knowledge generated in the ETC network do not flow in one direction to Copenhagen. Nor is there any strict top-down management from the EEA. Rather, within the framework of Eionet, there is an interaction between the EEA, the ETCs and European countries. 'There are also plenty of useful things that we gain from the EEA,' explains Dils. 'Countries can, for example, use the network to obtain useful information about specific policy measures that other countries are already applying.'

The ETCs are linked to the EEA via a framework contract and can consist of knowledge organisations such as VITO, but also of other bodies such as public authorities. Dils: 'A wide diversity is an asset, because it enhances the cooperation.' A broad European spread is also a bonus. 'Although, of course, the in-house expertise is the deciding factor.'

Shifting priorities

Since 2014, Dils has been VITO's representative in successive ETCs on waste management and sustainable materials management. In early 2022, these topic centres evolved into an ETC on circular economy (ETC CE), in which VITO also is the coordinating partner. In the coming five years, this ETC will support the EEA in further developing the knowledge base for an accelerated transition to a circular economy in Europe. The work programme includes monitoring and mapping existing circular policy measures, research into the introduction of an effective waste policy, and gathering expertise on material and raw material flows and their environmental impact.

Although the ETC CE has only just started to use 'circular' in its name, its content is very much in line with previous ETCs.



© Sigitā Lapina, Picture 2020/EEA

'The evolution reflects (political) developments and shows how priorities are shifting within Europe,' says Dils. 'In 2014, for example, circular economy was not yet a commonly used term. The European Commission's first action plan on circular economy only dates from 2015, but now circularity is one of the important pillars of the European Green Deal.'

How does an ETC work in practice? 'Each topic centre has an annual plan that lists an extensive range of tasks,' says Jos Bessems of VITO. 'For each task, a person is appointed within the consortium (the collective of partners that makes up the ETC) who also gives feedback to a project leader of the EEA itself.' Bessems is involved in the ETC HE, in which, among other things, the impact of environmental pollution on human health is reported. Within this ETC, data will be collected in the coming years in order to arrive at objective indicators for all kinds of pollution: from soil contamination and noise pollution by traffic to industrial emissions. 'We want to develop indicators that offer an insight into possible health damage and disease burden, such as annual death tolls from cancer or new asthma patients. 'Another important aspect is that we can visualise the indicators, which contributes to the EEA's communication assignment.'

The two other ETCs in which VITO is involved are the ETC CM (on climate mitigation) and the ETC CA (on climate adaptation and land use). VITO is also the coordinating partner in the ETC CM. 'We monitor the progress Europe is making in achieving its climate, energy and transport goals,' says Tom Dauwe, VITO's representative in this ETC. 'In this way, we generate important insights and knowledge to accelerate the transition to a climate-neutral society.' Also in this ETC, the priorities have shifted in recent years. 'We now focus more on topics such as sustainable energy sources and energy efficiency than before. And the sustainability of passenger traffic and goods transport is also receiving extra attention today.'

Three VITO themes come together in the ETC CA. Experts of VITO Environmental Modelling, specialised in land use and climate impact, work on the development of specific assessment tools for climate change effects, within the

framework of a platform on climate adaptation of the EEA (which was named Climate-Adapt). Within that platform, experts of VITO Health focus on the health aspects of climate change. Finally, VITO Remote Sensing contributes to linking information about climate and land use (in the form of satellite images) with the carbon accounting of ecosystems. And yes, here too, the focus has changed in recent years, or rather, it has broadened. 'Different domains, such as climate adaptation, remote sensing and health, now come together in this ETC,' says Filip Lefebvre of VITO. 'We work in an interdisciplinary and cross-unit manner, and that is very enriching in itself.'

For the VITO experts, involvement in the ETC network also pays off in their other activities. Lefebvre: 'At VITO we often work on regional and national projects. It is then, of course, very useful if you know the overarching European framework in detail and can keep up to date with current developments.' The EEA is after all the most important European environmental and climate body. Dils: 'The agency does not determine policy, this is however strongly influenced by the knowledge and insights it produces. Thanks to our strong presence in the ETC network, we can follow everything that is happening in Europe related to the environment and climate from the front row.'



More info
evelien.dils@vito.be
www.eionet.europa.eu/etcs

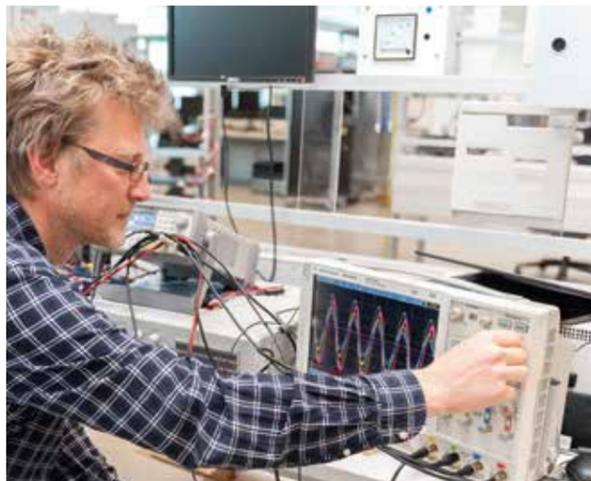
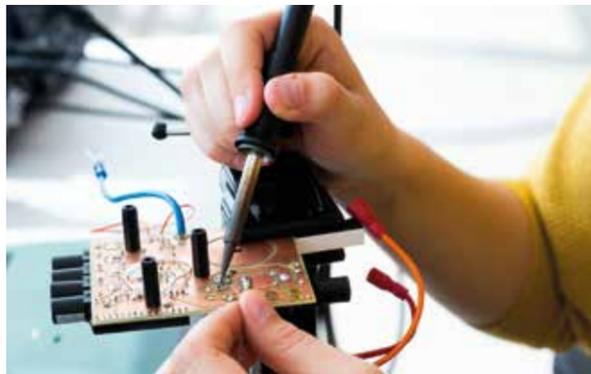


More info
tom.dauwe@vito.be

A unique and dynamic test environment for batteries and thermal systems

Developers of products or systems powered by batteries, or of equipment for heating and cooling, for example, can turn to VITO/EnergyVille for a wide range of tests that meet all their possible questions and needs. What is unique about both the battery test and the thermal engineering lab is that they both create very dynamic environments that are closely linked to real world scenarios. This sets them apart from standard laboratories.

The commissioning of the new EnergyVille 1 research building in 2016 also marked the start of the relocation of two labs from the VITO site in Mol to that of EnergyVille in Genk. The move was also accompanied by a substantial expansion of the lab facilities, and as a result that operation has only recently been fully completed. 'Our battery test lab, for example, has doubled in size,' says Ann Wouters of VITO/EnergyVille. 'We have also added many new test instruments, such as a new battery tester, a larger temperature chamber and an ARC (accelerated rate calorimeter) device that is unique in our country.' The ARC device tests, among other things, the thermal behaviour of battery cells and modules, as well as their resistance to fire and explosions.



Larger and more capacity

The thermotechnical laboratory has changed beyond recognition in comparison with the former facility in Mol. 'There, we had a lab that was much smaller and mainly focused on in-house research,' says Nico Robeyn of VITO/EnergyVille. 'Whereas we only had one HVAC connection at the time, we now have 25 in parallel. So, depending on the size of the equipment to be tested, we can now in principle carry out 25 different tests simultaneously.' In the thermotechnical laboratory, heating and cooling equipment is tested, among other things, where temperatures can be reached between 5 and 90 degrees (without the use of thermal oil) and even up to 300 degrees with the use of thermal oil. 'This gives us a total lab capacity of 2 megawatts.'

The VITO/EnergyVille battery testing laboratory is usually very busy. In addition to its own researchers, the lab is also available to external companies and other research organisations. For example, companies developing products or systems powered by batteries can use it for performance, service life and safety tests. 'What we often do, for example, are ageing tests on newly developed battery types,' says Filip Leemans of VITO/EnergyVille. 'This is done, for example, in a temperature chamber where the influence of very different and fluctuating weather conditions on battery performance is examined.' In order to test these conditions even more thoroughly, VITO/EnergyVille had a more extensive temperature chamber installed in 2020 (larger in size but also in temperature range). The chamber is, for example, large enough to test complete car batteries.

No standard lab

Simulating as closely as possible the environments to which batteries and devices can be exposed in real world conditions is one of the major USPs of VITO/EnergyVille's lab facilities. Wouters: 'It sets us apart from many other labs where it is often more about accreditation than testing in which we simulate the real world conditions as closely as possible. We study various heat and cold profiles, day and night effects, seasonal variations, you name it - and all this in an accelerated test rhythm. We are thus definitely not a standard laboratory where work is carried out in a static environment according to set standards and fixed specification limits.' The customers of VITO/EnergyVille can only benefit from this. 'Thanks to our highly dynamic working methods, in which we deliberately introduce variations into the test environment, our customers learn how their products and systems really perform.'

Customers are also closely assisted by the various expert teams of VITO/EnergyVille. 'Larger companies or organisations with their own R&D department usually bring their own test protocols, and for smaller companies, we often help them draw these up,' says Robeyn. 'And we also give proactive advice, for example in the form of possible



improvements to prototypes after we have tested them.' In recent years, both SMEs and larger companies have called on the two test labs. 'In the past, we mainly reached SMEs, but for a few years now, even larger companies have been approaching us on a regular basis (see box). They clearly appreciate our state-of-the-art technology, our dynamic test environment and also the advice of our researchers.'

That advice is not limited to just dry test results. 'We also give our customers our interpretation of the results,' says Wouters. Sometimes, we even intervene proactively before a test starts. 'From time to time, research questions are not clearly defined or we establish that the requested objective is not achievable when a prototype is delivered. In those cases, too, we provide timely feedback. In addition, customers can also call on the non-technical expertise of VITO/EnergyVille, such as that in economic modelling. 'Our strength is that we can bring together many different techniques and approaches.'

Currently, the two test labs are also being integrated into the oPEN Thor Living Lab, a test zone on and around the Genk Thor site where innovative energy solutions will be developed, tested and validated in the coming years, and this in close interaction with the entire energy system. In both labs, new technologies will be extensively tested before being linked to the other systems within the living lab.



More info
ann.wouters@energyville.be



Multinationals call on test labs

One of the multinationals that has already had its innovative technology tested at VITO/EnergyVille is Atlas Copco, which makes compressors, generators and (vacuum) pump systems. 'For the further development of our ORCs (organic rankine cycles, thermodynamic processes which are used in turbines, among other things), we called on VITO/EnergyVille to test our prototypes extensively,' says Christophe Gregoir, engineering team leader at Atlas Copco. 'The thermotechnical lab, where different heat and cold flows can be regulated, has helped us further develop our products.'

According to Gregoir, working with VITO/EnergyVille was a pleasure, partly because both organisations feel strongly about sustainability. 'Cooperation went smoothly, and special thanks go to the people in the lab, who were always quick and flexible in helping us, and respected the confidentiality of our projects. As such, we were able to take an important step in the development of sustainable products for our customers.'

By improving their ORCs, Atlas Copco aims, among other things, to increase the energy efficiency of its compressors. By doing so, the company wants to help its customers develop sustainable productivity.

In May 2018, global manufacturing company Jabil contacted VITO/EnergyVille to collaborate on a project for Philips related to the testing of battery modules. 'After an interactive scoping phase with VITO/EnergyVille's battery experts, we have engaged in a project in September 2018. About a year later, the test protocol for all the devices was finalized, and, in October 2019, the final results were presented to both Jabil and Philips within the confidentiality conditions of that collaboration.'

Our motivation to work with VITO/EnergyVille came from the professional approach. The battery experts pay attention to proactive problem solving and are also suggesting further product improvements. Adding VITO/EnergyVille's quality flow, their safety procedures in the lab, and the yearly calibration of the testing equipment, that all, made the difference, especially when you look for a long term partnership. To conclude, Philips and we were very satisfied of the collaboration with VITO/EnergyVille on the project and we recommend to anybody looking for battery testing to engage with VITO/EnergyVille and their battery lab team.'

Vital Driesen (Business Development Manager, Jabil)

JRC Citizens Forum pilot project in 'Bauhaus 2.0'

The renovation of the conference building on the JRC Geel site offers a unique opportunity to put the New European Bauhaus Initiative into practice. It is also an opportunity to ensure that the European Green Deal results in a real construction project that is sustainable, attractive and inclusive, both intrinsically and in the way it is realised. VITO has been a neighbour of the JRC Geel for many years, and is closely involved in assessing the sustainability of the entire project via Level(s), a new European framework for examining the sustainability of buildings.

The site of the Joint Research Centre (JRC) is right next to the VITO BIO site on the edge of Mol and Geel. The JRC is a European research centre and dates back to the early years of the European unification, and so are their buildings. 'Our buildings date from the 1960s and 1970s,' says Marc Wellens, Head of Support Services at the JRC Geel. 'In terms of usability and comfort, the buildings are still quite reasonable, as they were designed and furnished in a modern and tasteful way at the time. In terms of sustainability, however, aspects such as insulation and energy consumption are falling behind.'

The renovating process of the JRC site has already started a decade ago, to bring it up to 21-st century standards. The plans include a complete renovation of the basic infrastructure, offices and laboratories as well as the renovation of a conference building to create a multifunctional building with meeting and relaxation facilities for staff. This will also include a brand new visitor centre where visitors will be able to get to know more about the JRC and the Commission via a 'citizens' forum'.

New European Bauhaus Initiative

Sustainability goals have changed considerably over the past decade, and this has also an impact on the initial plans for the refurbishment and renovation of the JRC site. The goals have now become more specific and more ambitious, which is logical considering the Green Deal was revealed in

late 2019. The aim of this European Commission programme is to make Europe the first climate-neutral economy and society by 2050. Within the path of this European Green Deal, President Ursula von der Leyen personally inaugurated another initiative. With a genuine New European Bauhaus Initiative, the Commission hopes to fully engage with design and architecture that are not just sustainable, but also inspiring and attractive. The New European Bauhaus Initiative is built on three pillars: attractiveness (including look & feel), accessibility (inclusivity), and sustainability. That suited us perfectly, so we decided to position this renovation project as an internal New European Bauhaus Pilot Project. And it has been successfully accepted as such,' says Lia Bektasiadou, Project Leader at JRC.

The project, which will be called the JRC Citizens Forum, will therefore be an example of state-of-the-art sustainability, both in terms of the final result (completion is planned by 2025), and the design and construction phase (construction will start in the spring of 2023). To embed this sustainability from the start, and to closely monitor, assess and report on it, Level(s) will be used. This is a European framework for improving the sustainability of a building or a group of buildings right from the design phase, and to evaluate it over the entire life cycle. This is being done on the basis of six 'macro objectives' that are also firmly embedded in the Green Deal: the minimisation of greenhouse gas emissions, the circular use of primary materials and reuse of components, sustainable water consumption, a healthy and comfortable working environment and surroundings, and adaptations that take into account climate change. The Level(s) framework for sustainable buildings was developed by the Commission. It is being promoted within the New European Bauhaus Initiative as an instrument to assess the sustainability of projects. In this JRC Geel renovation project, VITO/EnergyVille will collaborate with the JRC and the architects in the implementation of the sustainability framework, during both the entire design and construction phase, and the use phase. This will be carried out by the VITO/EnergyVille team, which specialises in assessing sustainability in the built environment.



Communication of final assessment

As the name implies, the sustainability framework holds three levels.

The **first level** concerns the pre-design process, where qualitative assessments are conducted at an early stage. This first phase provides a simple structure so that attention to sustainability aspects can be prioritised. The process for this project ended in early 2022. Many decisions that have a major impact on sustainability are made during the design phase, so it is only logical to take this into account from the start. 'One example of such a decision is our choice to use materials for some building elements that extract CO₂ from the air during production,' explains Marc Wellens. 'This technology is still in its infancy, but we want to use it to show that we can play a pioneering role in this respect.'

'In the first level, the sustainability objectives are formulated and the realisation roadmap is established,' says Michiel Ritzen of VITO/EnergyVille. 'The concrete elaboration takes place in **level two**, with the help of more detailed and quantitative assessments of different building designs. This level 2 phase, which started in the spring of 2022, allows the sustainability of different design options to be compared.'

In the **third and last level**, everything that has been realised and the manner in which it has been done (the building) is being analysed.' This is the monitoring phase, which can only start after completing the construction phase. Do the results match what was predicted beforehand? Are the materials as sustainable as we thought? We then try to answer these kinds of questions.' The intention is that this final assessment will also be communicated and visualised in the visitor centre when it is ready. 'Visitors will get an idea about what a sustainable building actually entails, in every aspect,' says Bektasiadou.

Level(s) is both process-orientated and result-orientated. The six objectives around which the tool is built can be measured unambiguously with concrete indicators. Ritzen: 'This is necessary for reliable, thorough monitoring and assessments.' The indicators may soon be used by the European Commission to set target values for parameters

such as net greenhouse gas emissions for buildings. 'These can then be used to benchmark the built environment.'

The renovation of its conference building into a multifunctional building is an ambitious project for the JRC. It is also the first time that the Level(s) tool has been used on this scale. The impact is already noticeable. 'Previously, things like life cycle assessments in the context of a sustainability assessment were only conducted relatively late in the design and construction phase. Now that we are using Level(s), this happens much earlier, so Level(s) also has much more of a guiding role,' says Ritzen.



More info
michiel.ritzen@energyville.be



More info
marc.wellens@ec.europa.eu
evangelia.bektasiadou@ec.europa.eu



The fashion economy urgently needs to become more sustainable, but how?

Barely 1 % of all worn clothing in Europe is recycled to a high standard. The rest is largely incinerated along with household waste. The logical answer to how to do things differently seems to be to improve the collection, sorting and recycling process. But it is not that simple, as the experts on circular economy at VITO know. 'A real transition to a circular fashion economy can only be achieved if the change is systemic and occurs right across the value chains.'

The environmental and climate impact of our textile and clothing consumption is enormous. The production and transport of all textiles sold in Europe annually requires per European more than a tonne of primary raw materials (such as materials for fibres), as much as 100,000 litres of water and hundreds of square metres of agricultural land. Moreover, most of these garments and textiles remain in circulation for a very short time. It is a highly disposable economy, and in today's world where sustainability and the transition to a greener world are not an option but a must, this can no longer be tolerated.

But how do you change the textile sector? How do you transform it from a linear into a circular model? 'Countless initiatives have been taken to market so-called sustainable textiles,' says Evelien Dils of VITO. 'But these have actually had very little effect. Not infrequently, they were simply greenwashing fast fashion (clothes that are worn for only a very short time and then quickly discarded).' Another thing that such initiatives often lack, even if they're sometimes well-intentioned, is a broad scope. 'The textile sector is an immense and complex system that is also very globally organised. You therefore also have to ask yourself what Europe can do to bring about changes outside our continent. And then there are the many trade-offs. Take for example the introduction of new materials (such as apple leather). That is not necessarily beneficial. It just depends on how the textile industry picks up on some innovations and how they bring these to the consumer.'

Selective collection is underway

Nevertheless, something has to happen urgently, a view also shared by Europe. In 2020, the European Commission presented its Circular Economy Action Plan (as part of the Green Deal) in which textiles were defined as one of the most important product groups. At the end of March 2022, it subsequently launched an ambitious strategy for the development of a circular fashion economy. One of the most important elements in this plan is that targets will be set in the near future for the recycling and reuse of collected textiles. By 2025, every Member State will have to organise a system for the selective collection of discarded textiles - just as we do for plastic waste, for example, with the familiar PMD bags. 'That will be a massive shift,' says Tom Duhoux of VITO. 'But this measure alone is not enough. When that pile of textile waste is there, we will, of course, need to

know exactly what to do with it. And we must be ready by then, both technologically and organisationally.

For both VITO experts in the circular economy, the European textile strategy held few secrets. And that is not surprising, because Europe has already called on VITO many times to find out how the European textile industry can evolve towards more circularity and sustainability. The most recent study dates from February 2022. In a research report commissioned by the European Environment Agency, the answer was that the textile industry should focus on circular design with a view to extending lifetimes, using secondary materials and improving the collection of discarded textiles and high-quality reuse and recycling.

When asked how the textile sector can be made more sustainable, the logical answer is often: recycling. However, this alone is not enough, even if it were possible to extensively recycle different textiles and designs, which is certainly not the case today. Duhoux: 'Low-grade recycling (downcycling) is not an option, because that does not square with circularity. In addition to reducing our consumption, we must move towards recycling 2.0, in which the recycling process is attuned to the quality demanded by the textile industry.'

Six representative types of clothing

Such fine-tuning requires cooperation, which brings us to the SCIRT project coordinated by VITO, a European initiative launched in 2021 that (to put it in a nutshell) investigates the transition to textile-to-textile recycling. Although that is far too narrow a description. 'SCIRT brings many aspects together,' says Dils. 'There is a technological component in which we do research into improved recycling, for example of complex fibre mixtures. But the project also focuses on, for example, the sorting of textile waste, in which we study how we can better tailor it to the needs of a recycling company.'

And then, of course, there are the textile companies and the fashion designers, because changes will be needed there too. That is why five international clothing brands, each of which sells different types of clothing to different target audiences, are involved in the project. Specifically, these brands are Decathlon (swimwear), Petit Bateau (children's bodysuit), Bel & Bo (casual dress), HNST (jeans and jumper) and Xandres (formal wear). In cooperation with technical partners and research institutes such as VITO, these brands will develop six different representative clothing types based on recycled textile fibres.

Finally, the consumer is also involved in SCIRT. 'We will also set up a true cost model in which we quantify all third-party costs that are currently not included in the selling price of clothing (such as environmental costs or social costs of plastic waste),' says Duhoux. 'Then we can calculate the true cost price of a garment.' The true cost model can serve



as a lever to adjust the consumer's perspective, but also to convince policymakers that, for example, manufacturers who work sustainably deserve support in the form of a level playing field.

Another feature of SCIRT is its systemic aspect. 'A real transition to a circular fashion economy will only happen if the change is systemic and takes place throughout the entire value chains,' says Duhoux. 'And that will only be possible if all parties involved, from collectors over sorters and recyclers to spinners and designers, have a common interest and goal to focus on.' At the same time, the project, which runs until 2024, is also pragmatic. Dils: 'We do not seek to create the ideal system, because then you actually have to start from scratch and that is totally unrealistic. We are looking at how we can push the current system in the direction of a circular fashion economy through targeted and well-considered innovations, interventions and collaborations. That is how we are trying to set the transition in motion.'



More info
evelien.dils@vito.be
scirt.eu



SCIRT: an ideal experimental platform

One of the fashion companies involved in the SCIRT project is the Belgian Xandres. The brand has been committed to sustainability for some time now, focusing on six pillars: materials, design, production chain, packaging, logistics and also the customer (by offering a repair and maintenance programme, for example). Moreover, within its 'Xandres Lab', the brand consciously seeks out experiments and innovation around the circular economy. 'For us, this project is the ideal experimentation platform to see if we can succeed in bringing a product that is completely recycled through textile-to-textile to the market,' says Jasmien Wynants, sustainability coordinator at Xandres. 'We start from existing trousers with a complex fibre composition (a mix of wool, polyester and lycra) and together with VITO and the other research and scientific partners, we look at whether we can produce these trousers in a post-consumer recycled version, at the same quality and price.'

For Xandres, the exercise is very interesting at product level, no least to find out to what extent it is scalable and how this fits in with the business model. 'How realistic is a take-back system? What costs are involved? What is the true cost of an ordinary pair of trousers versus that of SCIRT trousers, and what happens to the price, for example, if you also take the social and ecological costs into account, and who pays for those? These are the kinds of questions we want to try to answer in this project.'

[xandres.com](https://www.xandres.com)

Innovative membrane technology to filter endocrine disruptors from wastewater

So-called endocrine-disrupting chemicals (EDCs) are chemicals that, above certain exposure thresholds, can disrupt endocrine systems. This entails health risks. In Flemish waterways and rivers, the concentrations of EDCs are too high to simply exclude an effect. Together with Inopsys, a developer of innovative methods and mobile, on-site water purification installations, VITO is already looking at how the substances can be filtered out of wastewater using innovative membrane techniques. So that a solution will be available when environmental legislation is strengthened.

Through our living environment, we are continuously exposed to a wide range of chemicals. As long as this exposure remains below certain threshold values, there is no problem for our health. That is why many chemicals are subject to strict regulation. But this does not apply to all chemicals that can potentially cause health problems. Endocrine disruptors, or EDCs, have long been considered with suspicion by scientists. These chemicals, which are present in many products (for example, in detergents, such as bisphenol A), can interfere with human hormone systems.



This can increase the risk of hormone-related diseases and disorders. Diabetes, reduced fertility and certain cancers (including prostate cancer) are just a few examples. However, the actual and concrete health risk for many EDCs is still not well known. This explains why many of these substances are currently under-regulated and are, as such, still allowed to be used in industrial production processes. And why they are found in watercourses, rivers and also in groundwater in concentrations that are not negligible - they end up in surface water through domestic and industrial wastewater.

Conventional water treatment is not enough

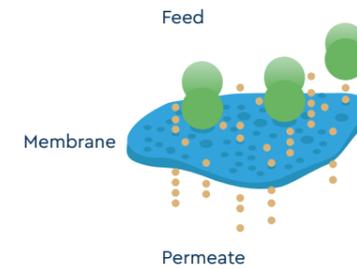
In Flemish rivers and waterways, EDC concentrations flirt with the threshold values that scientists have proposed as acceptable maximum concentrations (in scientific jargon: predicted no-effect concentrations). Of course, the situation differs from region to region and from river to river. For example, concentrations will be higher in densely populated areas and highly industrialised regions than elsewhere.

The problem is that EDCs escape conventional water purification. And VITO wants to do something about this, in cooperation with the Mechelen-based company Inopsys. Inopsys researches, designs and develops mobile and modular on-site water purification systems, for the chemical and pharmaceutical industries. Within the last project SuMEMS, which was supported by Catalisti (the Flemish spearhead cluster for the chemical and plastics industry), Inopsys already investigated how its technology can help with the on-site purification of complex organic, solvent-rich waste water flows. 'The processing of such waste flows in the pharmaceutical and fine chemicals industry is currently still very unsustainable,' says Dirk Leysen of Inopsys. As part of this project, Inopsys installed a pilot system based on membrane technology at a pharmaceutical company to purify and process the waste water on the spot so no more trucks need to drive back and forth.

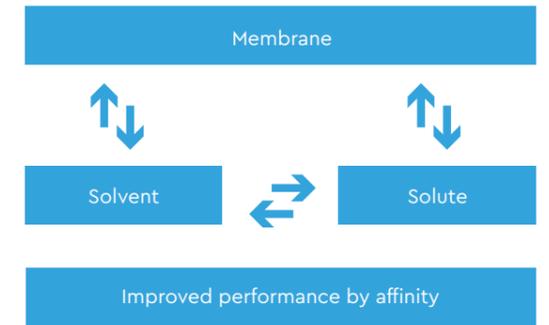
In the future, Inopsys hopes to work with VITO on a similar demonstration of an industrial, on-site purification plant specifically for EDCs. The groundwork for this has already been laid in the Ecoremedi project, which began in June 2020 and is due to end soon - Ecoremedi stands for Eco-Friendly Removal of Endocrine Disruptors. 'In this project, we investigated how we, with the innovative membrane technology and expertise of VITO and Inopsys, could develop solutions to remove EDCs from wastewater,' says Sara Salvador Cob of VITO. The project not only focused on EDCs, but also on so-called pro-EDCs. 'These are substances that are not harmful to health in themselves, but which can break down into EDCs.'

Within Ecoremedi, the work was mainly at laboratory level. 'It was all about knowledge creation and research data

Expanding the potential of membrane filtration



More than size



collection, where, for example, we did tests on different complex aqueous mixtures and solutions,' Salvador Cob continues. An innovative way to remove EDCs is to bring them into contact with certain natural molecules, selected by Inopsys. The advantage is that these molecules can indeed be contained by membranes. 'Via pressure-driven membrane filtration, such as nanofiltration and reverse osmosis, we can purify a waste stream by separating these larger molecules containing the EDCs.' The researchers from VITO and Inopsys have already found two membrane types that are very suitable for this purpose.

Effective solution in sight

The membrane technology appears to work and to have a sufficiently large purification capacity. Follow-up research must examine how fast the process runs, how much membrane surface is required and how the membranes must be maintained. This research could then lead to a pilot-scale demonstration. And this will probably also involve the VITO spin-off that was founded at the end of 2021. After all, A-membranes produces ceramic membranes that could be suitable for membrane extraction of EDCs.

Meanwhile, membrane extraction as a technology in itself is also further investigated within EASiCHEM, an SBO project that is again being supported by Catalisti and in which, among others, separation processes via membranes are studied and optimised. This project, in which both VITO and Inopsys are involved, runs until 2023.

In their search for a purification technology for EDCs, VITO and Inopsys are doing very proactive research. Leysen: 'There's a good chance that the environmental legislation on EDCs will soon be strengthened, and so it's best to have an effective solution.'

VITO and Inopsys have been working together for many years, sharing a long and rich experience in the field of membrane technology. 'Our expertise and activities are very complementary,' says Leysen. 'Membranes are a fantastic technology, but there is a lot involved in optimally integrating them into a separation process. For example,

a pre-treatment is needed and after separation, all kinds of 'leftovers' need to be cleared. We are specialists in these matters.'

Whereas until recently, cooperation between VITO and Inopsys was rather project based, it is now confirmed in a long-term cooperation agreement. 'This consolidates our good cooperation so far and guarantees it in the long term,' says Roel Vleeschouwers of VITO. The agreement includes concrete agreements on the allocation of intellectual property. 'VITO and Inopsys have known each other for a long time,' says Leysen. 'There is mutual trust and VITO will continue to be our preferred partner in the future.'



More info
roel.vleeschouwers@vito.be

Privacy by design: VITO returns management and control of health data to the citizen



With the We Are ecosystem, VITO is helping to develop a radically new and different way of dealing with personal (health) data of citizens. This is done by means of an innovative technological component but also by the development of new applications, such as the online prevention platform BIBOPP. It is intended to give citizens confidence in how their privacy-sensitive data are used - and above all: by whom and why - and thus to 'empower' them in terms of their data and personal health.

The data revolution that has unfolded over the past two decades is unprecedented. Our daily lives are increasingly taking place in a digital, online context. In recent years in particular, there has been growing concern about what happens to our personal data and who has access to it. This certainly also applies to data about our health that are generated, among other things, by the multitude of health apps on our smartphone (such as the pedometer) and activity trackers (such as a smartwatch). The handling of these data is very sensitive: when it comes to health data, we do not easily allow compromises.

We Are: data management by and for the citizen

VITO is working hard on a radically different, new approach to the management of privacy-sensitive (health) data. Central to this is the trust citizens have in this approach, and thus in the way their data - from pedometers to the risk of chronic diseases - is used. This is only possible if the data are protected with the best strategies and technologies and if citizens have total control over their personal data. Based on this philosophy, a new and ambitious 'ecosystem' was recently launched for the science-backed, sustainable use of personal health data. This We Are system is being built from the combined expertise of a collaboration between the Domus Medica GP association, Zorgnet Icuuro, the King Baudouin Foundation, the Flemish Patients Platform and, finally, VITO. The We Are initiative also aims to make data, technological building blocks and knowledge in the field of preventive and curative healthcare more scientifically, economically and socially accessible, and to do so in a safe, ethical and transparent way.

In the first two years of the We Are project, the technological backbone of the ecosystem is being built. VITO is closely involved in this. 'This is done on the basis of the Solid technology, which gives users of an online application access to an individual safe in which their data (both medical and non-medical data) from various applications are stored,' says Elfi Goesaert of VITO. 'The user remains the owner of their data at all times and they decide who can gain access to the safe, and to which data.' The core principle of Solid is to keep data and applications (apps)

separate. And therein lies the radically innovative element of this approach, because that principle is diametrically opposed to the current situation in which companies active on the web can easily - and sometimes without us knowing - collect our personal data, and in which it is often unclear for what purposes this is done or with whom the data are shared.

The basic idea of Solid sprung from the mind of Tim Berners-Lee, the inventor of the World Wide Web. But this innovative data technology is also being further researched and developed in Flanders, for example in the Flemish Artificial Intelligence Research Programme, of which We Are is a first application. This technology development is taking place in close cooperation with imec.

Expectations of the We Are system are high. Goesaert: 'It will really and noticeably change the way we manage our personal data - starting with our health data.'

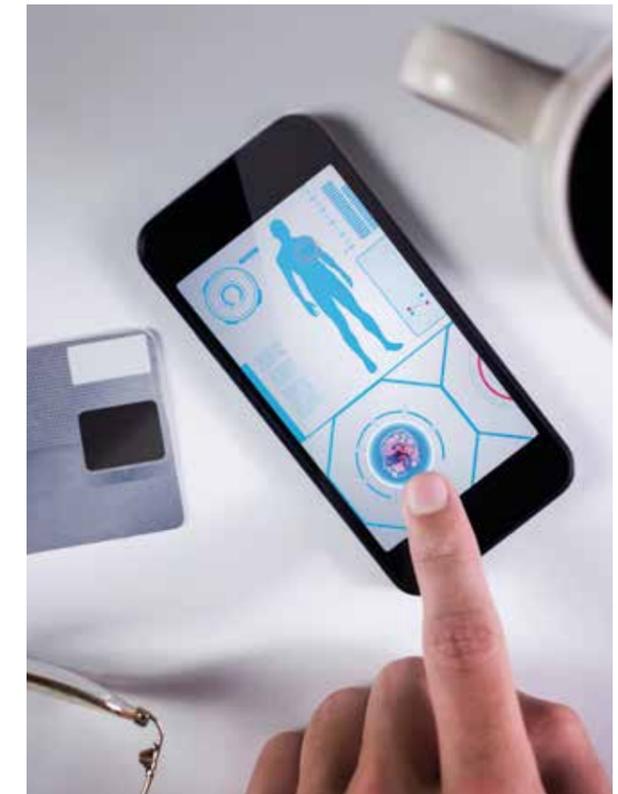
We Are should not only lead to responsible (health) data management. Within the ecosystem, new applications can also emerge that are of real use to citizens - and that make use of the data in the personal safes. That is why a number of use cases will be developed in the coming years within the context of various initiatives, of which the SAVE DATA project is one. In this project, health data can be used, for example, in the development of new health applications, in order to improve care and care policy (among other things, by making it more personal).

SAVE DATA is an example of a COOCK project, in which the Flemish government, via VLAIO, wants to stimulate the application of recently developed knowledge and prototypes. In concrete terms, use cases will be developed in order to disseminate knowledge from the We Are ecosystem to a broad group of stakeholders and innovators.

BIBOPP: an evidence-based online prevention platform

A first example of a personal health application is BIBOPP, a platform with digital tools intended for citizens to improve their health in a preventive manner. The online platform, whose name stands for Burgers in Beweging met een Online PreventiePlatform (Citizens in Motion with an Online Prevention Platform), is the result of a physical questionnaire drawn up by general practitioners to offer advice to their patients. By digitising this questionnaire, people can now use it themselves.

'The intention of BIBOPP is to give people more control over their health,' says Nathalie Lambrechts of VITO. 'By reusing the data from the questionnaire, users can draw up a personal action plan in BIBOPP to improve their general health. And the local dimension is very important here:



this plan will refer to locally-organised activities and care providers, such as group sports sessions, cooking classes for healthier eating, but also specialised assistance, such as exercise coaches, dieticians and stop smoking coaches.'

Within BIBOPP, users can even share their results with their GPs. In the first phase, the platform was rolled out as a pilot project in the Kempen region of Mol and Turnhout. 'But soon we want to roll it out elsewhere, and ultimately across the whole of Flanders,' says Lambrechts.

During the corona pandemic, citizens were already able to use the BIBOPP platform to estimate their risk of being infected by the corona virus and of developing a serious illness. This was done on the basis of personal data such as information about lifestyle, chronic conditions, age and weight, but also vaccination status and behaviour.

'The re-use of personal data in services that provide tailor-made advice contributes strongly to the empowerment of users,' says Lambrechts. 'And so we apply the ideas of We Are in a very specific way, creating an ecosystem for prevention through smart health applications in this case. In this system, people can easily find qualitative (evidence-based) tools. And that is a big difference to today's fragmented landscape, where the scientific foundation and also the intentions behind health apps and services are sometimes not clear.'

BIBOPP is the result of a collaboration between VITO, Zorgproeftuin LiCalab (Thomas More) and Domus Medica. The initiative was realised with the support of VLAIO, the Province of Antwerp and EmpowerCare (Interreg 2 Seas).



More info
nathalie.lambrechts@vito.be
we-are-health.be
bibopp.be



More info
elfi.goesaert@vito.be

From CO₂ to crops and habitats: global land cover map matches climate and biodiversity accounts

At the end of 2021, the WorldCover project of the European space agency ESA announced a scoop. For the first time, there was a detailed land cover map that spanned the entire surface of the earth. Equally important is the speed with which the map - which shows the land cover during the year 2020 - was developed. As a result, changes in land cover can now be spotted in near real time. And this enhances the monitoring of the impact of those changes on climate, biodiversity or food security.



In the historic Paris climate agreement, which dates back to 2015, it was agreed that countries would keep meticulous records of their efforts and progress in the fight against climate change. These so-called nationally determined contributions (NDCs) include national reductions in greenhouse gas emissions and adjustments to the impact of climate change. All these individual NDCs are periodically collected and processed in a global inventory of the climate effort, called the global stocktake, which is then used to assess the collective progress globally.

WorldCover

Producing these NDCs requires countries to keep complicated accounts. An exercise that only yields good results if it is based on objective, reliable input data. That is why the European Space Agency ESA launched the WorldCover project in 2019. The aim? To develop a high-resolution map of land cover worldwide for the first time. 'Land cover plays a key role in the calculation of greenhouse gas emissions,' says Ruben Van De Kerchove of VITO. 'The simplest example is probably that of a forest that absorbs CO₂ from the air or a grass meadow where cows produce methane gas.' Thanks to its years of experience in the development of land cover maps, VITO was selected by ESA, together with other partners, to carry out this project.

At the end of 2021, the WorldCover project was finished and VITO was able to release the new, global land cover map. With the unprecedented level of detail (up to 10 metres accuracy), the development of this map is a true milestone. It shows the global land cover for the year 2020, and precisely because it has taken less than a year to produce, it is a powerful demonstration of how it is possible to respond more quickly. Sven Gilliams of VITO: 'I remember when a similar land cover map for the year 2000 was only ready in 2005. Now it took less than a year, and in fact we have proven that it can even be done in less than three months.' VITO can take credit for this rapid development because, in addition to general coordination, its Remote Sensing unit within WorldCover was also responsible for building the map based on images from the European Sentinel-1 and -2 satellites. 'We were able to cut down on development time considerably by, among other things, automating the algorithms for image processing and thus significantly speeding up the process.'

Now that it has been demonstrated that global and detailed land cover maps can already be developed in the first few months following an observation year, it will

The World Resources Institute (WRI) is a user of WorldCover.

With these new, freely available, global land cover data at 10-metre resolution, we are taking a big step forward. They give us an insight into how land contributes to mitigating climate change, meeting our food needs and supporting biodiversity. The way land is used plays a crucial role in this and is therefore also an essential part of the solution. Moreover, land is a finite resource, which makes a better understanding of where and how land is used elementary for the next assessment of trends and the definition of action points for climate, food security and biodiversity.

WRI - Fred Stolle, Deputy Director Forest programme & Director Land cover monitoring



soon be possible to compare successive maps. 'Changes in land cover are very important. These changes do not only influence the greenhouse gas emissions in an area (think of forest that has to make way for agricultural land) but they can also have an impact on local biodiversity and food security,' Gilliams says.

Ecosystem accounting

The land cover map can be seen as a basis to which specific data are then added, depending on the application. Within the ongoing WorldCereal project, also from ESA, this involves information, such as the crop type or the level of irrigation in an agricultural area. 'Greenhouse gas emissions also vary between different forms of agriculture and between different types of crops,' says Gilliams. 'So this kind of information is also relevant in the context of monitoring the climate promises made in Paris at the time.' And, of course, land cover maps with detailed agricultural data are also important for monitoring food security, whether globally or in specific areas. In that context, the WorldCereal project - for which VITO is also responsible - completed a successful demonstration at the end of 2021 in which agricultural crops were monitored in five different countries during the growing seasons in 2019, and VITO is now working hard on the global follow-up of crops.

Given the speed at which they can now be developed and how detailed they are, global land cover maps also prove to be of high value for monitoring biodiversity - that other crisis threatening our planet. They allow for the accurate identification of natural resources (not only in the traditional sense of raw material reserves, but also, for example,

biodiversity hotspots and ecosystem services, such as clean air or water supply) in an area and their changes. Call it nature's accounting. 'In technical jargon, we speak of natural capital accounting (NCA), or ecosystem accounting,' says Bruno Smets of VITO. 'By combining land cover maps with other socio-economic data, we gain insights into the size and environmental quality of the ecosystems and their services in an area. With additional data on habitats we can, for example, investigate biodiversity. Or we can study certain ecosystem services in more detail by projecting flood risks onto the map, for example.'

As is currently the case with NDCs on climate, countries (or at least EU Member States) may soon have to start keeping such national ecosystem accounts - possibly as early as 2024. Eurostat, the statistical office of the European Commission, is currently laying down the rules for this. And VITO is also working on this. 'We are helping Eurostat set up an NCA system by developing guidelines and tools for reporting these natural accounts,' Smets says.



More info
sven.gilliams@vito.be

VITO EMPLOYEE IN THE SPOTLIGHT

Since he graduated from KU Leuven in 1988 with a physics degree, Jurgen Everaerts (58) has worked for about five companies and organisations. However, the technology behind remote sensing is a common thread throughout his well-filled career. Today, within his Remote Sensing department, he is strongly advocating rejuvenation and diversity. 'I am driven by stimulating and supporting young people.'

You have worked at VITO since 2003. Were you involved with remote sensing from the very beginning?

'Yes. The very first project I worked on was Pegasus, a solar-powered stratospheric drone for observations of the earth's surface. That was a real pioneering project, because today this type of drone is still in the development phase. You could say that with Pegasus, we were 20 years ahead of the game. With that project, we gained invaluable knowledge and experience about how to reduce the weight of drone cameras, how to increase the resolution of aerial images and how to fly this type of aircraft in poor weather conditions. Thus began with Pegasus a new specialisation within the Remote Sensing unit.'

How exactly did that happen?

'Before the Pegasus project, the unit was mainly working on satellite images with a maximum resolution of one kilometre. In 2004, aerial images became available with a resolution of 20 to 10 centimetres. That is, of course, on a completely different scale, which made us more relevant, especially in Flanders. It was also the beginning of a close cooperation with the Flemish government in the field of remote sensing applications. And we are continuing to build on that.'

From 2010 to 2015, you were responsible for the roll-out of Maconomy within VITO. What exactly did that entail?

'With that project we centralised and simplified both the project and the financial management of VITO. It was something completely different from remote sensing, but it did give me the opportunity to get to know the whole organisation of VITO. I visited all units and consulted with colleagues in every department. Apart from the successful implementation of Maconomy, this internal cooperation gave me great satisfaction.'

Then you returned to Remote Sensing, but not to limit yourself to one project.

'Since then, I have combined several things. For example, I am project manager for Terrascope, with which we make satellite images of Copernicus, the European earth observation system, publicly available.

I also do a lot of outreach. I enjoy speaking at colleges, universities and conferences (for example, for geography teachers). And sometimes I supervise a student's final year project or a thesis. This is very pleasant, because it brings me into contact with younger generations and with new ideas, perspectives and technologies. It is all very inspiring.

In addition, within our unit I am also a member of our project office, which helps streamline project work, so that



'Working with young people is inspiring'

our researchers and IT specialists - there are more than 100 of us - can focus as much as possible on the content of their work and less on administration.'

You have been working at VITO for almost 20 years. How do you look at your job today?

'I am now in a phase where I want to stimulate and support new employees, who are often still very young, as much as possible. Their fresh ideas and youthful enthusiasm are things we should cherish. I find that more important now than pursuing my own career, and I get a lot of satisfaction from that. The influx of new colleagues also increases the diversity within our unit. That, in turn, ensures that we are able to think about and develop solutions for tomorrow's challenges.'

Today there is a shortage on the labour market. Are you experiencing problems in your search for new colleagues?

'We may have struggled with this to some extent when we were specifically looking for remote sensing specialists. Until we decided to start looking more broadly, for data scientists. The pool is much bigger and data scientists also have the (mainly digital) basic skills on which remote sensing is built.

Finding and attracting computer scientists is a different story. They are in great demand on the labour market, so we have to emphasise VITO's strengths. Our appeal is largely in line with that of VITO in general, with strengths such as the sustainability aspect and social relevance. More specifically for our unit, we also have high technology in the field of IT and remote sensing. In that field, we really are among the international frontrunners.'

More info

jurgen.everaerts@vito.be