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GREEN W!N CLEANTECH INNOVATION BOOSTER

**#InnovationForPositiveImpacts**

Since 2011

2ND EDITION

# HANDBOOK

2011-2023


**GREENWIN HANDBOOK | December 2023 edition**
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# MESSAGE FROM THE CHAIRMAN AND FROM THE MANAGING DIRECTOR:

## GREENWIN,

## #BecauseTheFutureIsNow!
## #InnovationForPositiveImpacts

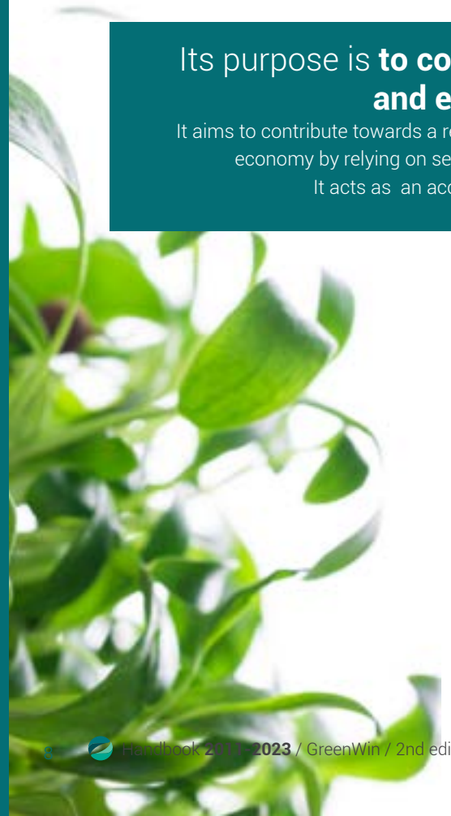
# **GREENWIN**, WALLONIA'S CLEANTECH CLUSTER, FOR A SUCCESFUL AND SUSTAINABLE INDUSTRIAL AND ECONOMIC TRANSFORMATION IN WALLONIA

Created in 2011, **GreenWin** asserts itself today as Wallonia's CleanTech Innovation Cluster. It serves three sectors of crucial importance:

- Chemistry (green)
- Materials and innovative Construction and Renovation processes
- Environmental technologies

Its purpose is **to contribute towards a prosperous, sustainable, and ecofriendly society in Wallonia.**

It aims to contribute towards a reindustrialisation of the region, fixing it in a regenerative, symbiotic, circular economy by relying on sensible digitalisation that serves human beings and the environment.
It acts as an accelerator of innovative and collaborative industrial projects.



**GreenWin serves as a tool that develops and provides access to the financing of innovative partnerships between companies, universities, and research centres.** With more than 80% of the entrepreneurial ecosystem of Wallonia made up of VSEs and SMEs, it is vital to combine resources, expertise, and know-how to allow this fabric to not only stay the course, but also to reinvent itself, anticipate needs and changes, to successfully face urgent situations.

**GreenWin** is at the service of its Members. It helps them to address their needs and complete their innovation projects. It organises seemingly improbable meetings between partners who are as different as they are complementary. Its governance is ensured by its Members, for its Members.

Since its inception, **GreenWin** has created a new vocabulary, a new grammar, but also, and especially, a new economic and industrial landscape.



# **GREENWIN**, THE PIONNEERING AND MOBILISING CLUSTER

Capture, utilisation and storage of $CO_2$, energy efficiency of industrial processes, resource management by the "good family man or woman", "lean" approach to the production and utilisation of raw materials, transformation of waste into secondary resources, biobased processes… All of these issues form part not only of the cluster's priority objectives, but they also feature within the achievements and innovative projects of its portfolio of projects in Wallonia, or in the European projects in which it is an effective partner.

In 2019, **GreenWin** decided to produce a medium-term Roadmap for the period 2020-2025.

Constructed in collaboration with its members, it defines **11 priority themes along 4 major axes**. It was presented in early 2020, a few weeks before the presentations on the European Green Deal by the European Commission and the National Recovery and Resilience Plan (Plan National de Relance et de Résilience -PNRR) of Wallonia.

The compatibility between the axes and priorities of these three fundamental sources presents with a strong coherence.

**GreenWin** therefore stands out as a particularly important interlocutor, partner, and contributor within the remit of the implementation of the European **Smart Specialisation Strategy** (or S3) in Wallonia, and that of **the selection of Strategic Innovation Areas** (SIA), as well as Wallonia's circular economy strategy **Circular Wallonia**.

**GreenWin also contributes to Wallonia's digitalisation**, starting with the diagnostics of companies within the chemical and construction sectors in which the cluster plays an active role, via, respectively, the **ChiMérique** projects on the one hand, and **Dig'Easy** and EDIH Connect on the other. These projects are implemented with key partners from the Walloon ecosystem, with whom the cluster has developed solid ties of cooperation with the aim of guaranteeing efficiency and robustness for those companies within its ecosystem.

**The co-certification of projects** with other clusters is also increasing with a view to guaranteeing **the transversality of the quality** of their components and activities. This approach aims at guaranteeing the strength of the eco-system via healthy interconnections between the different sectors – that is where the most promising innovations originate - all in efficiency and complementarity.

Not least, **GreenWin** plays a pivotal role by supporting the creation of **platforms and structuring programmes**, generators of new sectors, such as **HECO2** – towards a decarbonation of Wallonia's heavy industry, in collaboration with MecaTech – and **REMIND WALLONIA**, for the virtuous and decarbonated circularity of our region's mineral industry.

**GreenWin** supports a subregional approach to structuring projects, with District CleanTech, a generator of new sectors via an urban or local platform that brings together research and demonstration companies and facilities.

Other structuring projects will be launched over the next few years.

## **A PANDEMIC, A CLIMATE CRISIS, AN ENERGY CRISIS, AND A GEOPOLITICAL CRISIS:** THE MANY SCENARIOS REINFORCING THE LEGITIMICY OF **GREENWIN**'S APPROACH AND PRIORITIES

**The four major crises that the world faces today can only confirm the relevance of GreenWin's options and approach:**

- **Contributing to the re-industrialisation of Wallonia, in a sustainable manner** to ensure the conditions for its lasting prosperity, in balance with a healthy environment, and with a geographical and geopolitical independence that will protect us from any geo-dependency that might risk endangering the development of our fellow citizens and the quality of our environment.
- **Implementing innovations that enable us to face climate changes,** adapt to them, and prevent their disastrous effects even if we are not able to completely avoid the consequences that are already apparent, and those that are forthcoming.
- **Providing the means to face shortages of materials,** or even basic staple products by breaking with the linear production method and by stimulating intersectoral agility and the implementation of solutions and regenerative models. It is in fact a matter of facilitating the conditions for achieving sustainable strategic autonomy .
- **Only envisaging innovation in a manner that is eco-responsible,** by relying, at the very least, on serious and systematic life cycle analysis, in a conscience act of precaution and prevention of future risks, too often under-appreciated, and poorly or not detected initially.
- **Providing our society with innovative and collaborative tools that will allow it to tackle, with resilience and creativity, anxiety inducing unknows.** Agile management and tactical reactivity are at the heart of this capacity to bounce back, to rise above any pitfalls and surmount any obstacles.

These ambitions can only be met by the cluster with the assistance of each of its Members,
its partnerships with organisations such as **AWEX**, **WBI**, and the support of close collaboration with the **SPW** and financial organisations of Wallonia, and with all the participants in the Walloon ecosystem...

But also, via its international and European collaborations,
and by way of the projects it has taken part in and been associated with since its creation.

**Finally, GreenWin's aim is to engage in a constructive dialogue with civil society.** It is indisputably made up of the employees of the companies the cluster was created for, people of talent now and in the future, those who will allow for this transformation of our society into a model of regeneration to take place. An economy does not function in isolation, with producers on the one side, and consumers on the other. It is a component of the society we live in and are working for.

**As one of the major contributors to the development of a prosperous, sustainable, and responsible Walloon industry, GreenWin ensures its ambitions are in tune with societal expectations and requirements.**

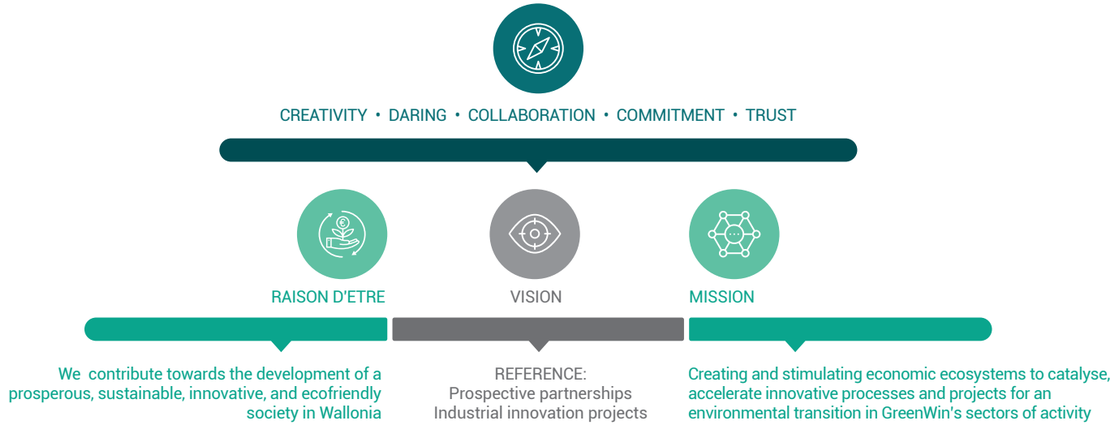
**GreenWin** sets its innovation strategy according to societal challenges in order to support the competitiveness and durability of enterprises. We work with companies who see these challenges as opportunities for the redeployment and development of activities, but also with companies who want to make their businesses evolve (including their business model) in order to anticipate and have a positive impact on society. Our companies also include intrapreneurs, individuals within structures,who bring forth innovative projects and are able to capture markets.

There is still much to do, stakes are enormous, but this only makes the challenges more attractive.

**David LAMY**
*Chairman*

**Véronique GRAFF**
*Managing Director*

## GREENWIN TODAY



The **GreenWin** innovation cluster is driven in every one of its actions by the values of **Creativity, Responsibility, Collaboration, Commitment and Trust**.

## KEY FIGURES

**INFLUENCE & INTERNATIONAL NETWORK ENTERPRISES / ACADEMICS:**
Events +400 participants/year
Creation of $CO_2$ Value Europe

800+ CONTACTS WORLDWIDE
500+ PARTICIPANTS
IN CLUSTER EVENTS

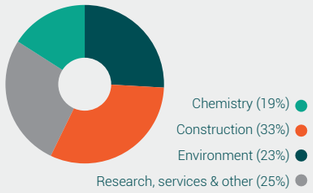
**ON AVERAGE/YEAR:**
7+ projects approved/year
€23.7 M budget for projects
+ 50% of projects relate to the circular economy

94 PROJECTS = €300 M BUDGET

223 MEMBERS:
33 LE, 142 SME, 17 CRA-W, 5 UNIV., 2 HS...

6 EUROPEAN PROJECTS
(WITH 1 COORDINATOR)

**TRIPLE HELIX CLUSTER :**
Created in 2011
26,300+ FTE = 175 member companies




**SCOT:** utilisation of $CO_2$ for companies with very high $CO_2$ emissions and innovative SMEs

**$CO_2$ VALUE EUROPE:** creation of an industrial AISBL

**LCIP:** LCA for SMEs

**AGRICHEMWHEY:** industrial pilot LE + SME in bio-sourced economy

**FERTIMANURE:** project for the valorisation and transformation of animal waste into natural fertilisers

**LIFE GIGAREGIO FACTORY:** ambitious, global, and industrialised renovations, with results that are guaranteed and cheaper

**EDIH CONNECT:** Facilitate the adoption of digital technologies in Construction & encourage the emergence of Construction 4.0

**#BeADoerDontJustBeAFollower**
**#BeAGreenWinner**
**#BecauseTheFutureIsNow**



# STRATEGIC AREAS OF ACTIVITY & PRIORITY THEMES

**GREENWIN** IS THE CLUSTER DEDICATED TO ENVIRONMENTAL TECHNOLOGIES –CLEANTECHS. IT CENTRES AROUND:

## 3 Economic sectors:

- chemistry
- construction
- the environment

## 9 Strategic innovation areas (SIA):

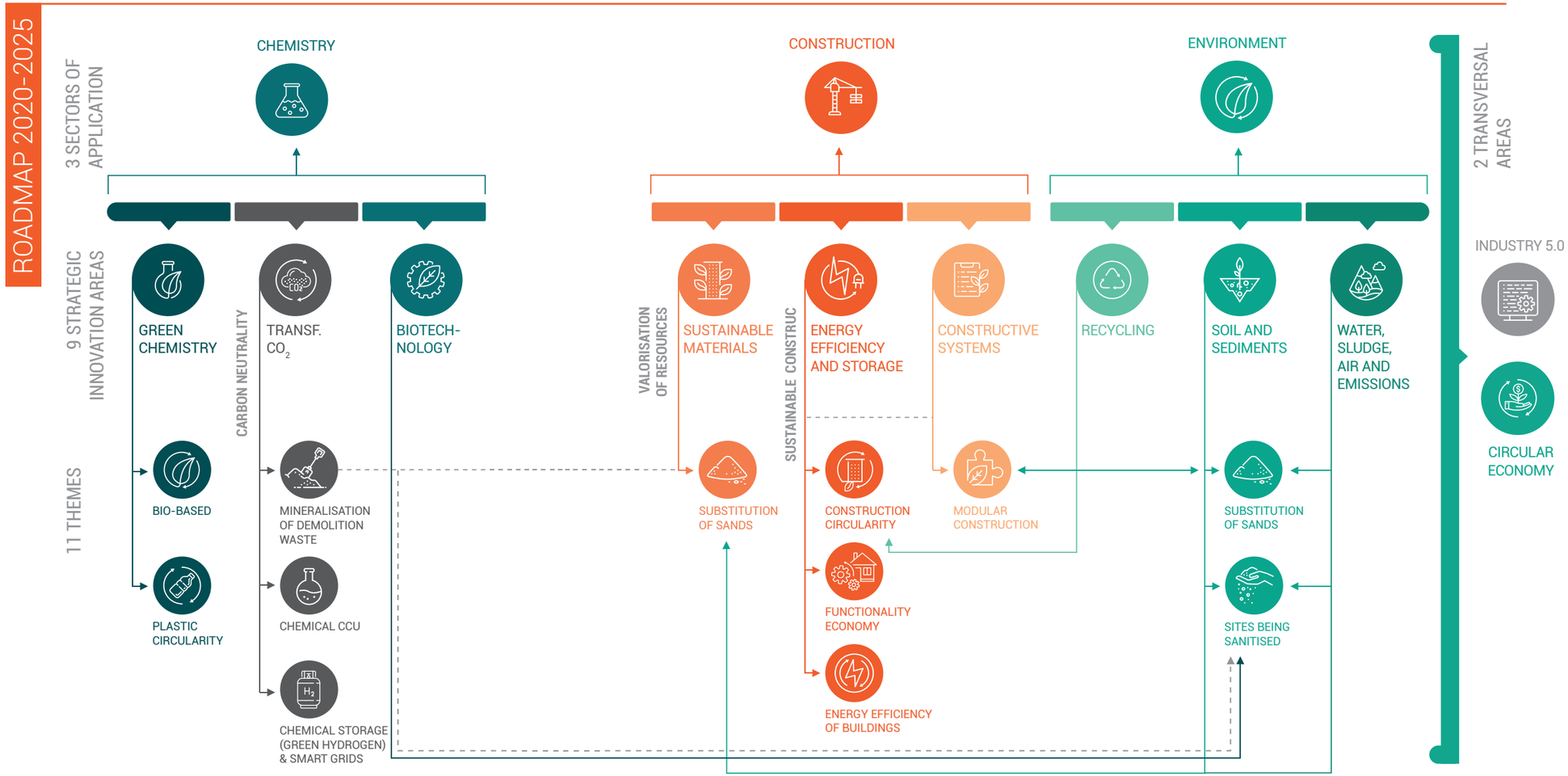
- Green chemistry Transformation of $CO_2$
- Biotechnology
- Sustainable materials
- Energy efficiency and storage
- Constructive systems
- Recycling
- Treatment of soils and valorisation of sediments
- Treatment of water and emissions

## 2 Transversal areas:

- Circular economy
- Digital

## 5 missions.

(see p. 16)



## GreenWin's 5 great missions:

- CONTRIBUTING TO THE REGIONAL STRATEGY AND GOVERNANCE OF THE CLUSTER
- COLLABORATIVE INNOVATION
- ACTIVATING THE NETWORK
- TALENT & TRAINING
- INTERNATIONAL

These missions have been confirmed by the contract of objectives and means signed with Wallonia.

**GreenWin's strategic innovation areas and priority themes are all completely in line with the priorities of the European Green Deal** and with the axes of Wallonia's strategy.

They are representative of the activities and themes typically referred to as CleanTech, as defined by the authors of the concept, from the world of finance, at the end of the 90s in the USA.

## GREENWIN'S "PROJECTS AND INNOVATION" STRATEGY

The hub's strategy is, in essence, "member and innovation project centred" and all its activities converge towards that core business.

**GreenWin's strategy and its implementation rest on the following Policy framework and innovation priorities:**

- **Wallonia's Relaunch Plan**
- **Wallonia's Smart Specialisation Strategy (S3),** published in March 2021
- **The Circular Wallonia strategy** adopted on 4 February 2021
- **The long-term energy renovation strategy** of the building sector
- **The European Recovery and Resilience Facility,** published in July 2020
- **The European Green Deal,** published in December 2019
- **The regional Policy Declaration (DPR)** 2019-2024, published in September 2019

**It is centred on its core business: industrial collaborative innovation projects.**

The cluster's priority activities, and the conventions and projects that it benefits from or is a partner in, are designed to generate such innovation partnerships, build innovation ecosystems, and develop and reinforce economic, innovative, and regenerative value chains in Wallonia:

- **Networking activities** (conferences, European networks and projects, missions, hackathons, bootcamps…) and the setting up of "platforms" and the structuring of projects are sources of sustenance and acceleration for the hub's core business, that is to say the structuring of collaborative innovation projects.
  Indeed, the various networking activities, and the setting up of platforms, enables the cluster to identify the expertise that is available, or lacking, among its members or other key players of its ecosystem, with the aim of nurturing consortiums of collaborative projects.

- **Bilateral meetings** with members also contribute towards identifying the short-term needs of members and the potential for the structuring of resulting collaborative projects.

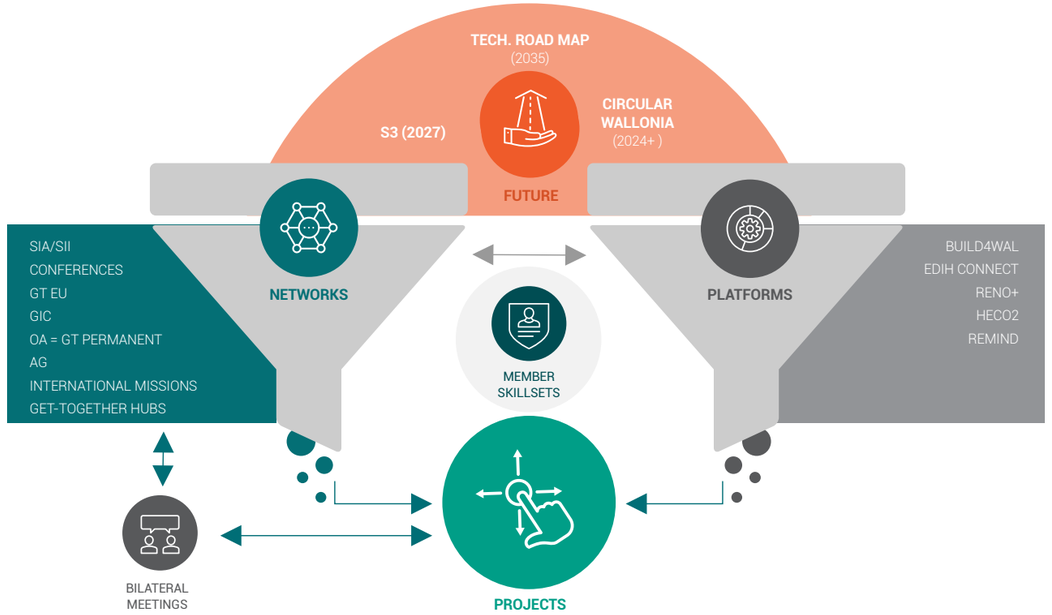
- **Missions** undertaken on behalf of the Region or the State:

  - steering of the Circular Wallonia strategy roadmaps in the "plastic materials" and "construction" sectors
  - the WALLACE convention on the flow of secondary materials to be valorised in Wallonia
  - the partnership with AWEX
  - the contribution to Wallonia's RIS3
  - …

- The development of a **2020-2025 roadmap**.
  (A new roadmap for 2025-2030 is currently in production).

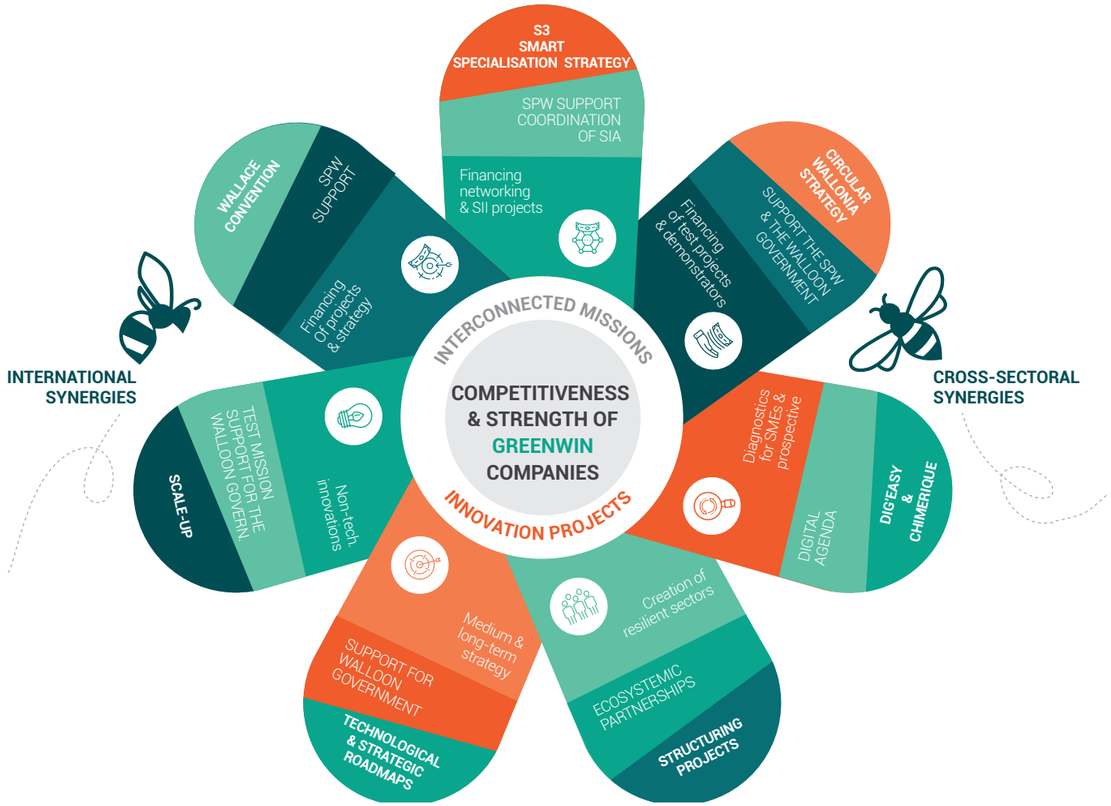
**To this end, all activities, conventions, or missions undertaken by the cluster contribute to creating the optimal conditions for structuring and implementing collaborative innovation projects**, accessible to all members of the ecosystem, SMEs in particular.

## "PROJECT AND INNOVATION" STRATEGY



## **THE "FLOWER POWER"** COLLABORATIVE INNOVATION STRATEGY

**GreenWin** undertakes a series of interconnected missions with the ultimate goal of stimulating and facilitating the implementation by members of its ecosystem of Innovation projects - technological or non-technological - that are essentially collaborative.






**SOCIETAL AND ENVIRONMENTAL STAKES:**

# THE GREENWIN KEYS

## KEY ACTIVITIES


## OUR SERVICES

On the basis of its core business and its support for innovation, **GreenWin** offers a whole range of services to provide support, reinforce skills, valorise products and services in Belgium, as well as internationally, in addition to activities undertaken by AWEX and its network of economic attachés across the world. The cluster also cooperates with WBI, within the framework of inter-university, educational and academic collaborations.

**These services are centred around our members and dictated by their needs.**


## TOWARDS A SUCESSFUL AND LONG-TERM INDUSTRIAL AND ECONOMIC TRANSFORMATION IN WALLONIA

**In accordance with its raison d'être, GreenWin** contributes towards the reinforcement of employment prospects by maintaining and creating new direct and indirect jobs in the three sectors it is involved in.

It provides access to **finance, advice, and to a network** of partners with the aim of developing and implementing industrial projects that are innovative and collaborative.

The cluster also forms a network that enables the **valorisation of the innovations produced by the projects it supports.**

It also gives access to various entities (companies, universities, hautes écoles, research centres...) who all share the common **resolve to innovate and contribute to the proactive management and taking of responsibility in terms of their economic, environmental, and societal developments, in a manner that is both sustainable and responsible, in Wallonia.**

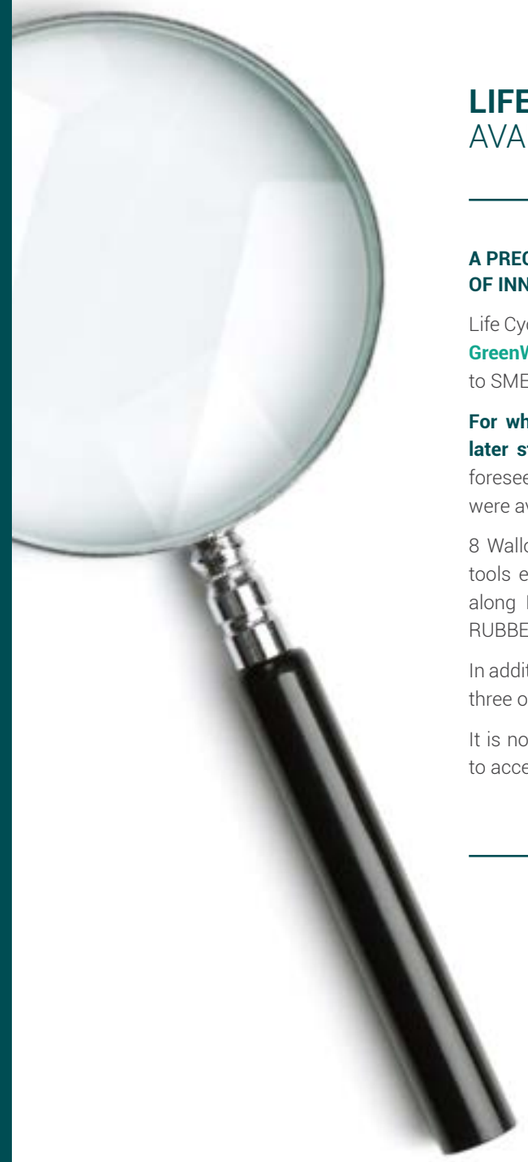
**The cluster facilitates many seemingly unlikely meetings, enriched by the complementarity of the partners and participants in attendance.**

Innovation brings change and newness (by definition), but **GreenWin** ensures that the innovations in its portfolio of projects does not generate any adverse effects. **Each project therefore undergoes Life Cycle Analysis (LCA), prior to, during, and at the end of the implementation of the project. It is a question of coherence and precaution, of an eco-responsible approach**.

**GreenWin** has developed skills and expertise in the framework of several European projects it has taken part in.

Life Cycle Analysis (Life Cycle in Practice) initiated by the European Commission marks an important step in the implementation of a truly circular and sustainable economy.

**GreenWin** is an innovation cluster of reference when it comes to the implementation of LCA in the innovation projects developed in Wallonia.



## LIFE CYCLE ANALYSIS
AVAILABLE TO ALL

**A PRECAUTIONARY MEASURE AGAINST THE UNDESIRABLE SIDE EFFECTS OF INNOVATION.**

Life Cycle Analysis or LCiP (Life Cycle in Practice) is a European project with which **GreenWin** partnered. Its objective was to make life cycle analysis (LCA) available to SMEs.

**For what is the point of innovating in the search for new solutions if, at a later stage, these only reveal disastrous side effects** that should have been foreseeable ,since the time and resources useful for spotting and identifying them were available and could enable them to be preventively resolved?

8 Walloon SMEs took the gamble and as pioneers benefited from customised tools enabling them to take strategic decisions to adapt their business model along LCA principles. Companies such as PREFER, MOBIC, PCIM, ISOHEMP, RUBBERGREEN, PUR VER, BIOWASTE RECYCLING and PAN-TERRE.

In addition, the cluster has also put in place a resource centre that revolves around three of our members: BUILDWISE, MATERIA NOVA, and ULiège-PEPS.

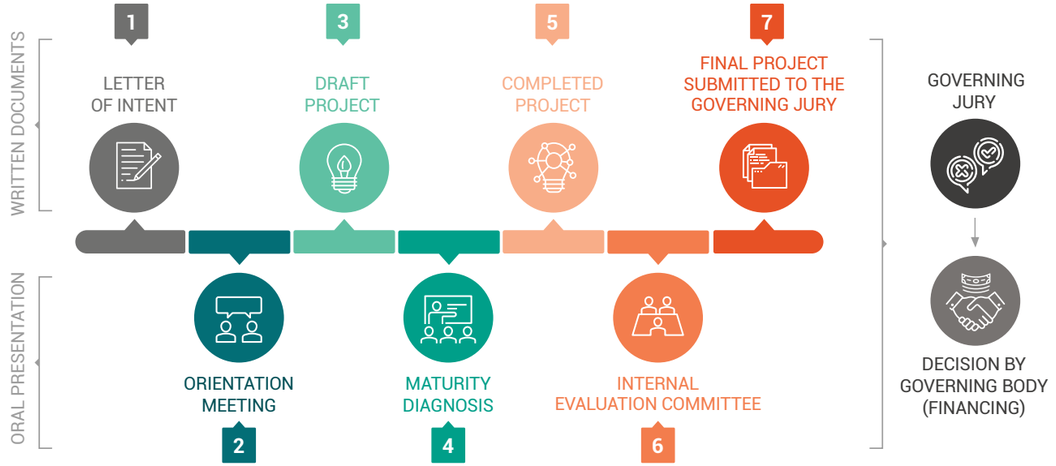
It is now possible, **for any SME that might be interested**, to contact the cluster to access this initiative, which **GreenWin** also makes available to other clusters.



**GreenWin** supports and provides advice to candidates for financing in order to optimise their chances of success not only at selection level but during the implementation and results stages of their project.

To this end, the cluster has generated a step-by-step methodology known as "Stage gate". Sometimes perceived as very demanding, its objective is to nevertheless flush out any grey areas, avoid any hazards and anticipate possible pitfalls, as much as is possible, in an approach that is both preventive and proactive.
Besides, it is widely used, in the industrial world, for managing innovation.

## SUBMISSION PROCEDURE



**SOCIETAL AND ENVIRONMENTAL CHALLENGES:**

# GREENWIN AND THE MAJOR GLOBAL ISSUES

# GREENWIN AND THE **MAJOR GLOBAL ISSUES**

**THE CHALLENGES FACING OUR CHEMICAL, CONSTRUCTION AND ENVIRONMENTAL SECTORS ARE IN FACT TRANSVERSAL, BUT OUR AREAS OF ACTIVITY AND THE PROJECTS WE SUPPORT LIE AT THE VERY HEART OF THE SOLUTIONS THAT NEED TO BE DEVELOPED AND APPLIED FOR THESE CHALLENGES TO BE TACKLED FROM A WIDER SOCIETAL PERSPECTIVE.**

THE **CHEMISTRY SECTOR** FACES A TRIPLE CHALLENGE:

- Challenges linked to climate change.
- Insecurity in respect of the access to resources.
- Access to energy.

**Limitations to the access to resources and climate change** reveal geopolitical tensions and pressures that no person will be able to escape.

**Our planet, by its very nature, is circular and finite, and the rarefying of resources can only lead to problems.** Green chemistry will therefore become a key component in the reduction of these pressures and conflict risks since it is founded on the principles and methods of **"lean production"**, with no waste.

**CONSTRUCTION**, FOR ITS PART FACES SEVERAL CHALLENGES:

- In the very short term, the upsurge in digital technology required throughout the whole production chain, and its impact on the creation of new jobs – the outlines of which we can't yet even imagine – but also on existing employment in a sector which is already facing labour shortages, with the risk of crisis that this entails.
- **The re-evaluation of business models and flexibility**, that, now more than ever, will become key factors in the industrial prosperity of our sectors and of Wallonia.
- The implementation of and the recourse to **the circular economy in the sector, with the aim of reducing the ecological footprint of its activities and increasing strategic autonomy** in respect of certain raw materials, thus limiting, or even reducing, the cost of materials.
- **Climate change requires the built environment sector to adapt:** innovations backed by GreenWin aim to ensure that needs are met, and that this major role, played by the sector in this regard, is supported.
- Innovation is equally vital for **making these new building processes accessible to the largest number possible.**

**THE ENVIRONMENT**: waste management also needs to be taken into account, at industrial as much as at consumer level. To this end "cradle-to-cradle" appears more and more like a solution, however this will require **an evolution of the recycling sector which must be prepared to reach ze-ro-waste**, by accepting to re-evaluate the method and nature in which it functions by adopting the universal principle of Lavoisier, which today still retains all of its potency: **nothing is lost, nothing is created, everything is transformed…**

**Eventually, CleanTech - or environmental technology - solutions** will not only make it possible to reduce the (negative) impact of industrial and human activity, but beyond that, implement regenerative activities with a now positive impact on the environment.

## OBJECTIVE ZEN
## (ZERO EMISSIONS NET OF $CO_2$)

**... OR HOW THE CAPTURE, UTILISATION AND STORAGE OF $CO_2$ IS A TANGIBLE WAY FOR INDUSTRY TO CONTRIBUTE TO A REDUCTION IN GREENHOOUSE GASES.**

The objective that **GreenWin** has set itself is that of actively contributing towards allowing Wallonia to attain a level of equilibrium between man-made greenhouse gas emissions and their extraction from the atmosphere, by, or as a result of, human-made action, in the three sectors that are of relevance to the cluster's activities.

This involves the implementation of methods that will stimulate or strengthen the absorption capacity of natural carbon sinks (forests, soils and oceans) and create technologies useful to this end, namely **Negative Emissions Technologies** (NET technologies).

**Following in the footsteps of the SCOT European project** (Smart $CO_2$ Transformation), The 1st European initiative for the capture and usage of $CO_2$, which **GreenWin** coordinated (and which gave rise to the notion of carbon neutrality and/or carbon circularity), the cluster was given the mandate to put in place a permanent European structure supported by industrialists - **$CO_2$ Value Europe** - which, in and unprecedented and exclusive manner, **represents and gathers all those involved in the usage of $CO_2$ in Europe, therefore significantly contributing to putting a low carbon economy in place in the EU.**

The initiative resulted from a public-private partnership in sustainable chemistry between industrialists and the EU in the chemistry sector. In fact SPIRE, a public-private partnership between industry and the European Commission has integrated the teachings of SCOT within its strategy and areas of priority. This is also the case for the JU (Joint Undertaking) BBI (Bio-Based Industry) – recently replaced by the "Circular Bio-based Europe Joint Undertaking" or CBE JU.

**GreenWin** also constitutes a partner of choice when it comes to helping companies manage their vulnerability to climate change.

Several **GreenWin** projects are dedicated to, or contribute towards, this societal objective. Some of the most striking examples can be found in the profile pages of this handbook. Each has been labelled with a distinctive pictogram to facilitate its identification.



## RENO+: for an acceleration of the massification of the renovation of the private built sector in Wallonia with the aim of reducing its $CO_2$ emissions

- 30% of GHG emissions in Wallonia are actually linked to the building sector.
- 16.3% of GHGs are due to the heating of households.
- The current renovation rate is very small (barely 1%/year).

**To achieve 2050 climate objectives in the building segment, one would need to reach an annual renovation rate of 3%, that is to say three times more than is actually the case**, which is an important growth rate to ensure and undertake.

**Added to these politico-climatic challenges comes the emergency caused by the terrible extreme weather in Wallonia**, in July 2021: the reconstruction of buildings in disaster areas must take climate conditions into account, **so it is necessary to not only rebuild very quickly, but to do so in a reasoned manner and with quality in mind.**

- RENO+ relies on the Embuild Wallonie (previously CCW) – Buildwise (previously CSTC) and **GreenWin**.
- RENO+ is a project that targets the massification of energy renovation in the built sector in the Walloon Region. All these renovation aspects are approached/studied, notably in terms of the offer.
- In the face of 15,000 homes needing to be renovated/rebuilt after the July 2021 floods, RENO+ forms part of the response to this large-scale construction site.

Offering disaster-stricken households a solution to their current and future needs, while managing their budgets and at the same time guaranteeing the quality of the works to be undertaken.

## GREENWIN AND **GLOBAL WARMING AND CLIMATE RISK**

Global warming is no longer a prediction but a reality. The upheavals it brings have already affected our fellow citizens in Wallonia during the major floods of July 2021.

As an innovation cluster dedicated to innovation in the environmental area, it is only natural for **GreenWin to provide the necessary skills and expertise required to manage this situation.**

And beyond the short, medium, and long-term threats, **this entails supporting companies in their initiatives and solutions to allow them to face this climatic evolution.**

# ADAPTING TO CLIMATE RISKS: GREENWIN'S POINT OF VIEW

**THE FIGHT AGAINSTGLOBAL WARMING WILL HAVE TO INVOLVE A PROFOUND CHANGE IN OUR WAY OF LIVING, BUILDING AND RENOVATING.**

*Extracts from la carte blanche by Véronique GRAFF in la Libre Belgique – 17/01/22*

**"**(...) From the outset, one question: should one rebuild in areas that have been flooded? This question underlines **the importance of land use planning, which requires if not a revision, at least deep reflection with all parties concerned, including universities, for a cartography that is precise and adapted to this new reality. Then, it is necessary to recognise that a risk exists, and increases.**

And this risk will become manageable with an objectivation of the situation, and its consequence, the availability of information and how it is treated. Let's take an example: in Japan, they build in areas that are prone to earthquakes; the risk is integrated and solutions to adapt have been found, with undeniable success. **Adaptation is a human being's major strength.** What is interesting, is that we find ourselves at the beginning of the process: **everything is still to be imagined, thought of, envisaged, conceived, and then built, while also observing what is happening elsewhere in the world.**

After this initial question, a precision... If local news was preoccupied by the floods, one must not forget that climate risks can take various forms in our regions: heatwaves, forest fires, severe snowfall or rainfall, storms, landslides...

Once these preliminaries set down any reconstruction envisaged must obviously be sustainable. But the term is large, hence the necessity to point out a few priorities.

First of all, it is self-evident – and is one of the pillars of the European Green Deal – one has to keep an eye on the energy efficiency of buildings, as much in the reconstruction process as in the renovation of the built sector in Wallonia. An energetic and proactive partnership between members of the industry, innovation, and public authorities is being put in place with RENO+ to propose solutions that are integrated – and centred around local initiatives – to improve the energy performance of the Walloon housing stock in a "client approach". These solutions, necessarily financially attractive, will put forward innovations both technological and non-technological, and take inspiration from pilot projects that have sprung up more or less everywhere in Europe and across the world.

After that, "**modular construction**" must develop. This involves **conceiving and using prefabricated construction models** allowing for a "mass customisation" approach. The aim is to significantly improve productivity, efficiency, wellbeing in the workplace and the climate footprint of construction and renovation materials and processes.

**Then follows circularity in construction**. The principle is to mobilise contributors to enable an **increase in the reutilisation and recycling of materials** in construction by way of innovative tools to be validated in test building sites. These innovations will support the prescriptive evolutions and necessary regulations.

**Finally, one has to develop the functionality economy in construction. In other words, encourage the advent of new economic models** based on the use and performance of buildings or technical and constructive elements rather than on ownership and product.

These priorities uncovered, one must of course **not limit them to reconstruction in disaster-struck zones, but on the contrary widen them to all new constructions** wherever they may be located, and to the renovation in the Walloon built sector. This renovation becomes a fully-fledged sector, with challenges that go beyond the fundamental need to be housed in a minimum of comfort and security. The stakes are perfectly understood by political leaders from all sides.

Wallonia, like the country's other regions, can directly profit from the process. The collection, recycling, reutilising and valorising of materials and the modularity of construction solutions open up **alternative ecofriendly routes**, in our quest for geo-independence, that invites us **to innovate and (re) locate industries on our territory.** (...)**"**

# GREENWIN AND THE **ENERGY CHALLENGES**

A number of cluster Members provide suggestions for innovative solutions to make it possible to address energy challenges, whether by the production of new circular isolating processes, or the optimised management of energy needs by efficient digitalisation.

RENO+: The absolute utility of this action-research, initiated in 2019 by the Buildwise-Embuild-**GreenWin** trinomial on the basis of a climate emergency, has been greatly amplified with the soaring energy prices following the war in Ukraine. This geopolitical crisis underlines our urgent need for geo-independence. It therefore aims to develop a competitive ecosystem to enable the largest number of people possible to access **easy, high-quality, in-depth renovation at a fair price, for a low carbon transition.**

**IN THIS INSTANCE, THE AIM IS TO CONVERGE TOWARDS THE FOLLOWING OVERALL OBJECTIVES:**

**INCREASE DEMAND:** identify and stimulate demand (public and private) by favouring client-centred orientation, considering the characteristics of buildings but also and especially the different user profiles and the co-benefits expected from the renovation works influencing the desire to renovate (increase in habitable area, integration of smart technologies, increased comfort, rise in property value, simple maintenance...).

**STRUCTURING THE OFFER:** develop an energy renovation offer in a holistic and innovative approach of integration of technical solutions, legal and fiscal incentives, novel financial instruments, training courses that make it possible to implement new business models in the long term. This offer needs to be accessible to all Walloons via suitable financing mechanisms that are tailored but also profitable in view of economies of scale.

**FACILITATE THE EXECUTION:** ensure the fulfilment of the implementation by making sure to control the 3 project management axes that are quality/standardisation, costs and deadlines relying on ecosystems of local protagonists.



## GIGA REGIO: The European relay for the massification of renovation

Giga Regio Factory is a European project cofinanced by the LIFE programme. It rests on the existing knowledge base and progress of the consortium to accelerate the improvement in Net Zero-Energy renovation offers responding to the needs and trends of tomorrow.

This will involve taking the best industrialisation workflow processes to reduce their cost by more than 25%. The project focuses on support technology and the development of industrial solutions to improve the renovation of homes.

**The project has 3 main objectives:**

- **Develop an open-source tool for the qualification of housing** and a smarter aggregation strategy to launch large-scale zero energy collective industrial renovations.
- **Develop an accelerator for integrators of global solutions** by supporting companies that integrate and construct industrial solutions, in order that they can develop offers that are 100% industrialised.
- **Develop a Giga Factory industrialisation kit** to enable solution providers to make their offers evolve and respond to massive demand.
- **Partners involved:** The project is a consortium made of 12 complementary partners from Italy, Belgium, Germany and France. **GreenWin** is proud to be one of the partners involved in this promising and ambitious project.

giga regio factory
by energie sprong

Co-funded by the European Union

# GREENWIN
# AND THE RAREFYING OF RESOURCES

Access to resources is complicated by the growing scarcity of certain materials (water, sands), global demographic pressure, and consequently, current and future health crises and conflicts.

**The end of the euphoria of globalisation** looms as our geo-dependence puts us in a vulnerable state, threatening our ability to cope with the aforementioned crises.

It is high time for Wallonia, and more broadly, for Europe, to deploy an industrialization that guarantees our resilience and ability to face the challenges that are and will be confronting us.

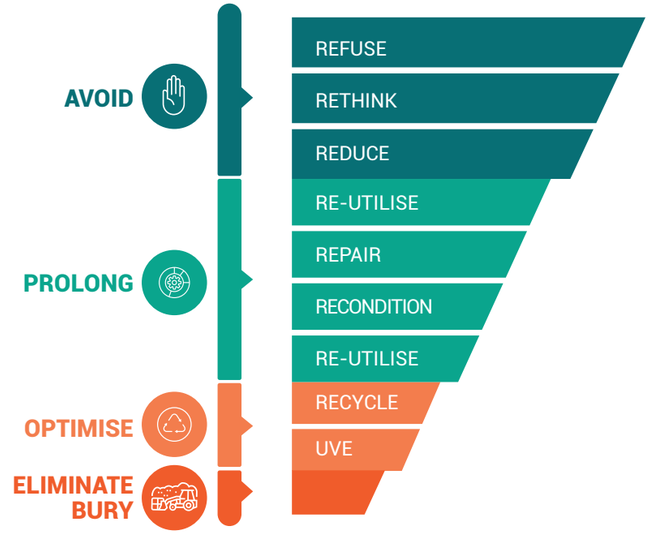
**It is also the end of extensive waste**, of thoughtless consumption, and blind consumerism.

We are in the era of "lean" production, of the reasoned use of resources and materials, of their repairability, reusability, and upcycling, thanks to not only precautionary but also avant-garde eco-design.

**It is a time for innovation for the transformation and circularity of materials, a time for the radical application of Lavoisier's law: NOTHING IS CREATED, NOTHING IS LOST, EVERYTHING IS TRANSFORMED.**

With this awareness and demand, which requires that these transformations be as virtuous as possible: without wasting energy, and in accordance with public health and environmental standards.

**IN THIS REGARD, GREENWIN ADOPTS IN ITS ANALYSES THE PRINCIPLES OF THE SO-CALLED "LANSINK'S LADDER":**




LANSINK'S LADDER



**FOCUS ON A STRUCTURING PROJECT SUPPORTED BY GREENWIN AND THE MECATECH CLUSTER:**

## HECO2 :
## Objective = Decarbonation of Wallonia's heavy industry

This portfolio of projects was submitted in October 2021 in the framework of the call to projects for the Relaunch and Resilience Plan (PNRR) for the low carbon industry chapter. In March 2022, the selection by the government of 5 projects in the framework of the PNRR was:

- Electrification and Electrolysis as primary innovation cluster with MecaTech.
- Plasmalyse Hybride, Butterfly and Saturn as primary poles with **GreenWin**.

This video explains in detail the objectives and components of the HECO2 portfolio of projects:

It was presented by the Walloon delegation in 2021 at COP26 in Glasgow.

THE PROJECT PORTFOLIO IN 5 AXES AND 7 PROJECTS:

- **Electrification of** high temperature **industrial processes:** Electrification
- **Reduction of $CO_2$ by production of hydrogen by alkaline electrolysis:** Electrolysis
- **Hydrogen production from plasma pyrolysis of methane:** Hybrid Plasmolyisis
- **Reduction of $CO_2$ by hydrogen combustion** in industrial processes: H2 Uses
- **Capture and concentration of $CO_2$ emissions** developed in 3 projects: BUTTERFLY, CARBOFREE and SATURN

20 combined partners

(Details of these projects can be found in the section dedicated to the hub's projects( pages 119 to 128.)

## **GREEN CHEMISTRY AND BIO-BASED CHEMISTRY:** "TWIN CONCEPTS" BUT NOT IDENTICAL!

Green chemistry is not (just) bio-based chemistry.

**Green chemistry** is also qualified as "sustainable" or "renewable" chemistry and applies the principles of sustainable development to that sector. It is concerned with the **economic, social, and environmental equilibrium** of the environment in which it is practiced.

Green chemistry is a way of producing, as a good family man/woman. It is the concrete application of the principles of lean production, or production without waste.

**Biobased chemistry** for its part is chemistry where fossil resources are partially or completely replaced by **resources obtained from biomass**. It notably enables to limit the dependence on fossil resources in the manufacturing of certain products, and to limit the environmental footprint of these products.

Since its creation, **GreenWin** has supported CIRCULAR ECONOMY projects at a Walloon level, as much as at a European level.



## **THE CIRCULAR ECONOMY:** A RESPONSE TO THE LIMITATIONS AND FINITENESS OF RESOURCES

Since its creation, **GreenWin** has supported CIRCULAR ECONOMY projects at a Walloon level, as much as at a European level...

The circular economy goes hand in hand with the cluster's other specificities, namely:

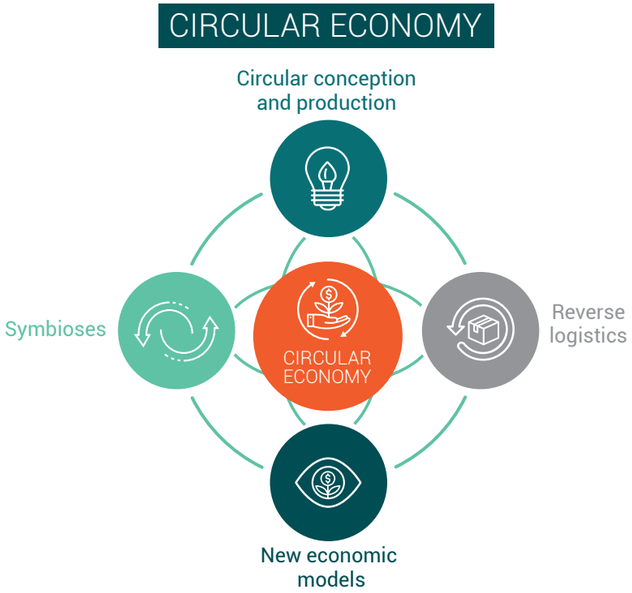
- the search for carbon neutrality;
- life cycle analysis;
- climate risk analysis.

**The recycling of waste is one of the key elements of the circular economy but it is not the only one.**
**GreenWin** is destined to focus on the promotion and implementation of models for a circular production and economy.

The circular economy is an integrating principle that regroups different approaches, connected and in interaction, that pursue a common objective: **optimising the use of resources as levers of competitiveness for companies.**

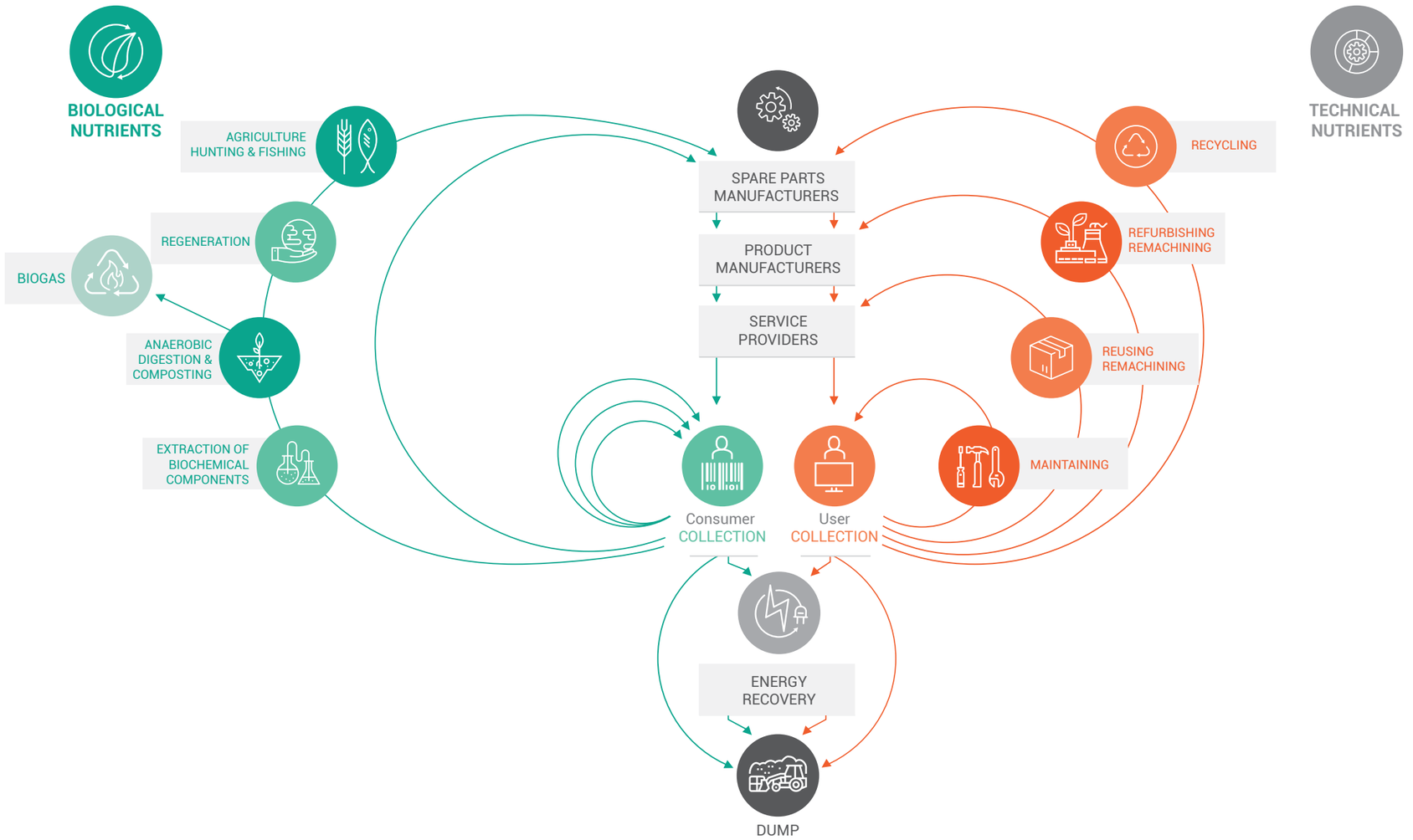
Within this approach, the concepts of eco-conception and circular production, of reverse logistics, of industrial symbiosis and the new economic models act in an integrated manner to enable industry to transition to a circular economy.

Practice brings us to widen this pattern...



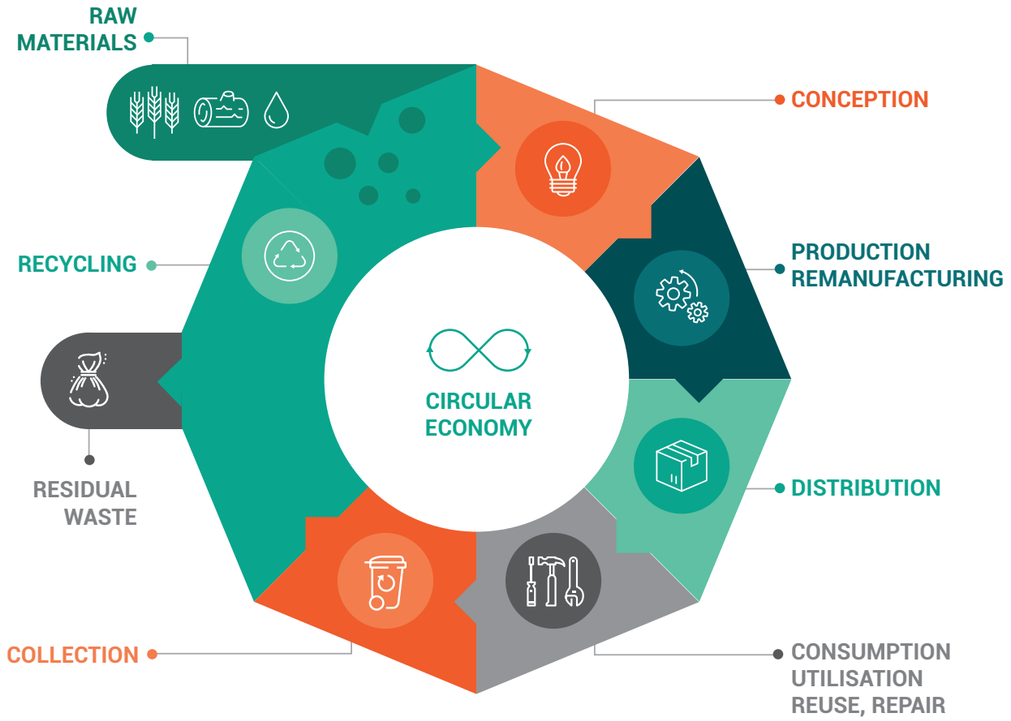
In this respect,
**THE ELLEN MCARTHUR FOUNDATION DETAILS THE FLOWS AND INTERACTIONS OF THE CIRCULAR ECONOMY AS FOLLOWS:**

## INTERACTIONS OF THE CIRCUALR ECONOMY



The cluster's work is to facilitate access to sources of information and the understanding of concepts the implications of which are, all in all, revolutionary.

**WE THEREFORE FAVOUR SIMPLIFICATION, AT THE LEVEL OF THE VALUE CHAIN:**




The WALOSCRAP (2013) and WALOSCRAPII (2018) projects are two resulting achievements: the WALOSCRAP I & II grant, brought to completion with the Agriculture – Natural resources – Environment SPW, focused on the la implementation of viable sectors starting in Wallonia.
The observation is that for a recycling sector to be viable, it is also vital to respond, in parallel and in a coordinated manner, to challenges that are not always of a technological nature.

## WALLACE:

Further to the WaloSCRAP I & II conventions, **GreenWin** signed a new convention with the SPW: **WALLACE**.

Its goal is to diagnose and map out the digital needs of companies from the chemical, rubber, and plastics sectors.

- **Support the SPW for waste-resource project calls** in part financed by the PNRR.
- **114 dossiers have been introduced and 76 projects retained, 22 of which are supported by GreenWin.**
- **1 comparative study on End-Of-Waste legislation** was undertaken in regions neighbouring Wallonia, at the request of several of the cluster's members.

The different activities accomplished within the framework of the WaloSCRAP I & II projects allowed us to obtain a global image of the sector for each of the waste deposits studied.

We will be able to speak of a real circular economy when we will evolve in an economy where waste is truly and systematically perceived, valorised and treated as actual resources.

**GreenWin**'s project portfolio includes several success stories relating to the circularity of materials, at regional and at European level.

**50% of the projects supported by GreenWin relate to the circularity of materials and models.**

It is only quite naturally that **GreenWin** has joined the institutional partners of the Circular Wallonia strategy in 2021.

The cluster actively contributes to the Construction and Plastics sectors. The coordination of the SIA1on the circularity of materials has been entrusted to **GreenWin**.

## CIRCULAR WALLONIA:

In 2018, **GreenWin** launched PEPIT (Polymer Ecocircularity Partnership for an Industrial Transition), a first initiative for the implementation of a truly circular value chain in the polymer sector, in partnership with the MecaTech and Plastiwin clusters.

This initiative has set the basis for an approach that is more systematic and generalised to other sectors, and was a source of inspiration for **Circular Wallonia, the strategy for the deployment of the circular economy elaborated by Wallonia**, since January 2020.

PEPIT will soon give way to its successor – currently being elaborated – whose objectives and means will be adjusted to the current needs of the ecosystem.

CIRCULAR WALLONIA

## COORDINATION OF VALUE CHAINS FOR "PLASTIC MATERIALS" AND "CONSTRUCTION"

Within the framework of Wallonia's strategy in respect of the circularity of materials, **six value chains have been identified as of priority for the Region:**

PLASTIC MATERIALS

CONSTRUCTION

TEXTILES

WATER

FOOD SYSTEMS

METALLURGY

For each of these value chains, roadmaps and action plans have been elaborated.

In 2020, **the Walloon government entrusted GreenWin with the implementation of its "construction/buildings" and "plastics" taskforces.**

**This has resulted in a series of measures being taken up by the Circular Wallonia strategy, with a three-year Circular Grant running from 1 January 2021 to 31 December 2023.**

## GENERAL MISSIONS OF THE GREENWIN CLUSTER WITHIN THE FRAMEWORK OF CIRCULAR WALLONIA:

**GreenWin** has coordinated the implementation of 6 structuring activities for the "Plastic materials" value chain and 8 actions for the Task Force "Construction/building".

At the time of writing,

83%

**of "Plastic Materials" activities** and

95%

**of "Construction/building" activities**

have been initiated, directly or indirectly.

In addition to steering the implementation of the ROADMAP activities, **GreenWin** also belongs to two themed communities:

- **The coordinators** of value chains, with the aim of exchanging intersectoral good practice.
- **The communicators**, to coordinate events such as the "quinzaine wallonne" of the circular economy.

And it is also wholly logical that **GreenWin** sustained and supported the creation of a new structuring programme destined to create a new eco-circular sector in the mineral industry, REMIND WALLONIA. It saw its launch in September 2023.

## FOCUS ON A STRUCTURING PROJECT SUPPORTED BY GREENWIN MEMBERS:

### REMIND WALLONIA: turning Wallonia into the **Mineral Valley** of North-West Europe

REMIND WALLONIA is a platform for industrial, technological, and scientific excellence, and an accelerator of the circular economy in Wallonia. It was inaugurated on 5 September 2023, in the presence of Willy BORSUS, Vice-President of Wallonia and Minister for the Economy and for Research, and of Thomas DERMINE, Federal State Secretary for Economic Recovery and Strategic Investments.

**What is the ambition of REMIND WALLONIA?**

To transform Wallonia into the "Mineral Valley" of West Northern Europe by 2030, through the setting up of an **ecosystem dedicated to the circularity of mineral materials** (granules, sand, concrete, clay…) with a view to:

- Imagining new materials synergistically in co-creation (open innovation).
- Setting up new product valorisation sectors while preserving the maximum amount of added value on the Walloon territory (short channels).

**7 research & development projects are active today within REMIND WALLONIA**, supported by 15 industrialists, who benefit from the scientific support of 2 universities and 2 research centres, and from the financial support of Wallonia. These projects concern 4 strategic axes: **sustainable construction materials, high-performance concrete, alternative binders and carbonate materials.**

Through REMIND WALLONIA, a number of other industrial projects will progressively see the light of day, thus boosting the economy and long-lasting and non-relocatable employment, leading sectors towards a decarbonised Walloon industry.

This initiative is a first in Europe.

To find out more: **www.remind-wallonia.be**

REMIND Wallonia

## WALLOON S3, STRATEGIC INNOVATION INITIATIVES (SII) AND GREENWIN: A NATURAL COMPLEMENTARITY

SMART SPECIALISATION STRATEGY

S3 Wallonie

Within the framework of the 2014-2020 programme of the European funds, the European Union has requested from all European regions that they conceive a **smart specialisation strategy (S3), for research and innovation in their territory.**

**Wallonia's S3 was developed and approved in 2015** with the aim of harmonisation and collaboration between the different parties involved in the different industrial policies for regional research and innovation.

**Wallonia has placed innovation clusters at the heart of its S3**. This relies on the principle according to which each region must focus its resources on the innovation for which it detains the best assets compared to other European regions.

**GreenWin co-presides two working groups (WG) of Wallonia's S3** (WG Bioeconomy, agrifood, & natural Resources, WG Climate, Energy & Mobility) **and coordinates the "circular economy" chapter of the WG Digital & Industry.**

A FEW BASIC OBSERVATIONS AND THE CREATION OF A STRATIGIC FRAMEWORK ON WALLONIA'S S3 (SMART SPECIALISATION STRATEGY):

At the initiative of the European Commission the S3 was elaborated to address a number of observations:

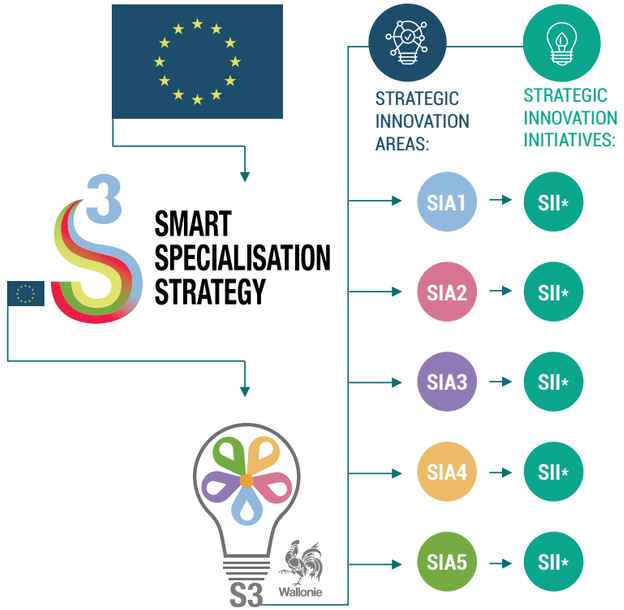
- Wallonia's ecosystem **lacks diversity when it comes to those active in innovation.**
- We have good researchers, **but not enough conversion** in industrial applications and therefore in value creation.
- We don't have enough access **to European financing**.

Wallonia has therefore identified 5 important **Strategic Innovation Areas (SIA)** that concern sectoral jewels from our economy.

**GreenWin** is directly implicated in 3 of these important SIAs and has links with 1 additional SIA (SIA3), in the light of the manufacturing industry's common interest with SIA 1 of which the cluster ensures the coordination.

EACH AREA CAN BE BROKEN DOWN INTO SEVERAL STRATEGIC INNOVATION INITIATIVES (SII) – 19 in total, 12 of which in areas directly linked to **GreenWin**, through which the Region intends to:

- **Include new players** in the innovation drive.
- **Form cross-sectoral consortia** around strategic priorities and bring about projects across the entire innovation chain.
- **Reinforce the "ascension to Europe"** for clusters of relevant parties.
- **Respond to the SIA roadmaps,** and societal **challenges.**

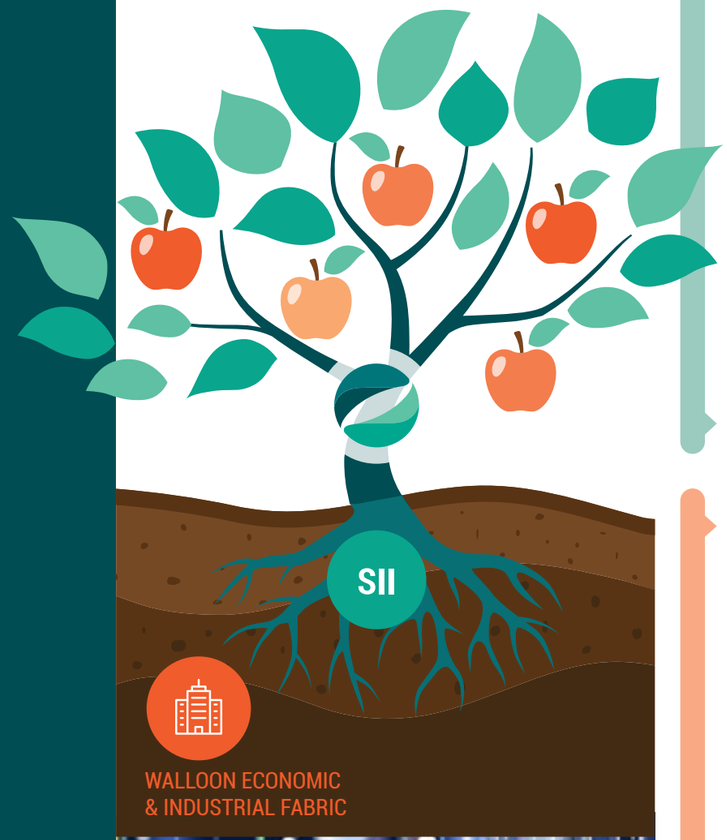



In this regard, **these SIIs strengthen thecluster's work, ambitions, and business core .**

THEY COMPLEMENT IT AND ALLOW FOR A MORE IN-DEPTH EXPLORATION, TO MEET WITH ACTORS WHO ARE YET TO BE MOBILISED IN INNOVATIVE PROJECTS AND **THUS BROADEN THE BASE OF INNOVATIVE COMPANIES WITHIN THE ECOSYSTEM.**

**GreenWin is involved in 8 out of the 12 SIIs overseen by the SIAs of direct relevance to the cluster:** more particularly in the case of **WIN4C** and Valbowal (SII1Circularity of Materials), **eWallon-Hy** (Hydrogen). **ReNOW** (and its obvious links with RENO+) in the SII4 Energy systems and sustainable housing, **H2O** (in view of the cluster's involvement and number of the cluster's projects dedicated to water), and **Waste2Bio** (in partnership with Agr-ifood cluster Wagralim), in the SSI 5 Agri-food chains of the future innovative management of the environment.

Furthermore, the cluster's involvement and its role are intended to be employed in the **CETWA SII** (SIA 4), to be developed in the **MadeinWal SII** (SIA 3 Means of design and agile and safe manufacturing), and, to a lesser extent, in **Digibiocontrol** (SIA 5).

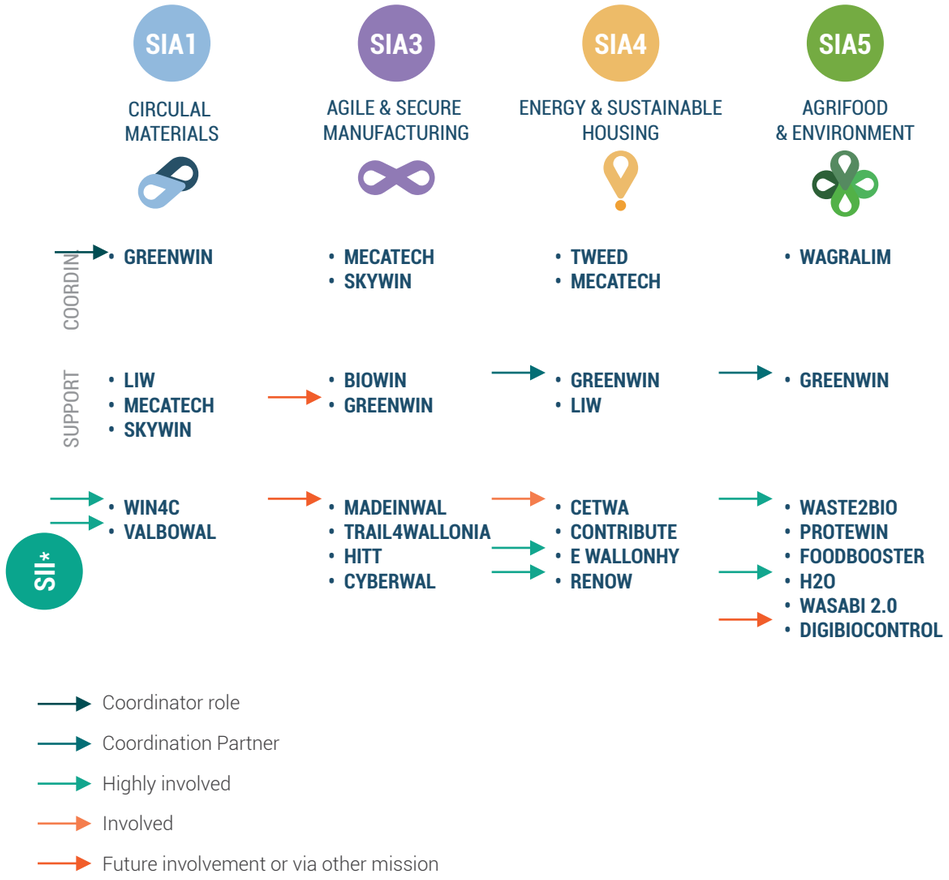



**The trunk and branches = GreenWin's ecosystem for:**

- Supporting the setting up of collaborative innovation projects.
- Facilitating the creation of consortiums and access to financing.
- Monitoring of regional and European financial instruments.
- Strategic partnerships with other members of the ecosystem.
- A favourable environment for the **creation of structuring projects for new sectors**, different, even cross- sectoral sectors, that are resilient, eco-responsible and strong, the fruits of these complementarities, cooperations and synergies.

**Like the roots of a tree, SIIs** allows to access deep into a base of companies that might still not be (or are hardly) involved in innovation but are components of our economic and industrial fabric.

By drawing on the "relays" that are SIIs and on all of its members and those involved in innovation in its ecosystem, **GreenWin** will be in a position to help and support them along the routes of collaborative innovation, mobilise them and include them in structuring projects that are creators of efficient, eco-responsible and robust sectors.






# **THE BIOBASED ECONOMY** TO ADDRESS DIFFICULTIES IN ACCESSSING RESOURCES AND TO BOOST THE IMPLEMENTATION OF REAL CIRCULARITY

The bio-based economy allows to disengage from excessive reliance on fossil resources, which are limited and non-renewable, at the same time reducing the environmental impact of companies producing and using energy by diversifying the sources of energy and income from biomass.

It is one of the **key components in a successful transition into an economy that is truly circular.**

Several members of the cluster are leaders in the production of bio-based solutions, notably in the building materials sector. Then again, the cluster's catalogue of projects also contains worthy success stories in the area of environmental remediation (depollution of water and soil).

**GreenWin** positions itself as a solid partner in this area, whether at regional or European level.

## FERTIMANURE

**The FERTIMANURE European project of** which **GreenWin** is one of 20 partners is another example of the support given by the cluster to approaches that are innovative and bio-based and are alternatives to the conventional proposals which only drag us into the vicious circles of geo-dependency and environmental toxicity that we resolutely want to break away from.

## AgriChemWhey

**Another ongoing European project, AgriChemWhey**, is supported by 11 European partners under the leadership of Irish company Glanbia. Its goal is to build and activate an industrial scale biorefinery with integrated symbiotic industrial and agricultural value chains with the capacity to valorise more than 25,000 tonnes (100% dry matter) per year of excess WP (whey protein) and DLP (delactosed whey permeate) from milk production into several value-added products aimed at growing world markets, namely lactic acid, polylactic acid, and minerals for human consumption, and bio-based fertilisers.

To watch the video produced by **GreenWin** for this project:

# FERTIMANURE

## FERTIMANURE: Respond to environmental challenges and increase the strategic autonomy of European agriculture with the implementation of circular flows

The European livestock industry generates around 1.4 billion tons of manure and slurry every year. These dejections, rich in nutrients such as nitrogen, phosphorus, potassium, but also in micronutrients, are normally dispersed on agricultural fields.

Today however, this traditional practice is confronted with several challenges:

- Raw manure is not as reliable as conventional synthetic mineral fertilisers.
- Manure contains large amounts of water which makes it expensive to transport; furthermore, it can only be used on farms that are located in close proximity to the source of manure itself.
- In many European regions, the quantity of manure generated exceeds the nutrient needs of local agriculture and its use is limited by environmental legislation, which produces management problems.
- It is a source of nuisance for neighbourhoods in regions that are often high in population density.

T HE FERTIMANURE SOLUTIONS:

- The FERTIMANURE project offers **real solutions** to the current challenges that result from the inefficient use and management of animal dejections.
- FERTIMANURE is a **model of innovative circular economy for the encouragement of rural development** in the agricultural sector, by creating real synergies and ties between farmers and members of the fertiliser industry.
- FERTIMANURE focusses on solutions to **improve the agronomic use of recycled nutrients** from livestock manure and reconnect nutrient flows between plant production and animal production.
- Finally, FERTIMANURE is working on **2 additional complementary and compatible business models**, with 2 proposals with different values, within the framework of its operating activities. The two main parties being considered for the exploitation of the project's final products are farms and fertiliser companies.

This 54-month project gathers 20 partners from 7 countries in the EU and Argentina - including universities, research centres, associative research and innovation organisations (innovation hubs), public organisations, SMEs, and NGOs. The project is coordinated by the UVic BETA Tech Centre (University of Vic – Central University of Catalonia).

It aims to offer **an approach to manure management without waste, and obtain reliable and safe fertilisers** that can compete on the European fertiliser market.

To access the video produced by **GreenWin** about this project, scan the QR code:

## GREENWIN AND THE ARDUOUSNESS OF JOBS, LABOUR SHORTAGES, CAUTIOUS RESOURCE MANAGEMENT AND MODERATION: **RESORTING TO SENSIBLE DIGITALISATION OR THE BENEFITS OF INDUSTRY 5.0**

The European industry is an essential engine in the economic and societal transitions we are currently living through.

To remain the engine for prosperity, industry must drive the digital and green transitions.

**Industry 5.0** encourages the promotion of industrial activity that **goes beyond technical or economic objectives**, such as productivity and efficiency. **It also looks at other objectives equally essential for the future of industry, such as the wellbeing of employees, sustainability, and resilience.**

**Industry 5.0 places employee wellbeing at the centre of the production process and utilises new technologies to ensure prosperity beyond jobs and growth while respecting the limits of production and of the planet.**

It therefore completes the "Industry 4.0" approach, which exists specifically by putting **research and innovation at the service of transition towards a sustainable European industry, centred on the human being and resilient.**

Industry 5.0 brings advantages to industry, to employees, and to society. It makes employees more responsible and addresses the evolution of skills and employee training needs. It increases the competitiveness of industry and contributes towards attracting the best talent.

**GreenWin** subscribes 100% to this approach:

Digitisation and robotisation must in effect be at the service of the human being, by notably reducing the arduousness of tasks, and optimising efficiency while guaranteeing wellbeing in the workplace.

They must not become exclusion factors for employment, but rather opportunities for training in their use and maintenance, generating new jobs and new opportunities.

## **DIGITAL TRANSITION:** MORE THAN A THREAT, OPPORTUNITIES TO SEIZE AND DEVELOP

Digital transition is to be looked at taking into consideration two main angles: **the technical approach, and the evolution of jobs, practices, mentalities, and corporate culture** (mind set).

It resembles the circular economy very closely: **flexibility, transparency, efficiency of flows and production costs, traceability in the production process and from suppliers (transparent production), network enterprises…** It can, consequently, come into confrontation with the conventional conception of the business model. But it is aimed at optimising the utilisation of resources, access to which is or will become at best limited, or worse, under threat.

To flourish in a successful digital transition, one must therefore accept to **question longstanding models**, and open up to changes in the corporate culture and in the business model.

Besides, it is hardly surprising that the functionality economy, in association with the circular economy, is supported in its implementation by digital technology and its numerous applications.

In this context, **GreenWin** offers its members consultation sessions and support in respect of their innovation projects, as in the case notably of **CHIMÉRIQUE** and **DIG'EASY**, both financed by Wallonia's digital agency **Agence du Numérique**.

The cluster is also an interlocutor when it comes to those involved in training and to training organisations, aiming for a better preparation for this digital transition at a company's human resources level, as well as at the level, of the creation of new jobs and skills.

## CHIMÉRIQUE AND DIG'EASY: helping hands in the digital transformation of Wallonia's SMEs in the chemistry and construction sectors:

IN 2021, **GREENWIN** SUBMITTED 2 PROJECTS WITHIN THE FRAMEWORK OF THE "INDUSTRY OF THE FUTURE" (INDUSTRIE DU FUTUR-IDF) CALL TO PROJECTS MADE BY THE AGENCE DU NUMÉRIQUE:

- **CHIMÉRIQUE**, of which **GreenWin** is the coordinator, in the "Chemistry, Rubber and Plastics" sector.
- **DIG'EASY**, coordinated by Embuild Wallonie and concerned with the construction sector.

Dig'easy

The Dig'Easy project – whose partners are Embuild Wallonie, Infopole, Wood.be, Fedustria, Logistics in Wallonia and Buildwise, the approved research centre for the construction industry, was launched in January 2022.

Its aim is to establish diagnostics for the digital maturity of SMEs in the construction sector, to inform and convince about the utility of a digitalisation that is well-calibrated to the needs of the enterprise.

Within the framework of this project, a series of digital maturity diagnostics are carried out for companies in the construction sector.

ChiMérique

This project - whose partners are essenscia Wallonie, CETIC, Certech, Sirris, the INFOPÔLE and PLASTIWIN clusters – began during the second half of 2022, on the basis of a convention between **GreenWin** and the Agence du Numérique.

**GreenWin** is the coordinator for this project, for which a Head of Digital Transition was recruited.

CHIMÉRIQUE created inspiring events et and opportunities for networking and exchanging around digital good practice for companies in the Chemical-Rubber-Plastics sectors.

For more information:



## SCALE-UP MISSION: SUPPORTING WALLOON SMES WITH THEIR IMPLEMENTATION AND GROWTH

The SCALE-UP mission is an initiative by Wallonia that offers made-to-measure support to Walloon SMEs to help them gain momentum and gain access to markets.

It is backed by 9 Walloon partners, including Wallonia's 6 innovation clusters, Wallonie Entreprendre, and the incubator WSL (Wallonia Space Logistics).

To assist SMEs to achieve their full potential in terms of sales and staff recruitment while avoiding the most common traps at the rapid development stage, Wallonia put the "SCALE-UP" mission in place.

By participating in this programme, companies can benefit from individuals with experience and from means put at their disposal for 2 years. Objectives? To lift any current hindrance to growth and help to structure their development. The programme can be adapted 100% to the needs of the enterprise.

It is based on long-term support with a SCALE-UP advisor assisted by ad hoc services that can be activated on an "à la carte" basis, according to the priority needs and challenges of the company.

**Wallonia's SCALE-UP mission consists in identifying companies that are experiencing strong growth and supporting them with a personalised expertise tool that will make it possible to act on several levers for growth.**

**The goal here is to accelerate the emergence of companies of a certain size in Wallonia.**

### What do we mean by **"high growth companies"**?

These are companies:

- With at least one place of business in Wallonia or who will open one in Wallonia within the framework of this growth;
- with an established business model, founded on a product/service that potentially creates high value;
- that has strong growth potential (business model with large-scale potential);
- with credible market validation, in the commercialisation phase;
- with a turnover above €1,000,000.00, or with at least 10 members of staff.

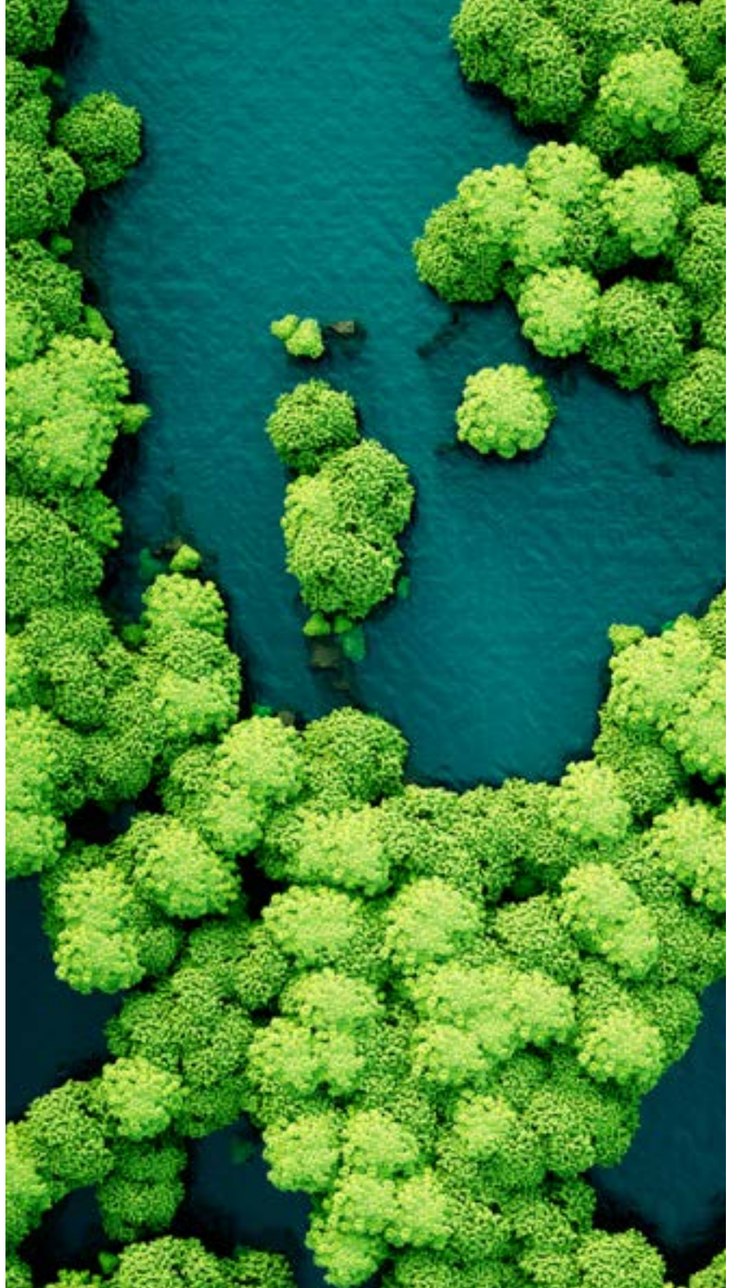
These criteria are indicative and non-exhaustive. Proposals will be looked at on a case-by-case basis and selected ad hoc, in the hope of optimising the candidate's chances of obtaining support.

## GREENWIN AND ENVIRONMENTAL POLLUTIONS:
## THE REHABILITATION AND CLEANING UP OF THE ENVIRONMENT

Environmental technologies constitute **a weapon when it comes to the rehabilitation and cleaning up of the environment.** Wallonia has developed real expertise in the matter, with the taking over, management and repurposing of old industrial sites left for wasteland after the disappearance of heavy industries with heavy environmental impacts. Conscious of these environmental duties, and aware of the **economic opportunities**, a regional impulse for the remediation of soil, air, and water (waterways and groundwater), at the beginning of the noughties, raised Wallonia to the top of the regions that are custodians of know-how in this field. Taking into consideration the strategic challenges of these natural resources, in the short, medium, and long term, at global level, encourages the cluster to continue supporting innovation projects in this field whose consequent vocation is exporting to outside markets.

Companies, university laboratories, "hautes écoles", research centres are all able to pool their expertise and resources to bring about concrete projects, in situ, in partnership with organisations and companies dedicated to these subjects.

**Several of the cluster's projects are emblematic** of this savoir- faire, and they are consequently classified in this handbook by suitable pictograms.



## BLUE, WHITE, GREEN:
## THE GREENWIN BIOTECHNOLOGIES

Wallonia's expertise in biotechnology goes back to the Middle-Ages and to its brewing tradition: what better example of the way in which enzymes, yeasts, and micro-organisms enter into the transformation of matter and ingredients to end up with a totally new product?

**As a result of biotechnology, researchers active within GreenWin are targeting energy production and the production of biomaterials by preserving the environment.**

**BLUE BIOTECHS**
constitute a specific category of biotechnologies.

They use **marine resources** (mainly seaweeds and micro seaweeds) as their base materials. They are in fact also called marine biotechnologies as they are concerned with biotechnologies that employ marine organisms.

**WHITE BIOTECHS**
**use nature** to serve industrial processes in a **low-energy approach that is respectful of the environment.**

Their ambition is to sustainably produce biochemical substances, biomaterials, and biofuels on an industrial scale and from renewable resources.

**GREEN BIOTECHS**
are involved with the **plant world.** But careful: the adjective "green" does not guarantee that it is necessarily a biotechnology that is concerned about the environment.

Green biotechnologies apply to agriculture and food, but they also invest in other fields that are non-food related like the production of energy and the production of biomaterials, while preserving the environment.

Since 2014,
the **GreenWin** cluster,
in collaboration with
**ValBiom**, has become
an effective member of
the European Biobased
Industries Consortium
BIC which gathers the European
bio-based industry.

BIC (approximately 200 members)
represents the private sector in this
public- private partnership established
with the European Commission,
the BioBased Industries Joint-
Undertaking.

**This alliance opens the way for Wallonia's SMEs active in the sectors relevant to the cluster to access the European programmes for the bio-based economy,** access to which would otherwise be much more complicated.

## (BIO)TECHNOLOGIES AT THE SERVICE OF **ENVIRONMENTAL REMEDIATION**

One of the 3 sectors of application to the cluster is dedicated to environmental (bio)technologies. Their goal is to repair, rehabilitate sites affected by human activities, including those that are now no longer practiced.

Air, water, soils, natural areas, everything that constitutes our living environment must be treated with respect. Our survival on Earth depends on it. We are responsible for it, including for future generations and the fauna and flora we depend on so much.

A whole chapter of **GreenWin**'s work and projects are aimed at their depollution, and their re-establishment to a position they should never have lost. Chemistry (ideally green, sometimes bio-based) and biology supply ecofriendly keys and solutions to this end.

**Our catalogue of success stories** perfectly illustrates the approach favoured by us with for example projects such as MEDIX (dedicated to the depollution of used waters from hospitals and healthcare centres) and MEMORIS (dedicated to the depollution of industrial wasteland contaminated by heavy metals). But beyond this type of remediation, **GreenWin intends to favour regenerative models which, instead of repairing the damage caused to nature, will suggest solutions that strengthen it, maintains it in equilibrium, and makes it thrive.**

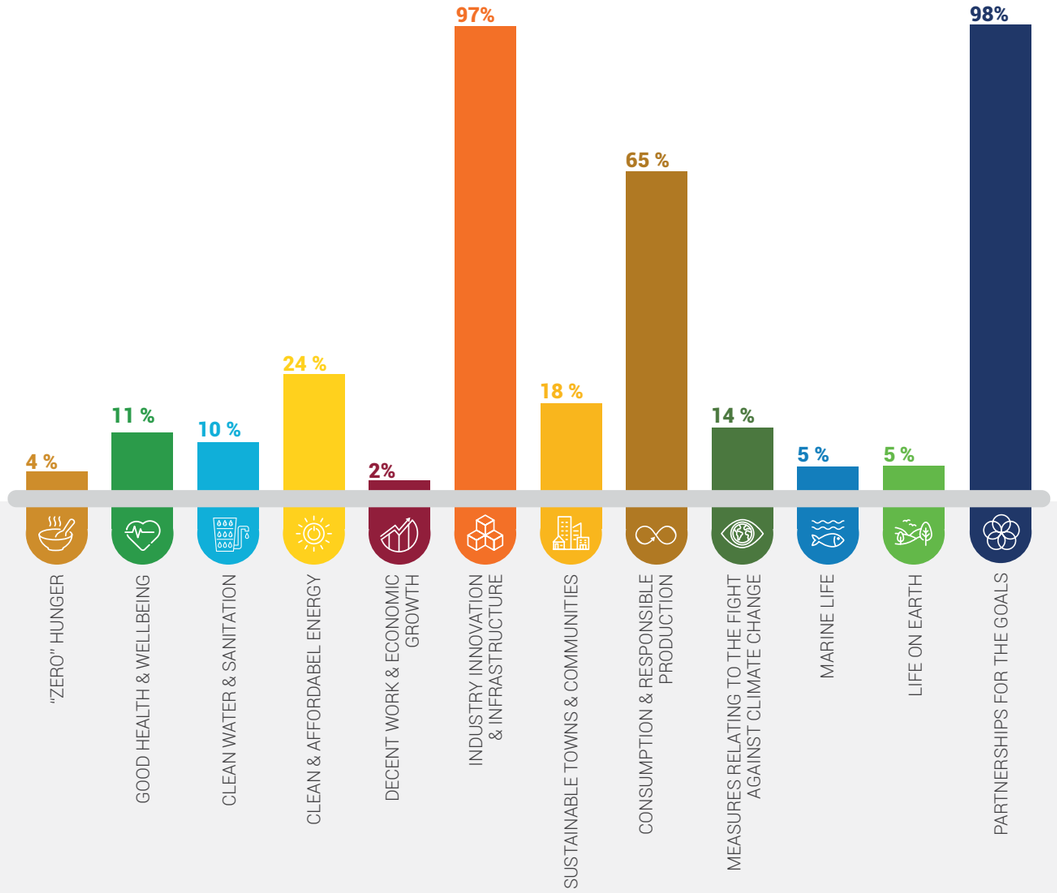


## **GREENWIN**, COMPATIBLE BY NATURE WITH **THE SUSTAINABLE DEVELOPMENT GOALS OF THE UNITED NATIONS**

**17 OBJECTIVES, DEFINED BY THE UNITED NATIONS, FOR A SUSTAINABLE WORLD:**
Sustainable development objectives provide us with the path to follow in order to achieve a better future that is more sustainable for all. They address the global challenges that we face, notably those linked to poverty, inequality, climate, the degradation of the environment, prosperity, peace, and justice. The objectives are interconnected, and to leave nobody aside, it is important to reach each and every one, and each of their targets, by 2030. These objectives in fact constitute criteria for good governance – "as a good family man/woman", and as a rule of law(s).

Descriptions of **GreenWin**'s projects, presented further down, touch upon one or several of these objectives – these are highlighted for each of the different projects.

## SUSTAINABLE DEVELOPMENT OBJECTIVES COVERED BY THE CLUSTER PROJECTS BY DIRECT CONTRIBUTION






**ABOUT GREENWIN:**

# GREENWIN IN FIGURES

## Companies that are members of the **GreenWin** cluster feature among some of **the most successful companies in Wallonia and Belgium**:

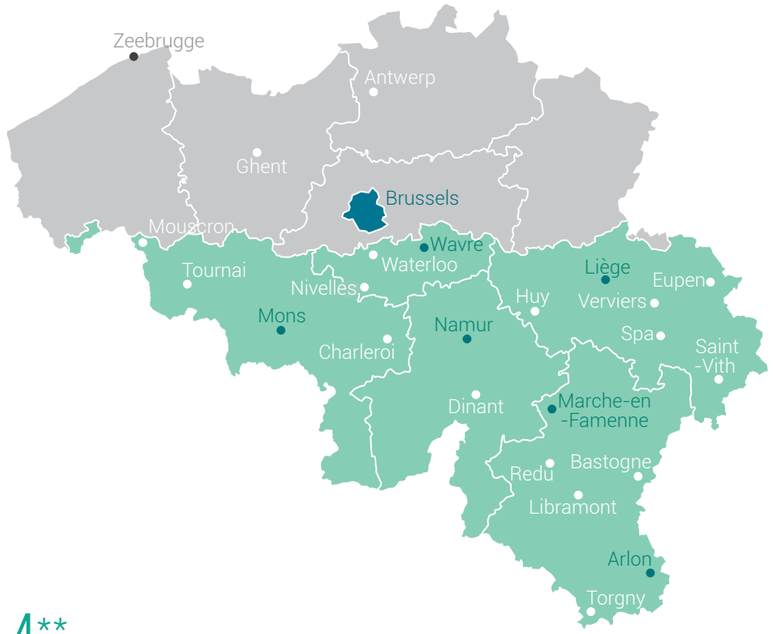
**+20%****
(+25% SME)
**EMPLOYMENT GROWTH RATE**

**+13%****
(+42% SME)
**VALUE ADDED GROWTH RATE**

**95,000***
**DIRECT JOBS**
(24% of industrial employment)

**180,000***
**INDIRECT JOBS**

**€ 24,400 M****
**EXPORTS**
(15% of Wallonia's total exports)




* Figures from **GreenWin**'s industrial sectors: Chemistry, Construction and the Environment
** Since 2018

## **GREENWIN** IN A FEW FIGURES...

**GreenWin**'s membership is made up of companies (small, medium, and large), 5 universities and their research laboratories, hautes écoles, approved research centres, suppliers of further education, and sectoral and professional federations.

**It constitutes a network and source of collaboration that is as rich as it is varied.**

**GreenWin** is strengthened by its 6 international partnerships with equivalent hubs in France, Italy, the United Kingdom, Quebec, and Flanders.
It is also a member of 5 large international networks.

## MEMBERSHIP

THERE ARE 3 LEVELS OF MEMBERSHIP:
**MEMBER, REGULAR MEMBER, PREMIUM MEMBER**

The cost for the Premium membership presents good value in view of the advantages the formula offers.
To consult our membership price list, please consult the dedicated page on our website:
*https://www.greenwin.be/page/cotisations.*

**220+**
**MEMBERS**

**170+**
**COMPANIES**

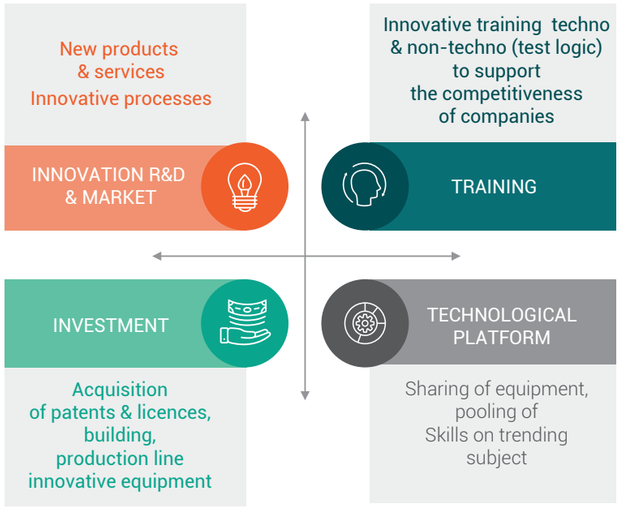
**6**
**INTERNATIONAL PARTNERS**

**5**
**INTERNATIONAL NETWORKS THAT GREENWIN BELONGS TO**

# The cluster's raison d'être and the **completion of collaborative innovation projects.**

## CLASSIFICATION
## OF THE CLUSTER'S PROJECTS

THE TYPOLOGY OF CLUSTER PROJECTS
IS OUTLINED AS FOLLOWS:




These different types of projects can coexist within one same cluster project.

**A CLUSTER PROJECT IS AN AMBITIOUS PROJECT THAT MUST MAINLY MEET 4 CRITERIA:**

- **COLLABORATIVE:** there must be effective collaboration between partners.
- **INNOVATIVE:** the new product/ process/service must be innovative compared to the state of the art.
- **SIZEABLE MARKET:** the market being targeted must be large enough to have an impact at regional level, the consortium must be able to access it.
- **INTERNATIONAL:** the project must have a vision for its deployment at international level in the medium term.

| | |
|---|---|
| Objectives | Development of a new process/product/innovative service able to be valorised on the market |
| Consortium Min. 2+2 | Univ./HE/CRA + Univ./HE/CRA + PME + PME/GE |
| Sizeable budget | Between €800,000.00 and €10,000,000.00 per project |
| Project length | 2 to 4 years |
| Financial support | Between 40% and 100% in grants. |
| Type of eligible research | Research: laboratory, generation of new knowledge.<br>Development: on site, putting into practice existing knowledge. Up to pilot level! |
| Time2market | Medium term: 3 to 5 years |

**R&D CLUSTER PROJECT**

| | |
|---|---|
| TRL 1 | Basic principles observed |
| TRL 2 | Technological concept formulated |
| TRL 3 | Experimental test of the concept |
| TRL 4 | Technology validated in laboratory |
| TRL 5 | Technology validated in indicative environment<br>*(industrial environment in the case of KETs)* |
| TRL 6 | Technology established in indicative environment<br>*(industrial environment in the case of KETs)* |
| TRL 7 | Prototyped demonstration of the system in operational environment |
| TRL 8 | System accomplished and qualified |
| TRL 9 | Real system established in operational environment<br>*(competitive manufacturing in the case de KETs; or in situ)* |

*TRL = Technology Readinesss Level = technological maturity of project*

## SUCCESS RATE

AS A RESULT OF ITS SUPPORT ROLE,
THE CLUSTER PRESENTS WITH
THE FOLLOWING SUCCESS RATES:

# 71%

**QUALIFICATION RATE OF PROJECTS PRESENTED BY GREENWIN**

Compared to 12% at European level and 20 to 50% with conventional Walloon support.

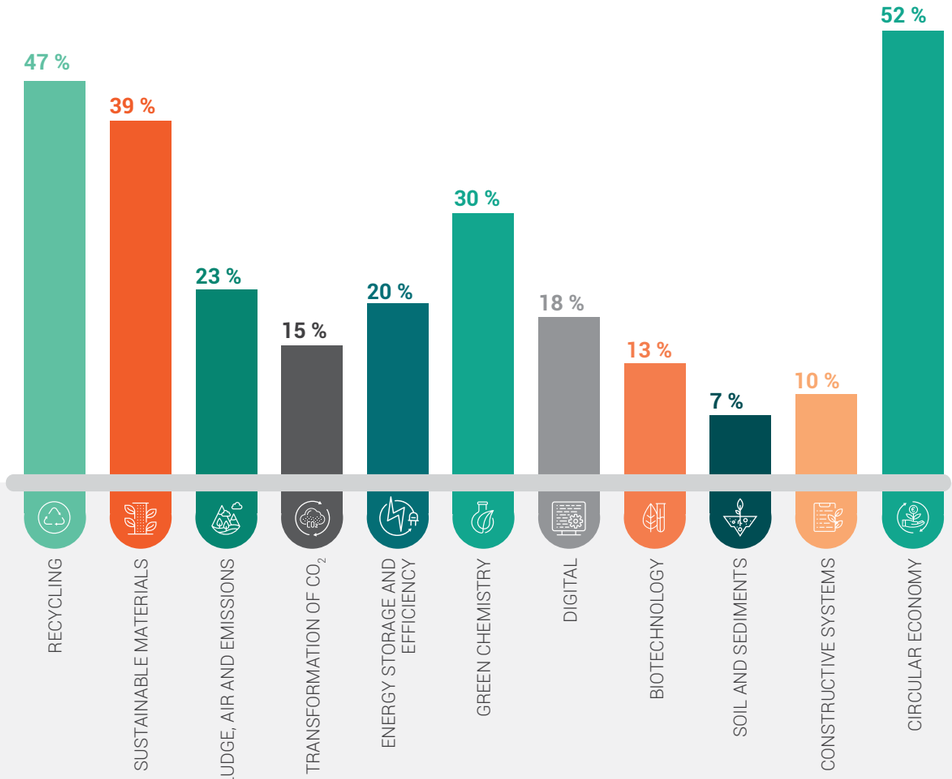
# 94

**NUMBER OF PROJECTS QUALIFIED SINCE THE HUB'S CREATION IN 2011 UNTIL 2018…**

# 5

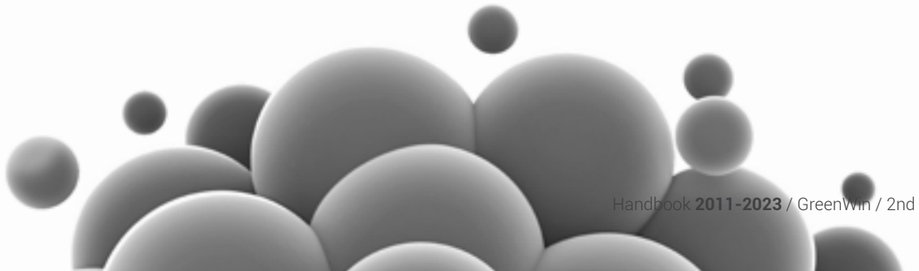
**TECHNOLOGICAL PLATFORMS CREATED, INCLUDING 1 INTERNATIONAL SINCE THE HUB'S CREATION.**

## THEMATIC DISTRIBUTION OF THE CLUSTER'S PROJECTS



**AT THE HEART OF THE WALLOON ECOSYSTEM:**

# GREENWIN STRATEGIC PARTNERSHIPS



# GREENWIN'S INTERNATIONAL STRATEGY

## SOCIETAL CHALLENGES

**The climate challenge**, in the front seat of the innovation engine

**Circularity:** to no longer go round in circles with our resource management

**Digitalisation** at the service of collective wellbeing

## AMBITIONS

**Ensure better internationalisation for cluster members.**
**Attract European financing for members.**
**(GREEN DEAL and RECOVERY & RESILIENCE FACILITY).**
**Support and implement the RIS3.**
**Provide foreign investors with an attractive ecosystem.**

## STRATEGY

Stimulation **of collaborative innovation projects**

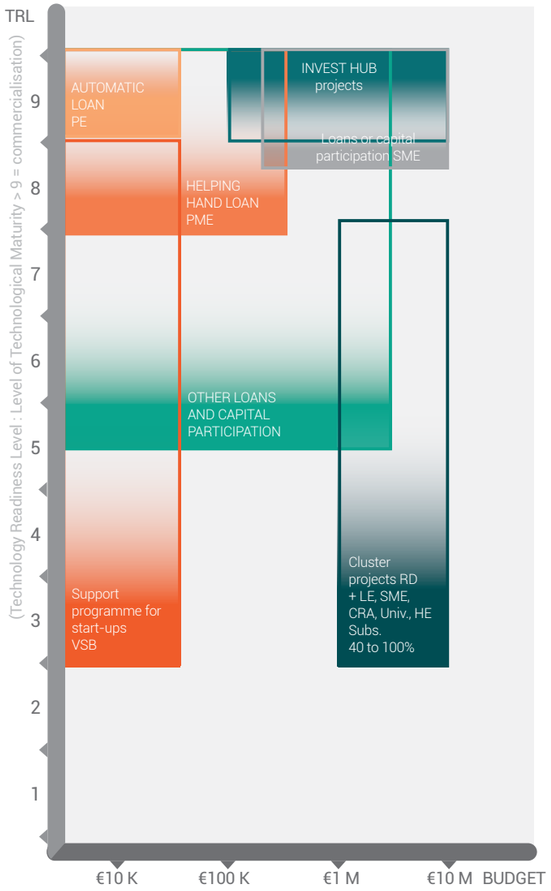
**Valorisation** of our members' cluster projects and technologies

**Support** & strategic integration in **EU networks/consortia**



# GREENWIN'S PLACE IN THE WALLOON ECOSYSTEM

**GreenWin** intervenes within the Walloon ecosystem, in complementarity with other financing entities - also strategic partners of the cluster – companies, and Walloon initiatives.




**INNOVATION HUBS:**

- RD PROJECTS: product/process/service development between €800k and €10M, percentage between 40 and 80% for companies.
- PROJET INVEST: up to 3% aid.

**WALLONIE ENTREPRENDRE:**

- HELPING HAND LOAN: loan by someone close who offers 4% in exchange for tax reductions the first years then 2.5 the following years, on the amount borrowed. Max 100 k by lender and 250k by borrower, period between 4 and 10 years. www.wallonie.be/fr/actualites/prolongation-du-pret-coup-de-pouce
- AUTOMATIC LOAN: max €75,000.00 for companies: property, buying back of company. www.sowalfin.be/financement/pret-automatique/

**OTHER LOANS:**

- "EASY UP": €500k for innovation and the development of product/process/service. www.sowalfin.be/financement/pret-easy-up/
- "EASY-GREEN": €1M per project for eco- innovation and similar. www.sowalfin.be/financement/pret-easy-green/
- INVESTS WALLONS LOAN: €3.5M for companies. www.sowalfin.be/financement/prets-invests-wallons/

**THE WALLOON "INVESTS":**
www.sowalfin.be/les-invests-wallons/
https://investbw.be/partenariat/#types

# STRATEGIC PARTNERS OPERATING AT SEVERAL LEVELS, SECTORIAL AND GEOGRAPHICAL

**IN BELGIUM**:

**GreenWin belongs to a community of six Walloon innovation clusters**, along with BIOWIN (life sciences and medical/health biotechnology), LOGISTICS IN WALLONIA (logistics and freight transport), MECATECH (mechanical engineering and metallurgy), SKYWIN (aeronautical sector) and WAGRALIM (agri-food sector).

**GreenWin**'s focus on three sectors of activity brings it to regularly collaborate with the following **business clusters**: CAP CONSTRUCTION, ECO-CONSTRUCTION, INFOPÔLE, PLASTIWIN, and TWEED.

**Professional federations are our preferred interlocutors and privileged partners:** AGORIA, CANOPEA, DENUO, EMBUILD Wallonie, ESSENSCIA, FEBELCEM, FEDUSTRIA, FEGE, INDUFED and WOOD.BE in particular.

VALBIOM is a Walloon benchmarking body and our strategic partner for anything that concerns the **valorisation of biomass**.

In order to facilitate partnerships between the North and the South of Belgium, **GreenWin** signed a Memorandum of Understanding (MoU) with is Flemish counterpart CATALISTI. **Its aim? To facilitate the setting up of interregional collaborative innovation projects while respecting the specificities and modalities of each region in the co-financing procedure.**

As the cluster is in pole position when it comes to identifying new production methods and new professions resulting from innovation, it is naturally a privileged partner for Walloon training and skills centres and operators such as FOREM, IFAPME, TECHNIFUTUR TIC, SOLVAY BUSINESS SCHOOL ECONOMICS & MANAGEMENT (Masters in Sustainable Development), the FACULTY of the UCLouvain School of Management, the EPHEC, HE CONDORCET, HELMO, HEPL, and others.

Finally, **the valorisation of the cluster's projects and of its Members on external markets** is only made with the support of the relevant official promotional organisations in Wallonia and in the Fédération Wallonie-Bruxelles, namely and respectively AWEX and WBI.



**IN EUROPE:**

In 2018 already, the cluster would play an important role in several networks that are actively involved in the themes as defined by the operational cell; **GreenWin**'s presence within them helping to support the regional strategic vision in the medium and long term, notably in the sectors of the bio-based economy.

Within this framework, let us also mention the follow-up and daily activities undertaken by the cluster within Walloon networks (COQ VERT), Belgian networks (GRD NETWORK - Groupe Recherche-Développement), and European networks such as **VANGUARD**, **$CO_2$ VALUE EUROPE**, **SUSCHEM** and **BIC**.

Accordingly, it is essentially within the BIC network (Biobased Industries Consortium) that the cluster has chosen to be the most active.

**At European level**, the cluster, in collaboration with **VALBIOM** and the **NCP WALLONIE** has been the most present within the BIC consortium. Within the framework of this network, **it represents around 10 Walloon enterprises.**

Finally, the cluster continues to work with the European $CO_2$ Association, **$CO_2$ VALUE EUROPE**, launched at the end of 2017, following in the footsteps of the SCOT European project steered by **GreenWin**. The list of current members of the association can be found on http://www.co2value.eu/about-us/members/.

**GreenWin's dynamism on external markets and within European initiatives has facilitated networking possibilities with innovation hubs from other European countries.** In this context, the cluster has signed MoUs with its British, French and Italian counterparts, CAMBRIDGE CLEANTECH, AXELERA and SPRING ITALY. In 2022, **GreenWin** equally formalised in this way its cooperation with the British cluster **Cambridge CleanTech**. Other clusters form The Netherlands, Switzerland, the Grand Duchy of Luxembourg, and Germany are regular interlocutors.

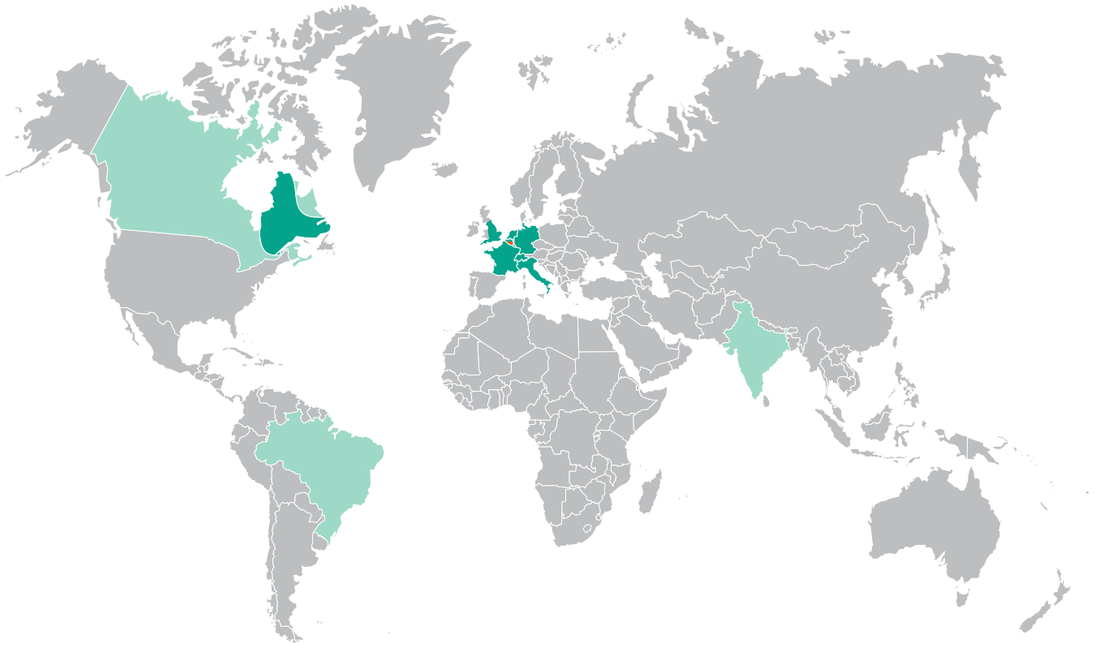
## PARTNERSHIPS & EUROPEAN COLLABORATIONS

**OUTSIDE EUROPE:**

However, **GreenWin**'s connections spread well beyond EU borders. **Our business relations in Quebec** give us the opportunity to collaborate regularly with our local equivalent, CRIBIQ (Consortium for research and innovation in industrial bioprocesses in Quebec).

Other partnerships on the different international markets that **GreenWin** considers a priority, such as Brazil or India, for example, can also be envisaged.

## INTERNATIONAL PARTNERSHIPS & COLLABORATIONS





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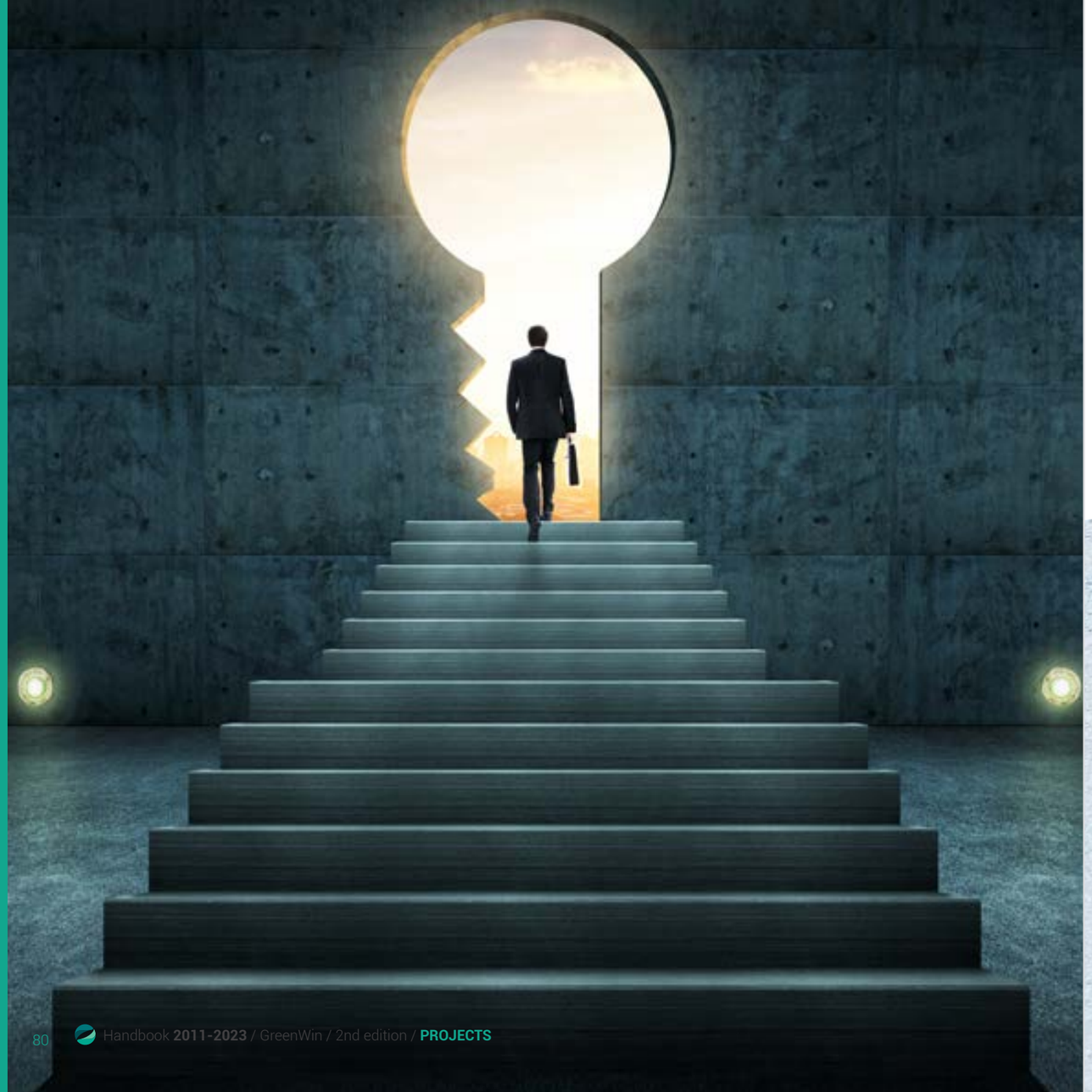




# ACCUTHERM

SECTORS:
CONSTRUCTION
CHEMISTRY

ENERGY EFFICIENCY

INDUSTRIAL PROCESSES
MORE RESPECTFUL
OF THE ENVIRONMENT

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# ACCUTHERM

**HOW CAN YOU PROPOSE AN INTEGRATED SOLUTION THAT ALLOWS FOR THE STORAGE OF** (COLD) **THERMAL ENERGY THAT OPTIMISES THE ENERGY EFFICIENCY OF REFRIGERATION INSTALLATIONS?**

**GreenWin presents ACCUTHERM:**

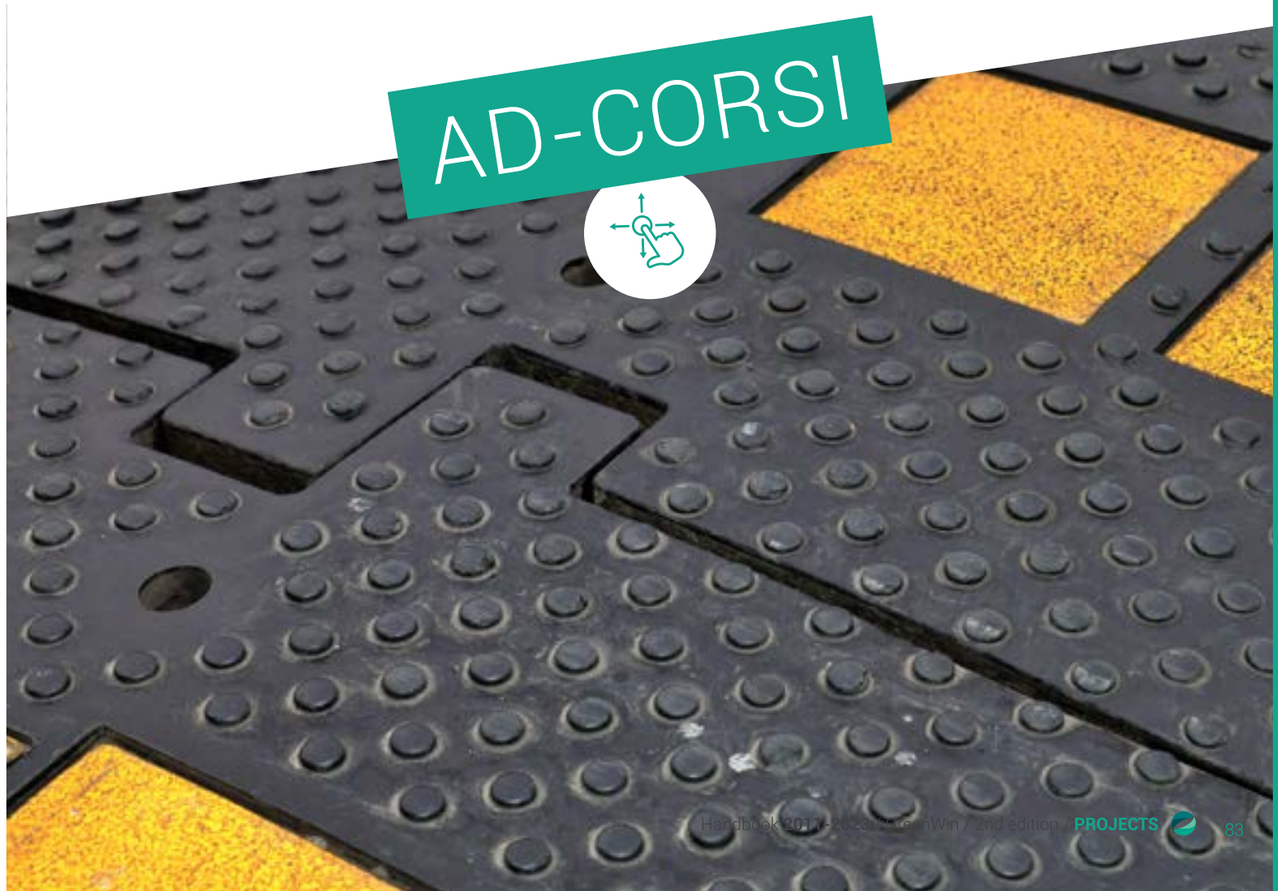
ACCUTHERM aims to use integrated phase change materials within a complete cold storage system with the final objective of proposing an advantageous alternative to electric batteries that maximises the use of renewable forms of energy (intermittent by definition). Materials used by ACCUTHERM do not harm the environment and are also non-flammable.

The research undertaken has allowed the identification of promising solutions for positive cold storage applications (> 0°C) that can be used at various levels, from the local butcher shop to industrial production halls that require large amounts of cold.

**THE "PLUSSES":**

- ACCUTHERM allows for the shifting of peak energy consumption to times when energy is far less in demand and therefore cheaper: 90% of energy needs are concentrated within a period of 8 hours out of 24.
- ACCUTHERM ideally complements renewable energy installations (solar, wind) with the 100% use of free energy these offer.
- The bulkiness of the installation is very limited compared to the volume of cold rooms, a measure of how easy it is to install.
- The system can be installed in "plug and play" on any type of refrigeration installation.
- Unlike with a classic battery, performance does not deteriorate over time.
- The materials used are totally harmless to the environment.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTORS:
CHEMISTRY
ENVIRONMENT

CIRCULARITY OF
PLASTICS
RECYCLING

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE
CONSUMPTION
& PRODUCTION

# AD-CORSI

**HOW CAN YOU ENHANCE THE THERMOSETTING PLASTIC RECLAMATION PROCESS TO ACCESS NEW MARKETS WITH HIGHER ADDED VALUE?**

**GreenWin presents AD-CORSI:**

The aim of the AD-CORSSI project is to improve the process of revalorisation of thermosetting plastic by using a special application (the development of an industrial speed reducer) with the objective of reaching new markets within the circular economy.

The project will see the automation of the conveying of raw material from mixer to mould, drastically diminishing any sources of variability in the actual manufacturing process. As a result of this stabilisation, it will be possible to create a material model to analyse any remaining variables, such as the different supply sources.

This material model could then be integrated into the production process digital twin, helping to anticipate production vulnerabilities, notably those linked to new material mixes.

These improvements will be directly taken advantage of with the commercialisation of a speed reducer specifically conceived for heavy goods vehicles and industrial vehicles. Existing local industrial constraints mean that solutions currently being used for this type of traffic are not resistant enough and have a much shorter life cycle. An LCA assessment will be also carried out on these developments.

**THE "PLUSSES":**

- This market (HGVs and industrial vehicles) is only one example of the markets that can be targeted by the revalorisation of the material or the digital twin and the templating of the recycled products.
  In 2029, five years after the end of the project, 29 direct employments would be created. It is also expected that turnover for the three partners involved would increase by around 9 million Euros.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

DECONTAMINATION
OF THE ENVIRONMENT
BIOTECHNOLOGY
SOILS & SEDIMENTS

PUBLIC HEALTH

GOOD HEALTH & WELL-BEING
INDUSTRY, INNOVATION
& INFRASTRUCTURE

# ADEKIT II

**HOW CAN YOU QUICKLY, EASILY AND COST-EFFECTIVELY DETECT SIX TYPES OF ASBESTOS ON-SITE AND IN CONSTRUCTION AND INDUSTRIAL MATERIALS?**

**GreenWin presents ADEKIT II:**

Although its use has been banned since 2001, asbestos is still regularly found in buildings, a fact that constitutes a major preoccupation when it comes to public health and is of growing concern to the construction sector. Faced with this, the technologies currently available to the professionals involved in the removal of asbestos are burdensome, costly, and particularly time-consuming, especially when it comes to its rapid detection, something that is impossible to do on-site at the present time, giving rise to the need for laboratory analysis, something that can sometimes badly affect construction deadlines.

The objective of the ADEKIT II project is to continue to undertake, and to finalise, on the basis of the results obtained with ADEKIT I, the different research phases necessary for the industrial development of a rapid detection kit in respect of the 6 different types of asbestos found on-site in building and industrial materials by means of a biological method that is based on the use of specific peptides.

A strong partnership between industrialists and researchers who all share a common vision has resulted in the creation of a new company in order to valorise this diagnostic kit.

**THE "PLUSSES":**

- Fast and affordable in-situ method for detecting the 6 types of asbestos found in construction and industrial materials.
- Practical tool for the removal of asbestos in total safety.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# ATISOL C2C

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
ENERGY EFFICIENCY
OF BUILDINGS

QUALITY OF HOME
ENVIRONMENT

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES
RESPONSIBLE CONSUMPTION
& PRODUCTION

**HOW CAN YOU INSULATE AND VENTILATE A BUILDING, BETTER AND ECOLOGICALLY?**

**GreenWin presents ATISOL C2C:**

ATISOL C2C proposes an air and vapour barrier membrane that is produced from plant material combined with cork and wood fibre. It can be used in the renovation of existing constructions or in the construction of new timber-framed buildings.

The process conceived includes an insulation material, a vapour barrier and a coating, providing a solution that is totally ecological over the entirety of its life cycle. This allows for a reduction in energy loss, slows the passage of damp into the construction, and prevents problems with condensation within the insulation itself.

**THE "PLUSSES":**

- More reliable life expectancy.
- Faster application.
- Ease of dismantling and possibility to reuse.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

CO-LABELLING: **GreenWin** | **MecaTech**

SECTORS:
CHEMISTRY
ENVIRONMENT

GREEN CHEMISTRY
WATER, SLUDGE, AIR
& EMISSIONS

PUBLIC HEALTH

CLEAN WATER & SANITATION
INDUSTRY, INNOVATION
& INFRASTRUCTURE

# BLUE V

**HOW CAN YOU DISINFECT AND DECONTAMINATE WATER WITHOUT THE USE OF CHLORINE, BROMINE OR OTHER UV STERILISERS?**

**GreenWin presents BLUE V:**

BLUE V proposes the development of a new generation of low energy advanced oxidation sterilisers. The system allows for water to be disinfected and decontaminated.

The solution will also be certified for the treatment of recreational waters such as swimming pools and fountains.

**THE "PLUSSES" COMPARED TO EXISTING SOLUTIONS:**

- Simpler and cheaper for the end user.
- More efficient.
- Less energy hungry.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be




The CIMEDE project aims to develop a new construction concept based on industrially prefabricated wood panels.
The system was developed in two phases:

- *the first destined for family homes (CIMEDE 1);*
- *the second for the wider community (CIMEDE2).*

**CIMEDE is a concept based on a social and circular economic model.**

**HOW DOES ONE BUILD FLEXIBLE, SUSTAINABLE AND ECONOMICAL TIMBER FRAME HOMES?**

**GreenWin presents CIMEDE1:**

CIMEDE is a new patented timber frame construction system using industrially prefabricated timber that allows for the construction of flexible low-energy buildings.

**THE "PLUSSES":**

- Speed of construction.
- Limited and non-intrusive intervention on building sites.
- Reduction in $CO_2$ emissions as a result of the low levels of energy required for the transformation of wood.
- Flexible interior construction (easy displacement of internal panels with no impact on interior finishes).
- Possibility of expanding (or reducing) the building in order to adapt to the real needs of the occupants.
- Ease of adaptation over time (modification of interior and exterior finishes / shifting, additions or removal of window openings).

SUCCESS STORY

SECTOR:
CONSTRUCTION

MODULAR CONSTRUCTION
ENERGY EFFICIENCY
IN BUILDINGS

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES
RESPONSIBLE CONSUMPTION
& PRODUCTION

## HOW CAN ONE BUILD TIMBER FRAME CARE CENTRES FOR THE DISABLED, OR RETIREMENT HOMES, NURSERIES AND SCHOOLS?

**GreenWin presents CIMEDE2:**

One of the aims of this project is to allow potential new buyers, notably young couples, to achieve ownership of homes that can progressively adapt to their needs at competitive prices, while still maintaining optimum levels of quality, finish and comfort.

Technically, the CIMEDE construction system is composed of different elements that allow for a building to be conceived as flexibly as possible.

**THE "PLUSSES":**

- Flexible nature of the building (easy displacement of internal panels with no impact on interior finish).
- Possibility to expand (or reduce) the building in order to adapt to the real needs of the occupants.
- Ease of adaptation over time (modification of interior and exterior finishes / relocation, adding or removing of window openings).

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CHEMISTRY
ENVIRONMENT

PLASTIC CIRCULAR ECONOMY
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION

# CIRC-PVC

## HOW CAN YOU DEVELOP THE CIRCULARITY OF PVC CONSTRUCTION WASTE WITH DISSOLUTION TECHNOLOGY?

**GreenWin presents CIRC-PVC:**

Today still, plastic waste too often ends up being incinerated or being buried when it could be used as raw material in new applications. This is notably the case of PVC which is mainly used in the construction sector.

If the mechanical recycling of PVC is well developed in the case of rigid applications such as window frames or tubes, there is no technology for recycling flexible applications such as cables, tarpaulins, or composite structures like floor coatings.

CIRC-PVC intends to perfect a technology based on dissolution and extraction, at prototype level, along with a novel sorting technology that will help separate PVC waste according to its nature. The final product will be a R-PVC (recycled PVC, end-of-waste status).

The subsequent transition to an industrial unit with a PVC waste treatment capacity of 20 to 40.000 tons will make it possible to supply a market for R-PVC that is estimated at 1.8 million tons by 2030.

**THE "PLUSSES":**

- Development of a new recycling technology for PVC waste with separation of composite structures and extraction of prohibited additives, in order to recycle the PVC in the same application.
- Improved organisation on construction sites when it comes to the selective collection of plastics and PVC in particular.
- Creation of several dozen jobs in Wallonia.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be




## HOW CAN LARGE QUANTITIES OF ALTERNATIVE SECONDARY MATERIALS (MSA), CURRENTLY WITH NO OUTLET, BE TRANSFORMED TO CREATE NEW ADDITIONAL MINERALS FOR CEMENTS?

**GreenWin presents COSMOCEM:**

The cement industry faces a number of challenges, namely:

- in terms of materials, a reduction in natural resources and the decreasing availability of mineral additions used in cement, such as blast furnace slag and flue dust;
- on an economic and environmental level, the ceiling on $CO_2$ quotas along with competing imports of foreign cement and foreign clinker.

SECTORS:
CONSTRUCTION &
ENVIRONMENT

DECONTAMINATION
OF THE ENVIRONMENT
WASTE VALORISATION
SUSTAINABLE MATERIALS

CIRCULAR ECONOMY
DIGITAL

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

In this context, the project's objective is the creation of mineral additives for hydraulic binders resulting from the transformation of poorly or non-valorised Walloon waste streams by a new ecologic activation process operated by Artificial Intelligence.

It is therefore now necessary to find the best way of transforming important MSA streams with few or no outlets or means of being valorised in order to create new reactive mineral additives necessary for the production of cement.

**THE « PLUSSES »:**

- For CBR, in addition to maintaining the activity of cement factories in Wallonia: independence from traditional reactive materials; diminution in the shortage of raw materials; a stronger position compared to the competition; improved cost price; improvement in environmental footprint (reduction of $CO_2$ and less energy-intensive process, clinker substitution (0,8 t $CO_2$ /t clinker), local streams > reduced logistics, valorisation of greater internal MSA streams, energy-related and predictive monitoring with high tech tools).
- For the waste treatment sector, apart from the setting up of a novel sector:
  - Sustainable solution for asbestos-linked waste.
  - Rehabilitation of former industrial sites.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CONSTRUCTION

CONSTRUCTION
DIGITAL

OPTIMISED CONSTRUCTION
SITE MANAGEMENT
ENVIRONMENTALLY FRIENDLY
INDUSTRIAL PROCESSES

INDUSTRY, INNOVATION
& INFRASTRUCTURE
CONSOMMATION &
PRODUCTION RESPONSABLES

# DEEPCONSTRUCT

**HOW TO BOOST THE EFFICIENCY OF CONSTRUCTION SITE MANAGEMENT THROUGH THE INTEGRATION OF A DIGITAL TOOL?**

**GreenWin presents DEEPCONSTRUCT:**

The management of resources on building sites (people, machines, tools) often constitutes a problem for building companies. The amount of information being dealt with can quickly become a source of errors, time loss and frustration for supervising teams and support services.

DeepConstruct proposes a SAAS (Software As A Service) solution that allows for the sharing and verification of the documents and information linked to these resources (work permits, qualifications, technical specifications of machines...), and facilitates the establishment of an optimal resource assignment plan.

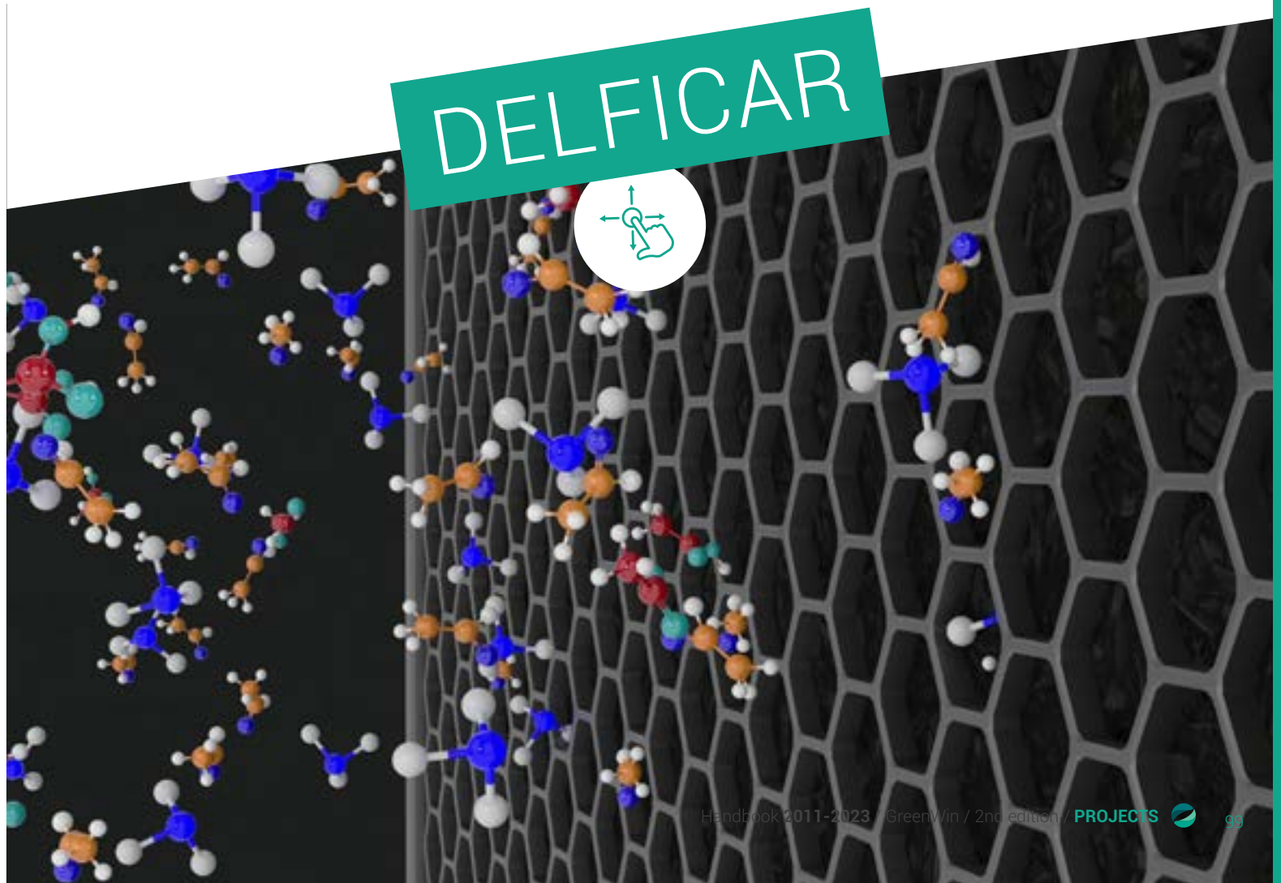
The different types of information are automatically analysed by artificial intelligence, only need to be verified once, and can be shared between sites and partners (internal and external) in total confidentiality, enabling the different participants to share their needs/availabilities in terms of resources, work schedules, attendance registrations, administrative documents, training qualifications and certificates.

The aim is to optimise collaboration, organise transparency and allow the different parties to have useful relevant data at their disposal.

**THE « PLUSSES »:**

- Significantly improves on-site global efficiency and security while reducing the carbon footprint of companies.
- Allows for optimisation at building-site level, but also at the level of companies and groups of companies, and in the construction sector as a whole.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTOR:
CHEMISTRY

GREEN CHEMISTRY
$CO_2$ TRANSFORMATION
RECYCLING

PUBLIC HEALTH

GOOD HEALTH & WELL-BEING
INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# DELFICAR

**HOW TO IMPROVE AIR QUALITY WHILE REDUCING THE ENVIRONMENTAL FOOTPRINT OF THE MANUFACTURING AND MANAGEMENT PROCESS OF AIR FILTERS, USING BIOCIDES AND BETTER $CO_2$ MANAGEMENT?**

**GreenWin presents DELFICAR:**

Although a number of scientific studies have highlighted the close connection between indoor and/or outdoor air quality and our wellbeing, the pandemic that has affected us has made us more aware of the importance of air quality and its impact on human health and the environment.

In order to offer a solution to tackle this challenge, a Walloon consortium has been established with the objective of creating filters for air handling units (AHUs) that would integrate several functions (biocidal, $CO_2$ management) to improve indoor air quality.

In the optic of the circular economy, the consortium also aims to implement the best recycling process adapted to used filters, making it possible to reduce the environmental footprint of the manufacturing process of disposable air filters of ventilation systems at end of life. This process will be undertaken with the help of an outside company.

**THE "PLUSSES":**

- Sanitation of indoor air for improved wellbeing in buildings with positive impact on $CO_2$ emissions.
- Circular aspect with eco-conception and recycling of filter components.
- Efficiency evaluation of the functions integrated in filters in real-life conditions.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

CO-LABELLING: **Skywin** | **GreenWin**

# DEMOST

SECTOR:
ENVIRONMENT

WATER, SLUDGE, AIR
& EMISSIONS

AVOIDED POLLUTION

GOOD HEALTH & WELL-BEING
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION
SUSTAINABLE CITIES
& COMMUNITIES
LIFE ON LAND

## HOW TO PURIFY THE AIR IN HIGHLY FREQUENTED AREAS USING A MOBILE FINE PARTICLE CAPTURE SYSTEM?

**GreenWin presents DEMOST:**

Fine particles have a significant impact on health and on the environment. A large part of the population is exposed to concentration levels of fine particles that exceed recommended thresholds. According to a study undertaken across 327 European cities, 315 do not respect recommendations for average annual concentration of fine particles, and over 250 exceed daily recommended limits.

The DEMOST device is aimed at developing a mobile (containerised) solution for filtering different sizes of fine particles, with a capture yield close to 100%, in the case of large airflows. The objective is to also offer revalorisation opportunities for the particulate matter collected.

The markets being considered will enable the targeting of densely frequented and highly polluted areas, having a direct impact on the concentration of fine particles in those areas. Two opportunities have been identified for testing the DEMOST prototype in real conditions in critical zones in Belgium and in France.

**THE "PLUSSES":**

- Positive impact on health through the improvement of air quality over a wide area and treatment that is rapid (as a result of high flow rate).
- Mobile solution in order to adapt to pollution peaks and climatic conditions.
- Consortium presenting excellent complementarity between solid members from Wallonia.
- Revalorisation of the fine particles collected.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

CO-LABELLING: **MecaTech** | **GreenWin**

# DESTORE

SECTOR:
CONSTRUCTION

ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

## HOW TO ENHANCE THE EFFICIENCY OF HEAT PUMPS AND LOCAL CONSUMPTION OF RENEWABLE ENERGY THROUGH NEXT-GENERATION THERMAL BATTERIES?

**GreenWin presents DESTORE:**

The DESTORE project, the result of a meeting between the academic and industrial worlds around the fundamental role of thermal energy storage in energy transition, aims to develop a new solution for the storage of energy: a new generation thermal energy battery.

The solution addresses the energy and environmental crisis by storing electricity produced by solar panels in the form of heat to be reutilised for use as daily heating and domestic hot water. Thanks to its unique composition, the DESTORE thermal battery will allow for the storage of 4 times more energy than traditional solutions.

The aim is to conceive a product that can be industrialised in the Walloon industrial region. The technical differentiators of the finished product are well mastered by the different consortium members. Together, they are capable of producing a competitive and profitable solution with a Walloon product that seeks to become anchored in the circular economy and is destined for the European market. In addition, the project will generate a large number of jobs within two Walloon SMEs.

**THE "PLUSSES":**

- Improvement in the efficiency of heat pumps, maximisation of local renewable energy consumption, and reduction in consumer energy bills.
- Reduction in carbon emissions by eliminating the equivalent of 8750 tons of $CO_2$ in 2035, or the annual carbon footprint of 1,100 individuals.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
ENERGY EFFICIENCY

CIRCULAR ECONOMY
DIGITAL

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
CLIMATE ACTION

# ECO-BLENDS

**HOW CAN YOU OPTIMISE THE EFFICIENCY OF OFF-SHORE WIND TURBINES AND OF GEOTHERMAL ENERGY?**

**GreenWin presents the ECO-BLENDS investment project:**

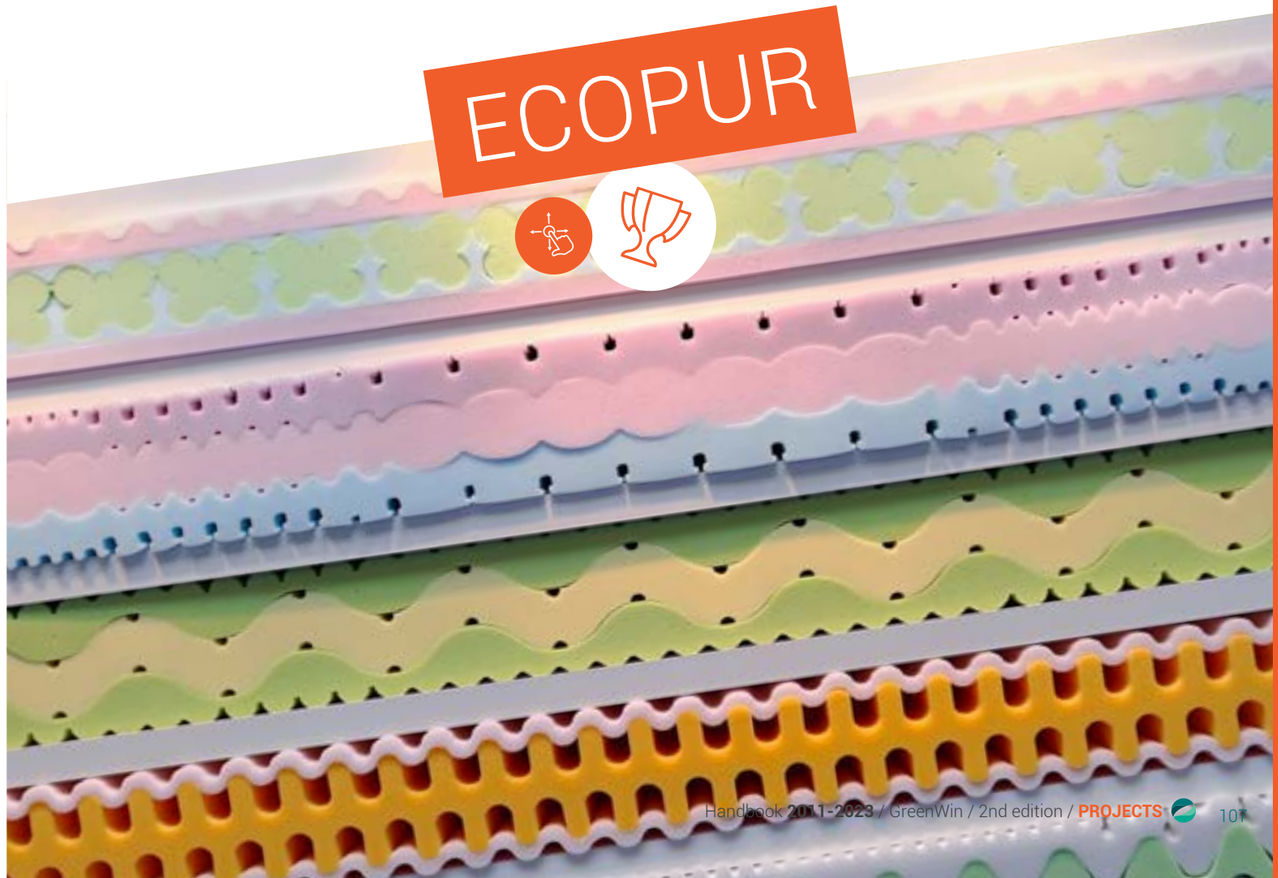
EUROQUARTZ has developed a new industrial installation with products that originate from EUROQUARTZ R&D. This new installation is able to supply ready-made mixes that fulfil required mechanical performance specifications once injected into the foundations of off-shore wind turbines. EUROQUARTZ also has the logistical capacity to supply these products in bulk on the open sea.

With regards to geothermal energy, the company has developed a product that offers excellent thermal conductivity (helping to improve the efficiency of the geothermal installation) as well as very low permeability (helping to protect groundwater by avoiding any form of contamination).

**THE "PLUSSES":**

- Supply of bulk mixes with high mechanical performance on the open sea.
- Excellent thermal conductivity and low permeability.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SUCCESS STORY

SECTORS:
CHEMISTRY
ENVIRONMENT

BIO-BASED CHEMISTRY
SUSTAINABLE MATERIALS
WATER, SLUDGE, AIR
& EMISSIONS

PUBLIC HEALTH
CARBON NEUTRALITY

GOOD HEALTH & WELL-BEING
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION

# ECOPUR

**HOW CAN YOU IMPROVE THE QUALITY OF MATTRESS PROTECTORS FOR THE MEDICAL SECTOR WHILE ADDRESSING MORE STRINGENT SANITARY AND ENVIRONMENTAL CONSTRAINTS?**

**GreenWin presents ECOPUR:**

The ECOPUR project aims to create polyurethane coating for synthetic textiles in accordance with future environmental and sanitary legislation and anticipate future production norms.

Today, the process of manufacturing coatings for use in the making of, amongst other things, mattress protectors (medical sector), requires the use of organic substances that could be replaced by alternatives that are more respectful of the environment.

The ECOPUR project aims to enable the production of mattress protectors using this new polyurethane coating technique.

**THE "PLUSSES":**

- Greater respect for the environment.
- Techniques that are more respectful towards workers and users (end-users = patients).
- Future developments geared towards new markets.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

# ELITHE

SECTOR:
CHEMISTRY

BIO-BASED CHEMISTRY
BIOTECHNOLOGY

CIRCULAR ECONOMY

ZERO HUNGER
INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

## HOW TO STIMULATE THE NATURAL DEFENSE SYSTEMS OF PLANTS TO COMBAT DISEASES AND AGRICULTURAL LOSSES, USING CAREFULLY SELECTED "SMART" ENZYMES?

**GreenWin presents ELITHE:**

Wheat constitutes one of the most important crops grown in the world, ahead of corn and rice, with 224 million hectares of wheat cultivated each year. Unfortunately, wheat is affected by a number of diseases, mainly Septoria (which can cause losses of up to 40%), Fusarium head blight, and rusts. As there are no organic solutions to fight against these diseases, the protection of wheat is entirely ensured by chemical solutions.

However, problems of resistance to the chemical molecules being used are on the rise. One alternative to this problem consists in stimulating the very own innate immunity of plants. Plants have, in effect, an innate immune system that allows then to cope with external aggressions. Membrane-anchored receptors recognise conserved molecular patterns (or elicitors) belonging to pathogenic micro-organisms, and trigger defence responses.

The consortium behind the ELITHE project is proposing to use disruptive innovation by developing the first biobased elicitor for wheat culture, producing enzymes that release oligosaccharide motives that are potentially recognised by the plants and generate a defence mechanism on their part.

**THE "PLUSSES":**

- Development by synthetic biology of a new bacterial chassis and elaboration of new bioprocesses for the production of recombinant proteins by precision fermentation.
- Reduction of the environmental impact associated with wheat production, lessening of the risk of resistance, and decrease in the dependence on chemical products for farmers.
- Project in keeping with the Green Deal and the EU's "Farm to Fork" strategy that will accelerate the creation of jobs within those companies that are partners in the project.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
CONSTRUCTIVE SYSTEMS
RECYCLING

DIGITAL

INDUSTRY, INNOVATION
& INFRASTRUCTURE

# EMAC

**HOW TO SUSTAINABLY OPTIMISE THE PRODUCTION OF LOW-ENERGY EXTERIOR CARPENTRY AND PASSIVE CONSTRUCTION IN THE CONTEXT OF EXPONENTIALLY GROWING DEMAND?**

**GreenWin presents EMAC (Economy Model Answer Circular):**

A recognised front-runner in the Belgian market over the last 30 years, EMAC Belgium is an industrial manufacturer of high-tech wood and PVC joinery aimed at the construction trade. It produces frames and doors that respect technical building construction norms in ranges that are standard, low energy and passive.

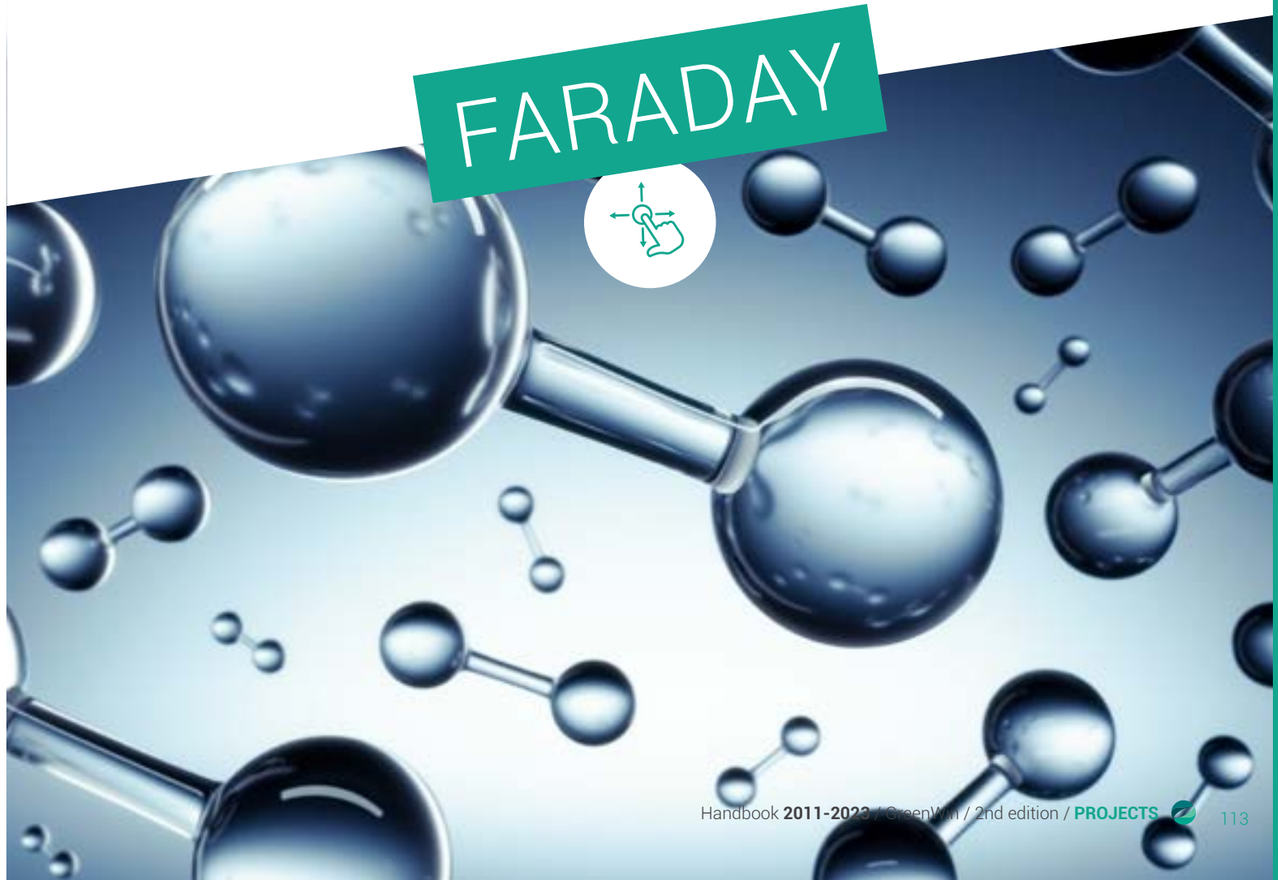
The company aims to modernise is production tool in order to continue with its technological and digital evolution in the external joinery sector. Two new production lines will address increasingly growing demand, responsiveness to evolving building energy regulation, and the needs for the rapid manufacturing of a product made with sustainable ethics: using wood as a raw material and PVC that is ecofriendly.

The project's global investment of 4,000,000.00 over two years will preserve the jobs of 60 people, aiming eventually to also generate 7 additional jobs. It will continue with the sustainable and circular approach to management that was already initiated by the company over 5 years ago.

**THE "PLUSSES":**

- Locally recognised and trustworthy partner, ideally suited to the profession as a whole (joiners, entrepreneurs, builders, architects, and the like).
- Eco-friendly project that contributes towards the objectives of reducing the environmental impact of buildings, with a high-quality material with high energy efficiency.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTOR:
CHEMISTRY

GREEN CHEMISTRY
$CO_2$ TRANSFORMATION

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# FARADAY

**HOW TO REDUCE $CO_2$ EMISSIONS BY CAPTURING IT, USING IT FOR LIME PRODUCTION, AND INTEGRATING IT INTO A VIRTUOUS CIRCLE OF PRODUCTION PROCESSES?**

**GreenWin presents FARADAY:**

Within its objectives for reducing $CO_2$ emissions, the lime producing sector is faced with the difficulty not only of reducing $CO_2$ emissions that are generated by combustion, but also, and especially, those emissions that are linked to the transformation of limestone into lime.

Yet reducing combustion emissions is possible with the help of renewable energy. Apart from the storage of $CO_2$, the transformation of $CO_2$ into chemical composites by reaction with hydrogen generated by water electrolysis constitutes a promising way of avoiding the industrial $CO_2$ emissions that are linked to that process.

The Faraday project aims to tackle the electrification of the lime production process, resulting in a concentrated flux of $CO_2$, and the production of hydrogen by water electrolysis that will supply the reactive mix ($H_2$/$CO_2$) needed for the conversion of $CO_2$ into chemical products when combined with the $CO_2$.

**THE "PLUSSES":**

- Long-term decarbonisation of the lime production process.
- Production of new chemical products with a much lower carbon footprint through the use of  a renewable source of energy.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CONSTRUCTION

ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES
CLIMATE ACTION

# FRENSIS

**HOW CAN WE REDUCE OUR GREENHOUSE GAS EMISSIONS BY 10% WITH THE HELP OF OUR WINDOWS ?**

**GreenWin presents FRENSIS:**

FRENSIS aims to develop super-insulating glazing and equally super- insulating window frames.

Based on vacuum glazing technology, the manufacturing process produces ultra-thin glass presenting an unequalled thermal insulation coefficient. The project is actually at industrial production phase.

The development also consists in integrating vacuum glazing in the most optimum way to minimise thermal bridging.

**THE « PLUSSES »:**

- Contributes towards the achievement of targets in respect of the reduction in greenhouse gas emissions.
- Radically modifies the actual tendency of increasing the width of elements in order to improve their insulating capacity.
- Allows for highly streamlined designs.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# GEOSLAGS

**HOW TO REPLACE CONVENTIONAL CONCRETES WITH A MORE EFFICIENT AND CIRCULAR ALTERNATIVE IN THE CONSTRUCTION OF COMMERCIAL AND INDUSTRIAL BUILDINGS?**

**GreenWin presents GEOSLAGS:**

The GEOSLAGS project, supported by an exclusively Walloon consortium, proposes the creation of an entire new value chain in Wallonia that allows for, to start with, the construction of commercial and industrial buildings by using a novel geopolymer hybrid that presents with mechanical or thermal performances able to be adapted to requirements.

This alternative solution to conventional concrete, developed on the basis of a hybrid geopolymer binder capable of fulfilling the role of cement in the formulation of concrete, and with a resistance that is similar if not superior to the one afforded by standard concrete, will incorporate a maximum of stainless-steel slags, which it is currently not possible to valorise, thus reinforcing the circularity of the industrial sector.

In addition, it will also contribute to reducing, or to completely eliminating, the use of rolled sand, already in short supply and the exploitation of which gravely harms marine ecosystems, or of crushed natural sand.

The circular nature of the project and the environmental benefits will be validated and quantified by a Life Cycle Analysis (LCA).

**THE "PLUSSES":**

- Innovative low-carbon Walloon alternative to standard concrete within the context of the construction of prefabricated commercial or industrial buildings.
- Valorisation of a fraction of stainless-steel slags accumulating though lack of a valorisation route.
- Supply of a material with a density that can be modulated and with thermal insulating properties that can be put to good use to provide a replacement for insulation currently in use by offering an additional attribute of total resistance to fire.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTOR:
CONSTRUCTION

ENERGY EFFICIENCY
CONSTRUCTIVE SYSTEMS

SUSTAINABLE FOOD

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE

# GREWFARM

**HOW TO FACILITATE THE LOCAL DEVELOPMENT OF DIVERSIFIED MARKET GARDENERS BY RELYING ON ON-SITE AND PROXIMITY ENERGY PRODUCTION?**

**GreenWin presents GREWFARM:**

The stakes relating to food and energy will be crucial over the coming years and will generally tend towards a consumption that needs to be cleaner, local, and respectful of the environment.

In order to respond to the strong demand for locally produced vegetables and energy, the GREWFARM project aims to combine locally produced agriculture and green energy by developing a range of optimised agrivoltaic greenhouses and adapted auxiliary products, such as heat pumps, ventilation or irrigation systems, LEDs, charging and storage stations, cultivation monitoring tools... in the shape of a turnkey solution for market gardeners so that they do not themselves have to bear any of the investment costs.

The aim is to facilitate the local development of a diversity of market gardeners, in Belgium and internationally, in combination with the local production of the energy used in the greenhouses and used nearby, in the spirit of a local Renewable Energy Community.

**THE "PLUSSES":**

- Local optimisation of cultivation and energy production.
- Infrastructure more easily integrated into the landscape, compared to other technologies.
- Production of market gardening produce and energy that is affordable for the end consumer.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# HECO2 - ELECTRIFICATION

SECTOR:
CHEMISTRY

GREEN CHEMISTRY
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# ELECTRIFICATION

## HOW TO ELECTRIFY HIGH-TEMPERATURE INDUSTRIAL PROCESSES IN THE WALLOON REGION?

**GreenWin presents HECO2 - ELECTRIFICATION:**

A number of Walloon industrialists, academic partners, and accredited research centres have come together within the "HECO2" consortium in order to develop new production methods and associated technologies that will help them to reduce their $CO_2$ emissions.

The "ELECTRIFICATION" phase of HECO2 will aim to establish the first demonstrators and engineering studies in Wallonia for the partial or total electrical heating (with no direct $CO_2$ emissions) of high temperature ovens, in replacement of $CO_2$ emitting fossil energy used in combustion processes, by addressing three main technological challenges in the areas of the production of sheet glass, slab reheating, and the thermal conversion of solids.

The electrification of these processes being considered presents with a number of technological, industrial, and economic challenges and risks, and their development will also be supported by an "Industry 4.0" approach via the creation of digital twins.

**THE "PLUSSES":**

- Potential to reduce emissions from the industries concerned by 8% or more if the project is enlarged to the whole of Belgium and Europe.
- Sustainability of economic activity in Wallonia, Belgium and Europe, and reduction of associated costs via mechanisms such as the Emission Trading System.
- Creation of around fifteen new jobs and potential for further employment opportunities after deployment and commercialisation of the technologies developed.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

# ELECTROLYSIS

SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION
GREEN CHEMISTRY
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

## HOW TO CREATE A GENERATION OF DECARBONISED HYDROGEN THROUGH ELECTROLYSIS?

**GreenWin presents HECO2 - ELECTROLYSIS:**

This project, which falls into the axis 2 portfolio of HECO2 projects, focusses on the production of hydrogen by electrolysis, with the aim of improving the performance of water electrolysis to generate green hydrogen under the best possible technical and economic conditions.

The main project deliverable will be an autonomous connected containerised electrolyser pilot, with optimised cells. Not only will this containerised electrolyser be a novel product, the results of the project will also be valorised for the entire range of products.

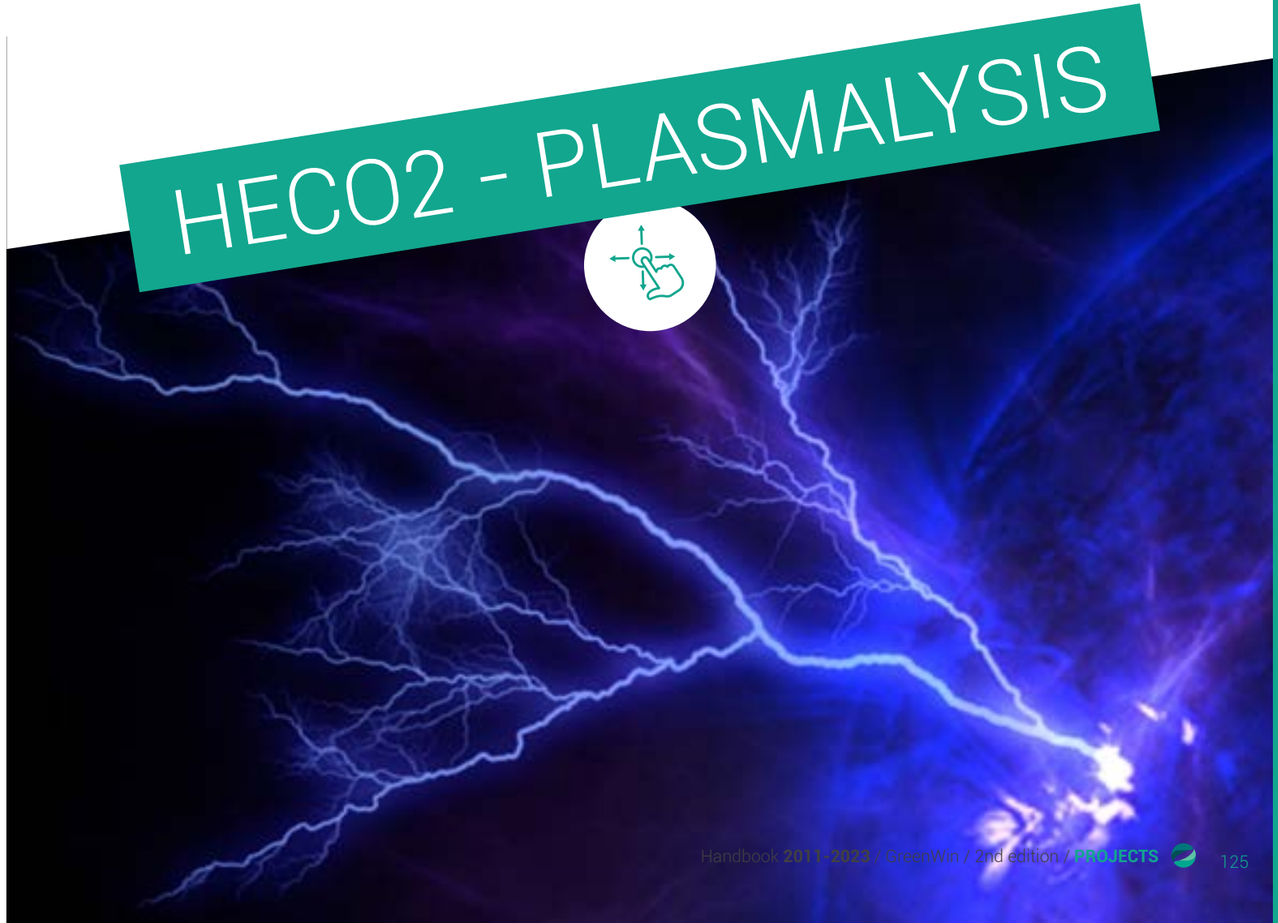
The other research focus will centre on the implementation of artificial intelligence to optimise production and maintenance on the one hand, and the equipment's eco-design on the other.

The use of decarbonised hydrogen will allow for $CO_2$ emissions to be curtailed in those sectors which are large consumers of hydrogen (the chemicals industry, treatment of metal and glass) by offering an alternative to fossil fuels.

**THE "PLUSSES":**

- Production of decarbonised hydrogen, an alternative to fossil fuels.
- Versatile solution for limiting $CO_2$ emissions in the industrial sector.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# PLASMALYSIS

## HOW TO OBTAIN HYDROGEN THROUGH HYBRID PLASMAYSIS WITHOUT $CO_2$ EMISSIONS?

**GreenWin presents HECO2 - HYBRID PLASMALYSIS:**

The use of clean hydrogen is a priority for Wallonia in its aim not only to achieve climate neutrality by 2050, but also preserve and reinforce industrial competition, and guarantee jobs and the creation of value.

If the large majority of hydrogen currently being used by the Walloon industry is what is known as "grey" hydrogen, although it is economical, it nevertheless produces very high quantities of $CO_2$.

The HECO2 HYBRID PLASMALYSIS project aims to develop, through a new and innovative hybrid plasmalysis process, the production of a "turquoise" hydrogen from different methane-rich sources obtained from local resources (biomethane, mine gas etc.) that would allow for a significant reduction in $CO_2$ emissions compared to other technologies, while also adjusting the quality of hydrogen and co-products to demand.

The consortium linked to this project also supports the creation of a "low-$CO_2$ Valley" development zone integrating the different stakeholders in the value chain with the aim of creating new opportunities for Wallonia.

**THE "PLUSSES":**

- Numerous applications possible in the industrial, transport, electricity, and construction sectors.
- A solid carbon produced in a much more ecological way, contributing to the reduction in the carbon footprint and to the creation of new economic openings at regional level.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# SATURN

## HOW TO CAPTURE AND CONCENTRATE POST-COMBUSTION $CO_2$?

**GreenWin presents HECO2 - SATURN:**

The capturing of $CO_2$ emissions considered "Hard-to-Abate" constitutes an essential technological building block that industrialists have at their disposal to help them reduce their respective environmental footprints. This building block, which is clearly complementary to a necessary decarbonation strategy, or even an energy de-fossilisation strategy, is however not easy to deploy on an industrial level.

The great variability in the flux of $CO_2$ emissions (stainless steel industry, lime production, glass manufacturing…) makes it complicated for these industrialists to identify the optimal technology that needs to be used, even more so when it comes to its industrial deployment, even at pilot level. Furthermore, such integration is at the boundary of the areas of expertise of these industrialists, whose know-how until recently was more focussed on production tools rather than their negative externalities. This hangover, which stems from an outdated industrial strategy, is of course redundant today.

The HECO2_5_SATURN project proposes a novel approach for pooling skills and equipment centring around the CRM and academic members of the Walloon region in order to accelerate transition in the relevant industries.

**THE "PLUSSES":**

- Identification of optimal technologies and solutions to be adopted according to the different industries.
- Decarbonated alternative that can be applied to the different markets of the industrialists concerned.
- Development of technological collaborations with world leaders in a booming sector (CCUS).

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# HECO2 - BUTTERFLY

# BUTTERFLY

SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

## HOW TO DEVELOP A PARALLEL FLOW REGENERATIVE (PFR) LIME KILN COMPATIBLE WITH CCUS (CARBON CAPTURE, UTILIZATION, AND STORAGE)?

**GreenWin presents HECO2 - BUTTERFLY:**

The BUTTERFLY project's aim is to develop solutions that allow for the capture and concentration of $CO_2$, directly at the stage of the lime manufacturing process, so that it is compatible with the application requirements for carbon capture (CCS - Carbon Capture Storage) - or carbon storage (CCU- Carbon Capture Utilisation).

It proposes to develop an innovative technical concept applicable to "PFR" (Parallel Flow Regenerative) lime kilns. Apart from providing the best available technology, these types of kilns are also currently the most widespread. However, even though these ovens are very energy efficient, they do emit diluted $CO_2$, which is unusable today.

The objectives of the project are as follows:

- Validation at prototype level of innovative concepts for lime kilns in order to produce concentrated $CO_2$ in flue gases.
- Study of a purification solution for treating $CO_2$ downstream and making it compatible with CCUS specifications.
- Development of a steering system for the process that includes amongst other things innovative instrumentation for the measuring of gas.

**THE "PLUSSES":**

- Reduction in $CO_2$ emissions linked to lime production in Wallonia.
- Decarbonisation of other industrial sectors linked to lime production.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
WATER, SLUDGE, AIR
& EMISSIONS

QUALITY OF HOME
ENVIRONMENT

GOOD HEALTH & WELL-BEING
SUSTAINABLE CITIES & COMMUNITIES
RESPONSIBLE CONSUMPTION
& PRODUCTION

# LOWEMI

## HOW CAN YOU IMPROVE THE QUALITY OF AIR INSIDE BUILDINGS?

**GreenWin presents LOWEMI:**

This project is aimed at the development of a range of water-based paints for interior use, as well as a range of decorative films, with very low VOC emissions.

These two product ranges are practically void of any noxious organic compounds likely to be released into the air with time.

**THE "PLUSSES":**

- Reduction in the amount of solvents traditionally found in painting and decorating.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

ENERGY EFFICIENCY
SUSTAINABLE MATERIALS
CONSTRUCTIVE SYSTEMS

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES
CLIMATE ACTION

# MAISOVI

**HOW TO REDUCE THE CARBON DIOXIDE EMISSIONS OF BUILDINGS BY COMBINING VACUUM GLASS TECHNOLOGY WITH LOCALLY SOURCED WOODEN WINDOW FRAMES, MINIMIZING THEIR ENVIRONMENTAL FOOTPRINT?**

**GreenWin presents MAISOVI:**

The building sector is responsible for around 36% of Europe's $CO_2$ emissions and 40% of its energy usage. Hence the imperative need to develop new solutions in support of a strategy for reducing the energy requirements of households.

The aim of the MaIsoVi project is to supply the residential and commercial (tertiary) segment of the construction and renovation sector with vacuum glazing (FINEO coated) presenting an energy performance that is identical to, if not superior to, triple glazing, weighs no more than double glazing, and has the thickness of simple glazing, together with a wooden window frame (equipped with this FINEO glazing), using a minimum amount of materials while still guaranteeing the best performance over a maximum amount of time.

The FINEO-coated glazing and the wooden frame will both be produced in the Walloon region, while the FINEO equipped window in its entirety will be commercialised in Belgium, as well as in a large part of France, and in bordering countries.

**THE "PLUSSES":**

- Vacuum glazing that is lighter and thinner than classic insulating glass and with a demonstrable energy performance identical if not superior to that of triple glazing, whatever its size, or use (security, acoustic…)
- Implementation and conception of optimised products with a lower environmental footprint than is achievable with the current state of the art, with the most up-to-date standards (wooden frame with triple glazing).

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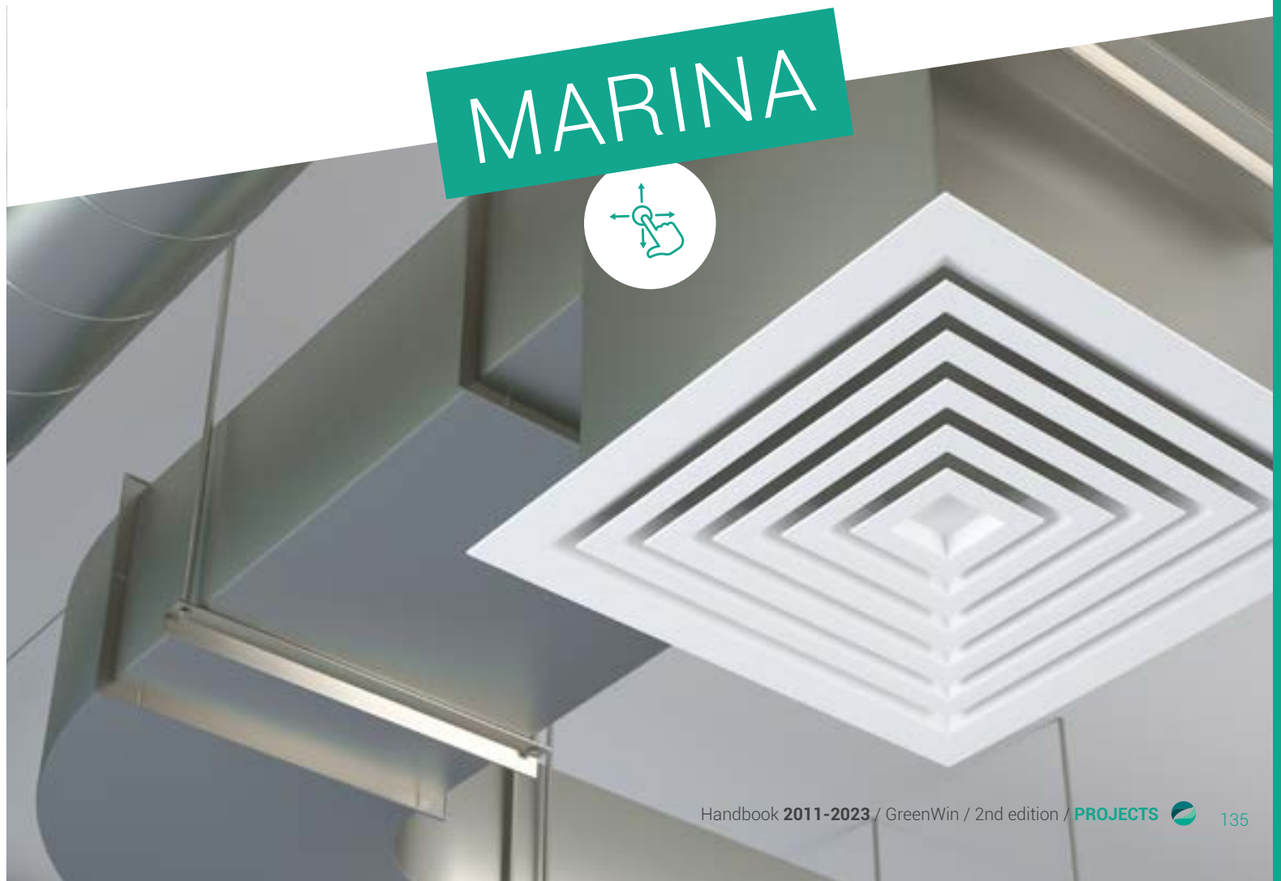


SECTOR:
ENVIRONMENT

WATER, SLUDGE, AIR
& EMISSIONS

PUBLIC HEALTH

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES

# MARINA

**HOW CAN YOU IMPROVE INDOOR AIR QUALITY IN TERTIARY SECTOR BUILDINGS WHILE ENSURING A TAILORED SERVICE?**

**GreenWin presents MARINA:**

Numerous studies have demonstrated that the air inside our buildings is often more polluted than the air outside. The fact that we spend a large amount of our time inside buildings increases our exposure to the pollutants they contain and also has negative impacts on our health and well-being.

The MARINA project aims to develop a solution for the management of optimal ventilation in buildings in the services sector by measuring the concentration of a number of pollutants that are considered critical owing to their dangerousness and their presence in offices.

New generation sensors will be developed to take measurements of these problematic pollutants. A modular and scalable digital platform will subsequently be built, based on software for collecting multi-source data able to integrate the semantics specific to each data. Finally, a customisable facility management service will be created to support the vision of a building that adapts according to the evolving usage of the premises and the occupation of the sites.

**THE "PLUSSES":**

- Optimised and low-cost service for better energy and health management and for the efficiency of HVAC systems.
- Reduction in respiratory diseases, absenteeism and other problems that can be linked to a loss in productivity.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

# MEDIX

SECTORS:
ENVIRONMENT
CHEMISTRY

WATER, SLUDGE, AIR
& EMISSIONS
BIOTECHNOLOGY

DECONTAMINATION
OF THE ENVIRONMENT

GOOD HEALTH & WELL-BEING
CLEAN WATER & SANITATION
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
LIFE BELOW WATER

**HOW CAN ONE TREAT PHARMACEUTICAL MICROPOLLUTANTS FOUND IN WASTEWATER THAT ARE GENERATED, NOTABLY, BY HEALTHCARE ESTABLISHMENTS?**

**GreenWin presents MEDIX:**

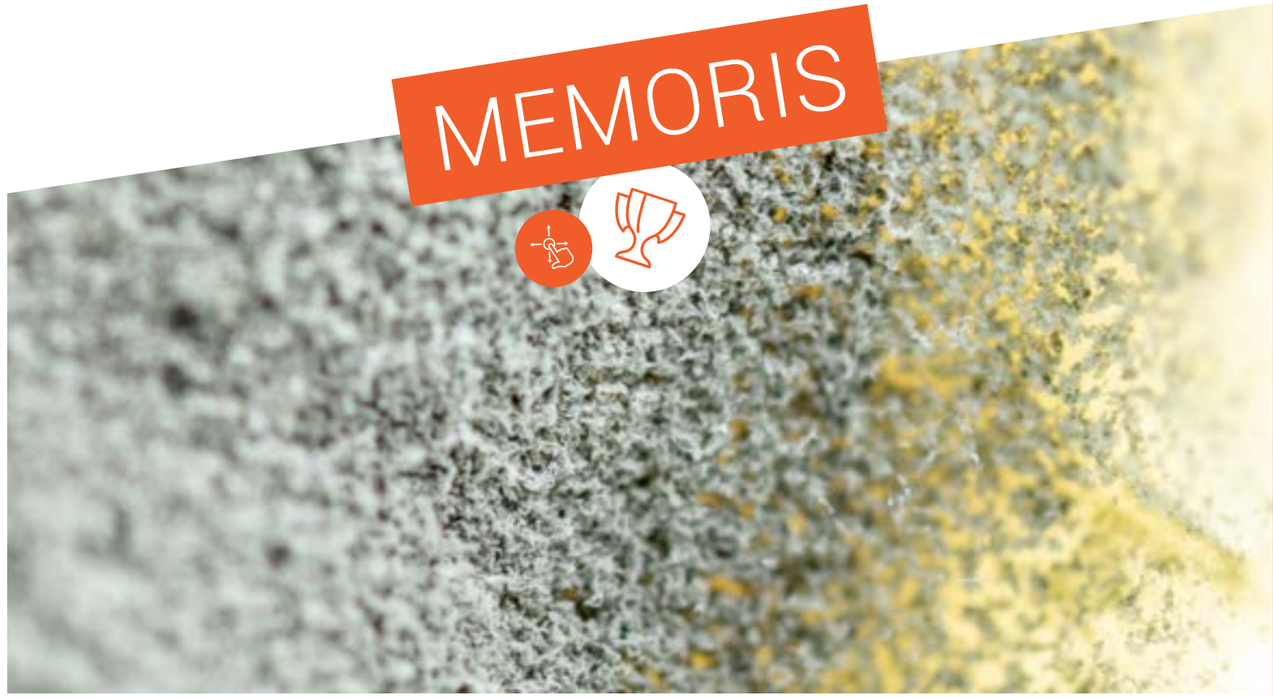
MEDIX was developed in order to address the treatment of micropollutants of pharmaceutical origin in our wastewater, micropollutants that have a recognised negative impact on the ecosystems, fauna and flora that are subjected to them, as well as on mankind. Through a novel process that is flexible, modular and energy-efficient and entirely based on the biological degradation of micropollutants, MEDIX is able to arrest pollution at source. Having taken the gamble to anticipate legislation, MEDIX offers an ideal solution for addressing this public health linked problem.

**THE "PLUSSES":**

- In comparison with processes for the treatment of micropollutants that are already known and mastered, MEDIX doesn't generate highly toxic supplementary by-products.
- In addition MEDIX consumes less energy and offers higher yields. Its achievements have been validated by an independent laboratory.
- MEDIX offers simple and modular integration.
- MEDIX benefits from the know-how of the John Cockerill Balteau company.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be






**HOW CAN YOU UNDERTAKE IN-SITU REHABILITATION OF SITES HEAVILY CONTAMINATED BY MIXED POLLUTANTS?**

**GreenWin presents MEMORIS:**

The reallocation of industrial wasteland for new activities is a major challenge for Wallonia and Europe. These sites are often heavily polluted and soil rehabilitation is required.

The most widespread technique – the excavation of contaminated soils, their transport and storage in technical landfill centres, with or without any treatment – remains costly, is polluting, and poses health risks for those living nearby.

The MEMORIS project aims to develop a bioremediation and monitoring process for the in situ remediation (without excavation) of sites that are heavily affected by mixed pollution and allow their rapid reuse while also preserving the assets presented by their infrastructures.

SUCCESS STORY

SECTORS:
CONSTRUCTION
ENVIRONMENT
CHEMISTRY

DECONTAMINATION
OF THE ENVIRONMENT
SOILS & SEDIMENTS

DIGITAL

GOOD HEALTH & WELL-BEING
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
LIFE BELOW WATER
LIFE ON LAND

**THE "PLUSSES":**

The MEMORIS process combines 4 different techniques in a very unique way, each technique being innovative in itself and bringing novel and efficient in situ remediation and monitoring solutions:

- The development of biostimulation and phytoremediation techniques allows for more rapid, more efficient and less costly in situ decontamination.
- The processes developed will be competitive compared to excavation, transport and offsite treatment, or again to the "pump and treat" method of cleaning such cocktails of pollutants that require heavy treatment units and are therefore costly.
- Innovative monitoring techniques will allow to follow the evolution of the decontamination on a regular basis and in the long term, and track any residual risk.
- The **remediation – monitoring pairing** will constitute a new approach for the management and progressive reutilisation of heavily contaminated sites according to the toxicological risks involved.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# MINERAL LOOP

SECTOR:
CHEMISTRY

MINERALIZATION OF $CO_2$
IN DEMOLITION WASTE
WASTE VALORISATION

CIRCULAR ECONOMY
CARBON NEUTRALITY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION
CLIMATE ACTION

# MINERAL LOOP

**HOW TO CAPTURE AND SEQUESTER INDUSTRIAL $CO_2$ THROUGH MINERAL WASTE CARBONATION?**

**GreenWin presents MINERAL LOOP.**

Mineral waste constitutes by far the most important mass of waste in Europe. Unlike other waste streams, it is rarely recycled, and most of the time is simply sent to landfill.

With a view to developing a circular economy relevant to mineral waste streams, the MINERAL LOOP project aims to conceive, develop, set up and operate an industrial pilot unit for the transformation of mineral waste into secondary products able to be reused in different relevant sectors.

The processes used will be based, amongst other things, on the principle of carbonation, i.e. the capture of $CO_2$ and its fixation in alkaline mineral materials, now reconditioned and stabilised.

The resulting products will be commercialised and valorised by the industrial partners involved in the project.

**THE "PLUSSES":**

- Transformation of a rarely recycled waste stream into resources able to be valorised and commercialised.
- Reduction in the quantity of waste frequently being sent to landfill.
- Positive $CO_2$ impact with the capture and storage of industrial $CO_2$.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTORS:
CONSTRUCTION
ENVIRONMENT

DECONTAMINATION
OF THE ENVIRONMENT
SOILS & SEDIMENTS

CIRCULAR ECONOMY

GOOD HEALTH & WELL-BEING
AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
CLIMATE ACTION
LIFE ON LAND

# MINERVE

**HOW CAN ONE BETTER EXPLOIT AND VALORISE HOUSEHOLD WASTE LANDFILL SITES?**

**GreenWin presents MINERVE:**

The MINERVE project proposes an integrated solution for the long-term management of landfill sites and non-controlled dumps through a methodology centred around 3 interconnected stages:

- Categorisation of landfill sites.
- Optimisation of waste mineralisation process.
- Extraction and treatment of mineralised waste.

**THE "PLUSSES":**

- Shortening of the life cycle of buried waste.
- Maximising the material and energy valorisation of buried waste.
- Betterment of the scientific expertise required for the 3 stages of the proposed methodology.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CONSTRUCTION

CONSTRUCTION WASTE VALORISATION
SUSTAINABLE MATERIALS

CIRCULAR ECONOMY

INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION

# MONOCRETE

**HOW TO ENHANCE THE QUALITY OF ROAD AND AIRPORT INFRASTRUCTURE, CONSIDERING TECHNICAL, ECONOMIC, ENVIRONMENTAL AND SOCIAL ASPECTS, BY UTILIZING CEMENTS MADE FROM RECYCLED MATERIALS?**

**GreenWin presents MONOCRETE:**

The road and airport infrastructures of today are no longer appropriate for the mobility and environmental challenges of tomorrow: roads are deteriorating, tarmacs at airports are no longer suitable for jumbo jets, storage areas require foundations that are more and more dense.

MONOCRETE aims to tackle these new requirements by combining the distinct advantages of two different products (compound cements, and recycled aggregates) in the formulation, manufacturing, and implementation of very thick types of road concrete.

One or two "robust" compositions of concrete will be analysed. The different studies will allow for existing product specifications to be achieved at different levels in order to permit for a wider utilisation than is currently the case. Combining recycled aggregates with a new type of cement, based on the exploitation of existing historic stocks, requires not only good knowledge of the material itself but also of the conditions in which it must be implemented, and constitutes a challenge that has still not been met within the scientific community.

**THE "PLUSSES":**

- Opportunity to set up recycling supply chains for recycled concrete stemming from the crushing of construction and demolition "waste".
- Densification and reinforcement of the local economic fabric, with creation of local jobs.
- Reindustrialisation of the territory and strengthening of know-how for Walloon industrialists in the cement and construction sectors.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

# MULTIO

SECTORS:
CONSTRUCTION
ENVIRONMENT
CHEMISTRY

BIOTECHNOLOGY
ENERGY EFFICIENCY

TREATMENT OF WATER

CLEAN WATER & SANITATION
AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION & INFRASTRUCTURE
SUSTAINABLE CITIES & COMMUNITIES
RESPONSIBLE CONSUMPTION & PRODUCTION

**HOW TO BETTER MANAGE WATER AND ENERGY IN RECREATIONAL WATER SPACES BY INTEGRATING THE REUSE OF TREATED WASTEWATER, RAINWATER, AND ON-SITE INSTALLATION OF PHOTOVOLTAIC PANELS?**

**GreenWin presents MULTIO:**

The objective of the MULTIO project is to contribute to a sound and novel approach to the management of water and energy use in homes with an innovative system that will enable the safe reutilisation of treated wastewater and rainwater within the home (including in swimming pools) whilst providing a solution to the storage of electricity produced by photovoltaic panels.

This technological solution which could be installed in an existing or a new swimming pool will be based on two distinct ecofriendly treatment processes that guarantee the quality of the water, and on the intelligent management of energy between its production point (photovoltaic panels), its storage (swimming pool) and its usage (homes).

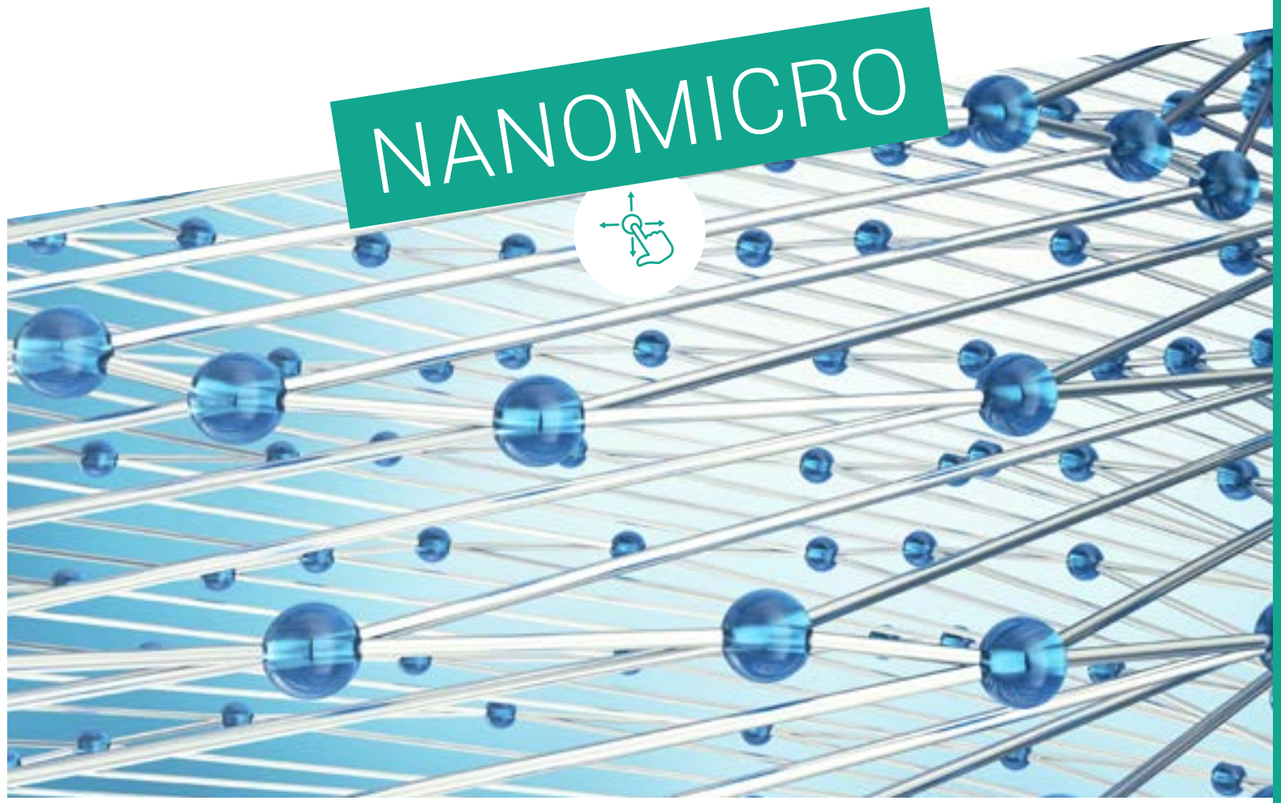
It will be accessible to any form of housing, whether already fitted with a swimming pool or where it is intended to invest in one. The presence of photovoltaic panels and of a wastewater treatment plant will only further increase the financial and environmental benefits for the end user and therefore indirectly for society in general.

**THE "PLUSSES":**

- Important reduction in the quantity of daily drinking water consumed within the home.
- Local and immediate utilisation of solar energy.
- Reduction in the environmental production and transport costs of drinking water and electricity.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be






**HOW CAN YOU EXPLOIT POTENTIAL NEW METALLIC NANOPARTICLES SYNTHESISED WITH SPECIFIC MICROORGANISMS FOR USE IN SOIL AND GROUNDWATER DECONTAMINATION?**

**GreenWin presents NANOMICRO:**

**Nanoparticles at the service of hydrocarbon decontamination...**
Europe in general and Wallonia in particular are characterised by a substantial environmental load as a direct result of heavy industrial activity that left in its wake many forms of pollution affecting soils and groundwater.

SECTORS:
ENVIRONMENT
CHEMISTRY

BIOTECHNOLOGY
SOILS & SEDIMENTS

DECONTAMINATION
OF THE ENVIRONMENT

GOOD HEALTH & WELL-BEING
CLEAN WATER & SANITATION
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
LIFE BELOW WATER
LIFE ON LAND

The different treatment technologies that need to be implemented are as many as the types of pollution themselves; they are costly and ultimately only constitute a "displacement" of the pollution to a confined environment (excavation of soil to be treated). Within this context in situ biological decontamination technologies are definitely guaranteed a bright future, so long as they are made more efficient.

Recent work has opened up interesting perspectives with regards to the use of metallic nanoparticles in biological processes so as to optimise their functioning. The NANO-MICRO project falls in line with these new perspectives as it puts forward the conception and application of this type of technology for the biological treatment of liquid effluent and solid matrixes (soils, sediments…) that are contaminated by hydrocarbons (including polyaromatic PAHs). The use of microorganism-synthesised nanoparticles is considered environmentally and economically interesting in view of the significant increase in decontamination rates.

**THE "PLUSSES":**

- Improvement in processes of in-situ treatment of contaminated soils.
- Acceleration in biodegradation rate of pollutants.
- Reduction in duration time of treatment.
- Improvement in treatment performances of sites difficult to access or non-accessible (under foundation, underwater, too deep…).

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# NISHYCEM

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
RECYCLING

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES
RESPONSIBLE CONSUMPTION
& PRODUCTION

# NISHYCEM

**HOW CAN YOU IMPROVE THE SUSTAINABILITY OF CEMENT MATERIALS, CONCRETE, FOAM CONCRETE OR FIBRE CEMENT SHEETING?**

**GreenWin presents NISHYCEM:**

Cement materials are porous in nature, a disadvantage which is noticeable at two levels: the mechanical resistance of concrete, and the durability of concrete. Reducing the absorption of water through the porosity of the cement matrix constitutes the best defence mechanism against aggressive agents.

NYSHYCEM has developed an ideal integral water repellent for use in cement materials that is based on micro-encapsulation technology. The advantage of this water repellent is that it has no impact on the mechanical properties of materials as it renders the cement matrix hydrophobic in its mass without changing its natural properties (notably its breathability).

**THE "PLUSSES":**

- High value-added product that enables the manufacturing of more sustainable materials with a longer workable life.
- The use of integral water repellents allows for treatment to be carried out at the same time as the material is being prepared, cutting out the need for one of the stages of the procedure.
- It offers complete protection, even in the case of incision or the drilling of holes.
- The new additive has minimal impact on the mechanical properties of cement materials, allowing for its use in materials such as foam concretes.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION

CARBON NEUTRALITY
DECARBONIZATION OF
THE AVIATION SECTOR

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# NKL

## HOW TO REDUCE THE ECOLOGICAL IMPACT OF THE AVIATION SECTOR?

**GreenWin presents NKL (Neutral-Kero-Lime):**

The aviation transport sector is one of the most difficult sectors to de-fossilise, requiring as it does a highly concentrated source of energy. This is what explains the use of kerosene, the hydrocarbon combustible liquid that presents with the highest energy density.

As changing an entire air fleet would be difficult to achieve in the short term in view of the colossal investments that it would involve, among the solutions that are sometimes envisaged (such as electric aircraft or hydrogen-powered planes for example), the use of synthetic kerosene, or e-kerosene, seems to be the one that is most credible.

Produced from hydrogen and synthetised from the electrolysis of water and $CO_2$ that is captured directly from the atmosphere, or indirectly from industrial emissions, this kerosene is carbon neutral.

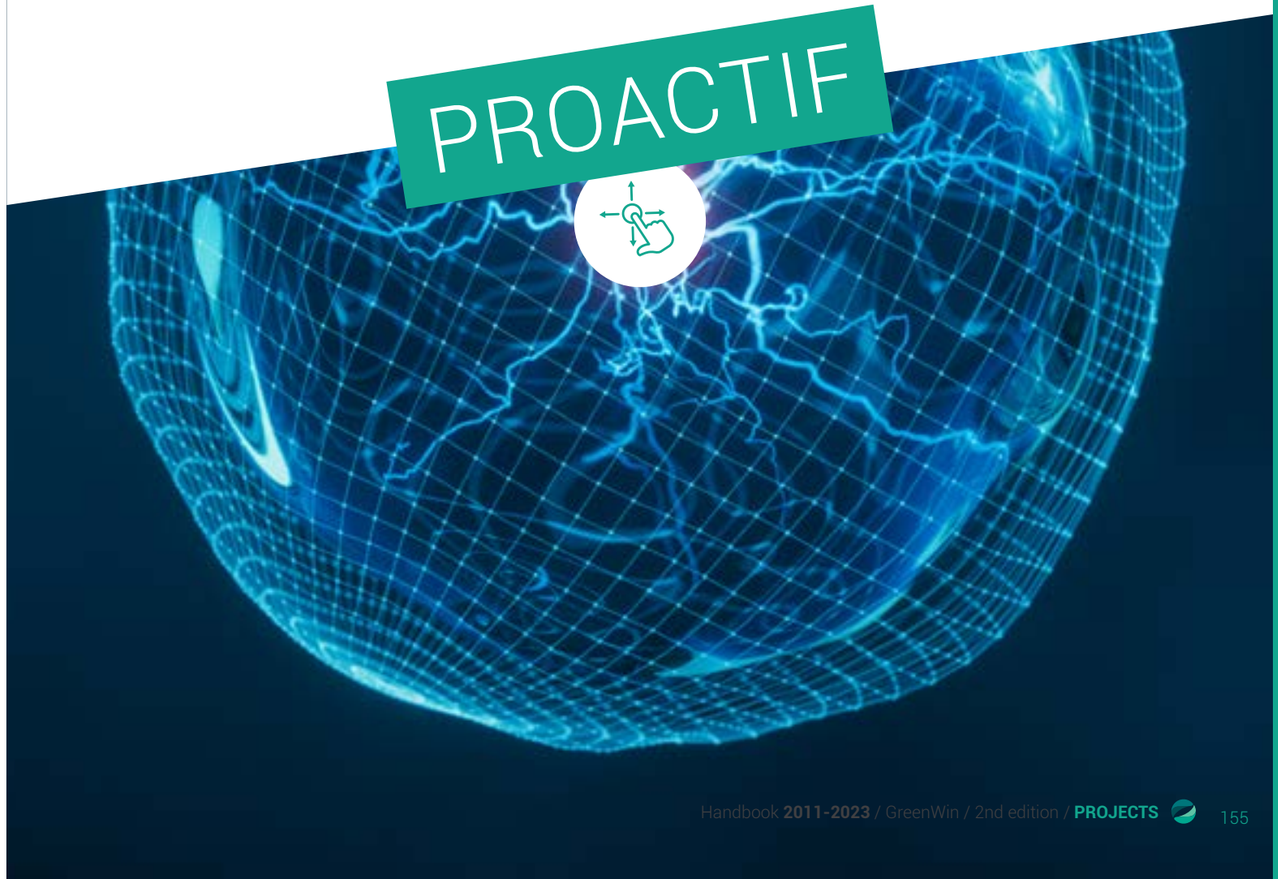
The objective of the NKL project is to generate the required data sets, methodologies, and technologies for capturing $CO_2$ from industrial lime production and produce e-kerosene by using that $CO_2$ with $H_2$ electrolysed with the use of renewable energy.

The project also involves the construction and exploitation of a pilot unit that combines technological blocks.

**THE "PLUSSES":**

- Creation of important technological parts for the e-kerosene, lime, and energy sectors in Wallonia.
- Positive impact on greenhouse gas emissions with the alternative, virtuous and circular production of carbon neutral e-kerozene.
- Contribution to the energy transition of Wallonia's air transport sector.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



CO-LABELLING: **Wagralim** | **GreenWin**

# PROACTIF

SECTOR:
CHEMISTRY

GREEN CHEMISTRY
BIOTECHNOLOGY

DIGITAL
SUSTAINABLE FOOD

ZERO HUNGER

**HOW TO ENHANCE PRODUCTION PROCESSES AND AGRICULTURAL YIELDS THROUGH INCREMENTAL AND DIGITAL LEARNING FOR THE OPTIMIZATION OF MICROBIAL BIOPROCESSES?**

**GreenWin presents PROACTIF:**

The aim of PROACTIF is to set up a bioprocess digitalisation framework for the unification of optimisation technologies for the processing and development of microbial strains.

By combining the development of the process and the microbial strains via the digital repository, the consortium linked to the project aims to bring not only a better understanding but also a deeper understanding of the processes used in in the production of enzymes for the agrifood sector.

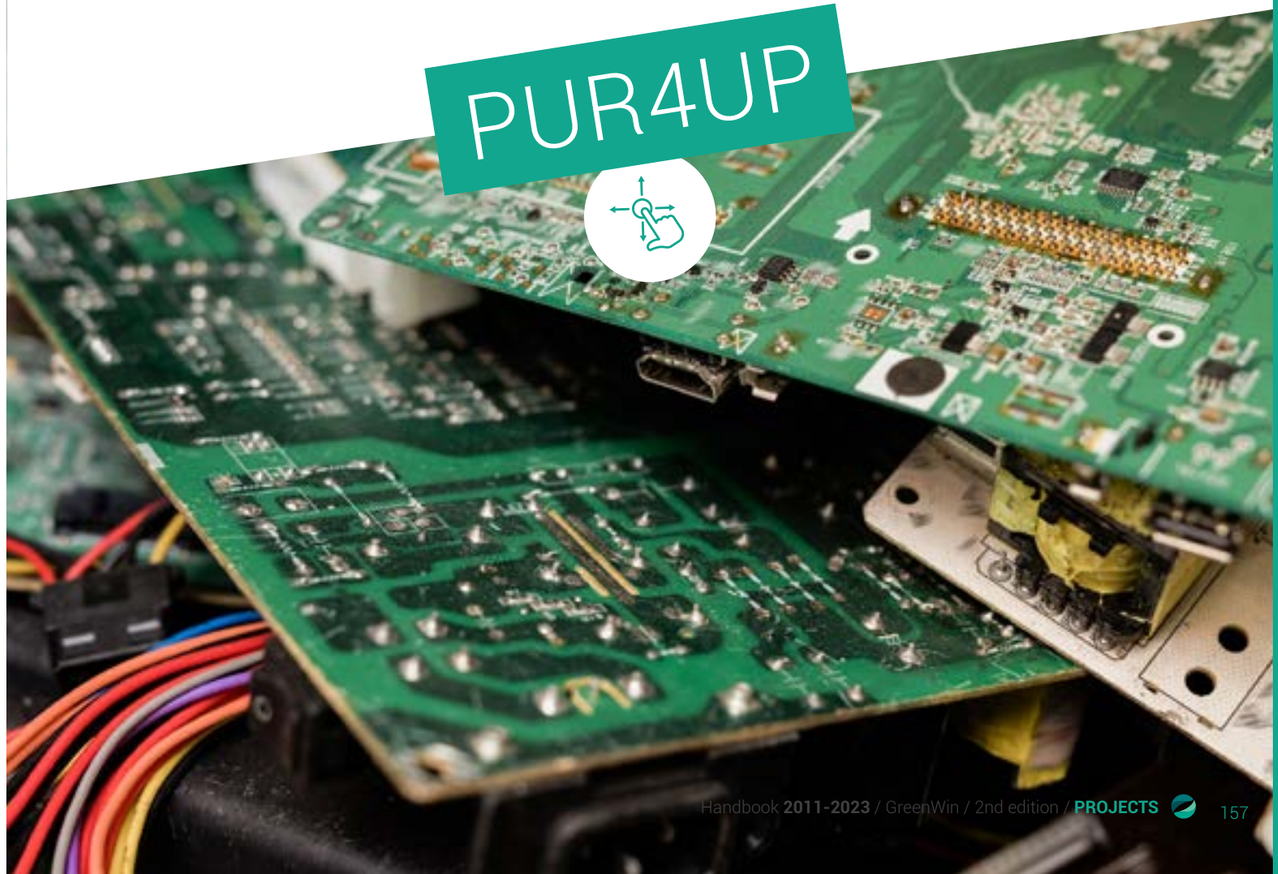
This novel approach, that reunites the expertise inherent to each of the 4 Walloon partners in each of their domains, will make it possible to prevent any deviation that could occur during the fermentation by an optimised conduct of the process, but also eliminate deviations due to the genotypic and phenotypic diversification of the microbial population.

In the first instance this will translate into an increase in the yields of current processes but also mainly by a better control of processes, reducing research and development times at laboratory level thus making it possible to enable new enzymes to become available for sale more quickly.

**THE "PLUSSES":**

- Superior exploitation of the available mass of data.
- Reduction in research and development times making it possible for enzymes for use in the agrifood to be brought to market more rapidly.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



CO-LABELLING: **MecaTech** | **GreenWin**

# PUR4UP

SECTOR:
CHEMISTRY

CIRCULARITY OF PLASTICS

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION
CLIMATE ACTION

**HOW DO YOU SIGNIFICANTLY INCREASE THE VOLUME OF HIGH-PURITY RECYCLED PLASTIC IN NEW END PRODUCTS AND DRASTICALLY REDUCE THE RATE OF PLASTIC WASTE LANDFILLING IN WALLONIA?**

**GreenWin presents PUR4UP (Purifying plastics for Upgrading in recycling):**

While the consumption of plastics is on the rise, the recycling of them is still in its early days. Only 10% of plastics are produced from recycled materials, and it is expected that between now and 2050 the production of plastics will see petroleum consumption increase by 20% and carbon emissions by 15% worldwide.

The European recycling industry is striving to resolve these issues, however the low quality of recycled plastic materials compared to that of virgin raw materials remains the major obstacle to them being used in larger quantities. A significant amount of plastic is still being buried or incinerated.

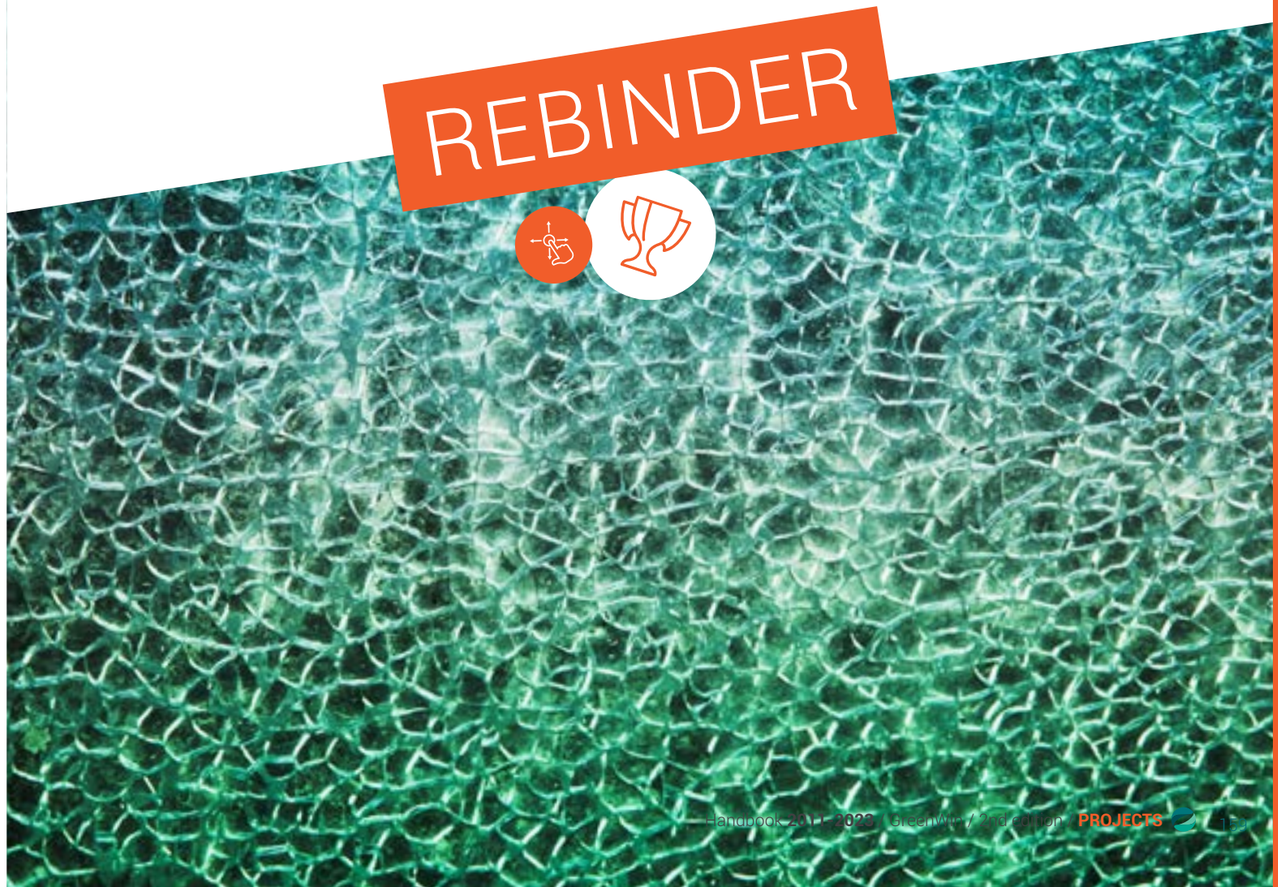
PUR4UP aims to conceive new products that incorporate recycled plastic materials originating from end-of-life vehicles (ELV) and electrical and electronic waste (W3E).

High-purity recycled plastics will be produced in a pilot unit and used in the construction of single treatment stations. A quantitative characterisation tool will ensure the quality control and intelligent sorting of plastics. An optimisation mission for the formulation and characterisation of these materials will also be undertaken.

**THE "PLUSSES":**

- New valorisation sector for recycled plastics. Reduction in the production of new plastics and in the consumption of fossil fuels.
- Significant environmental impact: almost 21,000 fewer tons of thermoplastics per year buried in Walloon technical landfill sites.
- Creation of more than 57 jobs in Wallonia and implementation of an upcycling strategy to counter the practice of downcycling.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SUCCESS STORY

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# REBINDER

**HOW IS IT POSSIBLE TO EXTRACT PVB FROM FLAT GLASS WASTE OR AUTOMOTIVE WINDSCREENS AND RECYCLE IT FOR MANUFACTURING BITUMINOUS BINDERS FOR USE IN ROOFING MEMBRANES OR FUNCTIONAL COATINGS?**

**GreenWin presents REBINDER:**

Polyvinyl butyral (PVB) is a thermoplastic which is chiefly used in the manufacturing of security glass and windscreens. At the present time it is a plastic that is not recycled in Wallonia. However, the annual mass of potentially recyclable PVB is estimated at around 10, 000 tons in Belgium.

The REBINDER project aims to establish and perfect a process for the extrusion of PVB from flat glass or automotive glass waste in order to enable its recycling and qualitative refinement.

It is also looking at developing new high value-added industrial applications that can utilise this PVB recyclate in the manufacturing of bitumous binders for roofing membranes and in the formulation of functional coatings.

**THE "PLUSSES":**

- Better understanding and improvement of the PVB recycling process.
- Reduction in the quantity of buried plastic.
- Optimisation of 20% of glass recovered: economic added value.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION
CLIMATE ACTION

# RECYGLASS

**HOW CAN YOU DEVELOP SYSTEMS FOR THE COLLECTION AND RECYCLING OF END-OF-LIFE GLASS?**

**GreenWin presents RECYGLASS:**

In theory, glass is a material that is indefinitely recyclable: it can be melted down and reshaped without any chemical degradation. In practice, however, two factors get in the way of this perpetual loop: the lack of facilities for the recovery of flat glass, and the purity of the recycled glass. This means that to-date no manufacturer of flat glass currently recycles end-of-life glass in its own furnaces.

The systems needing to be put into place must be developed on the logistics side as much as in the area of the pre-treatment of waste. Overcoming these two obstacles will mean huge possibilities for flat glass reuse for the partners.

Increasing the usage of recycled materials as raw materials provides economic interest owing to the reduction in cost prices and in the energy used by furnaces. It also answers the ecological expectations of consumers and improves the green credentials of companies.

Another aspect of this recycling is the valorisation of the waste (e.g. glass fibres) that is created by the production process.

**THE "PLUSSES":**

- Recovery of flat glass currently being sent to landfill.
- Reduction in the use of high quality raw materials which are replaced by used glass.
- Reduction in $CO_2$ emissions through the utilisation of used glass.
  Less energy needed to melt down compared to raw materials.
- Development of a Walloon know-how.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTOR:
ENVIRONMENT

PLASTIC RECYCLING

CIRCULAR ECONOMY

INDUSTRY, INNOVATION & INFRASTRUCTURE
SUSTAINABLE CITIES & COMMUNITIES
RESPONSIBLE CONSUMPTION & PRODUCTION

# RECYPLUS

**HOW CAN YOU ALSO RECYCLE, IN ADDITION TO TRADITIONAL PMCS, THE RESIDUAL FRACTION OF PLASTICS I.E. THE P+MC** (RIGID PLASTICS SUCH AS TRAYS, TUBS AND POTS, AS WELL AS FLEXIBLE PLASTICS SUCH AS FILMS AND BAGS)**?**

**GreenWin presents RECYPLUS:**

This project aims to seek out the household plastic waste in our rubbish bags that ends up being incinerated, with a view to searching for ways of recycling it. The three-and-a-half- year research programme started off with the classification of household waste streams from several Walloon intercommunalities. It then focussed on mechanical plastic sorting tests undertaken with experimental machines. Once these plastics were collected and extracted, the project applied itself to finding recycling processes for them so that tomorrow our yogurt pots, tubs and plastic films can also get to enjoy a second life!

**THE "PLUSSES":**

- Creation of new raw materials and reduction, therefore, in $CO_2$ emissions.
- Reduction in the dependency on virgin raw materials.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SUCCESS STORY

SECTOR:
CHEMISTRY

$CO_2$ TRANSFORMATION
GREEN CHEMISTRY
ENERGY EFFICIENCY

CARBON NEUTRALITY

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION & INFRASTRUCTURE
RESPONSIBLE CONSUMPTION & PRODUCTION
CLIMATE ACTION

# REFORGAS

**HOW CAN YOU PRODUCE HIGH VALUE-ADDED MOLECULES FROM BIOGAS USING PLASMA TECHNOLOGY AND CHEMICAL CATALYSIS?**

**GreenWin presents REFORGAS:**

REFORGAS proposes a new method for producing high value molecules from biogas ($CO_2$/$CH_4$ mix) that uses a combination of plasma technology and chemical catalysis.

The use of plasma technology allows for energy to be supplied exclusively by intermittent renewable electricity. Via this original process, the waste-generated biogas can be upgraded at low energy cost into high value molecules such as acrylic acid. Acrylic acid can then be transformed into polymers that can be used in the manufacturing of a variety of objects. The $CO_2$ contained in the biogas is thus immobilised in the plastics that we use on a daily basis.

This makes REFORGAS a potential solution for fighting greenhouse effect gas emissions and therefore global warming, but essentially a new path towards sustainable chemistry.

**THE "PLUSSES":**

- Possible solution for combatting greenhouse gas emissions and therefore global warming.
- New path towards green chemistry.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# IRMA

**HOW DO YOU USE AND VALORISE INERT CONSTRUCTION AND INDUSTRIAL WASTE IN THE MANUFACTURING OF REFRACTORY MATERIALS AND NON-COMBUSTIBLE INSULATORS?**

**GreenWin presents IRMA:**

Well-known company IPSIIS has patented a process for the production of insulating and non-combustible foams made from mineral materials.

The commercialised product, obtained from Metakaolin and made at its production site in Frameries, is aimed at the industrial oven and stills markets.

By substituting part of the Metakaolin with waste the company could move towards products that are more competitive in terms of costs and can be used for other applications, and in larger volumes, such as in insulation for buildings.

IPSIIS has already approved the compatibility of certain types of waste (mineral wool, limestone cutting slurry waste…) with its own process. However, the characteristics of the foams that make up the company's current commercial products have not been able to be reproduced in the case of foams that contain these mineral wastes.

The IRMA project aims to develop new porous materials (foams) that integrate these wastes once they have been treated. Formulations will be optimised to satisfy the technical specifications of the company's current and future applications.

**THE "PLUSSES":**

- Perfecting of formulations for achieving stable refractory foams with technical requirements compatible with intended applications within the context of the security and protection of individuals and property.
- Valorisation of inert industrial waste, deconstruction waste and other recycled resources.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# REMIND - RECOB2

SECTORS:
CONSTRUCTION

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# RECOB2

**HOW TO PRODUCE A NEW CIRCULAR, ENERGY-EFFICIENT, AND COST-COMPETITIVE DRY SCREED SYSTEM?**

**GreenWin presents RECOB2:**

The RECOB2 project aims to develop a new circular material that is destined for the manufacturing of dry screeds, is competitively priced and easy to implement, for use in timber frame constructions and renovation. This material will be entirely based on local recycled resources, mainly paper, crushed stone stand, metallurgical slags, and fly ash.

Besides its sustainable, local, and totally circular character, this material will also present with an array of unique mechanical, thermal and acoustic properties. No circular product of this type currently exists.

While the particular product being looked into by RECOB2 is a dry screed, the idea is to launch a completely new range of products that are suitable for different applications within the construction and renovation sectors in accordance with the different stages of the project.

The specific objective is to develop all the aspects (upstream and downstream) of the manufacturing process of a new dry screed material to be commercialised within 3 years maximum after the end of the RECOB2 project.

**THE "PLUSSES":**

- Manufacturing process that is simple and consumes very little energy, contributing to competitive pricing compared with existing products.
- Possibility of openings in other markets in Belgium and neighbouring countries.
- Secure supply chains offering new development and valorisation opportunities.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR
ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# CIBER

**HOW DO YOU USE DECONSTRUCTION FLOWS AND AGGREGATES TO PRODUCE HIGH-VALUE PRECAST CONCRETE AND LARGE MODULAR BLOCKS?**

**GreenWin presents CIBER:**

In the face of strong demand for aggregates of natural origin in the construction industry, it is now becoming ever more essential for the use of recycled aggregates to be increased.

Having already developed a process for the recycling of deconstruction waste, Wanty et Dufour will strive, in collaboration with consortium partner Roosens, to improve the quality of produced aggregates in order to valorise them in outlets with higher added value, namely prefabricated concrete for large structural pieces (bridge decks, lintels, slabs, flooring, deconstructable modular blocks).

The CIBER project will seek to develop new and more innovative structural building elements in the form of large-sized modular blocks, with the aim of improving execution and deconstruction processes (eco-design concept) so that they may be reutilised, in addition to being used in already commercially available structural pieces.

This Cradle-to-Cradle approach will make it possible to envisage the circular valorisation not only of the aggregates themselves, but also of the finished products through their reutilisation in the building sector.

**THE "PLUSSES":**

- Circular valorisation of recycled and finished products.
- More flexibility, easier dismantling, and possibility of reutilisation.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# C-GROUT

**HOW CAN YOU REPLACE CONVENTIONAL CONCRETE WITH SPECIAL AND CIRCULAR CONCRETES, USING MINERAL WASTE AND BY-PRODUCTS, IN OFFSHORE WIND FARM CONSTRUCTION SITES?**

**GreenWin presents C-GROUT:**

For a number of years now, as a result of the positive impact it has had on the reduction of greenhouse gas emissions, the offshore wind energy sector has witnessed a high level of growth supported by both the authorities and European companies.

This offshore wind farming sector has been identified as a real opportunity by the partners involved in the C-GROUT project, particularly as it is perfectly in tune with their core business and development strategy.

C-GROUT targets the production of special types of concrete for the offshore wind farming sector that are compatible with the concept of a circular economy. The use of recycled materials in lieu of certain concrete components will bring about economic, ecological, and technological growth, and will also reinforce the position of the Partners within this particular sector.

The need to develop a specific and innovative grinding technology will also confer transversal and multi-sectoral added value to the research results.

**THE "PLUSSES":**

- Contributes towards a reduction in the carbon footprint of wind farms.
- Transversal and multi-sectoral added value.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# REMIND - WASTE2MAT

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# WASTES2MAT

**HOW DO YOU DESIGN RESILIENT AND CIRCULAR ECO-MATERIALS, USING WASTE FROM VARIOUS MINERAL ACTIVITIES, MAKING THEM COMPLEMENTARY AND STABILISING THE POLLUTANTS WITHIN THEM?**

**GreenWin presents WASTES2MAT:**

A number of Walloon companies have currently been facing difficulties in respect of the management of their waste. Yet the pooling of some of these wastes could bring about the formation of a particular hydraulic phase that is able to act as a binder within the framework of the synthesis of low bearing capacity materials, such as re-excavatable self-compacting materials or sub-foundation materials.

Re-excavatable self-compacting materials have as strong development potential: although they address a real need, they are rarely used across the Walloon region. Additionally, the synthesis phase makes it possible for the inorganic pollutants in the waste to be stabilised and for a large number of water molecules to be captured, contributing to the hardening of materials.

The WASTES2MAT project aims to perfect environmentally friendly materials with a bearing load that is determined by this particular phase. The innovative character is further strengthened by the fact that the reactives enabling the synthetisation are all of secondary origin, which avoids them being sent to landfill sites.

**THE "PLUSSES":**

- Pooling of waste for the development of an alternative circular binder.
- Avoids the landfill burying of reactive waste.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# WASTES2CEM

**HOW DO YOU REDUCE THE ENVIRONMENTAL IMPACT OF CEMENT MANUFACTURERS BY LOCALLY PRODUCING CLINKER AND CEMENT LOCALLY USING SECONDARY MINERAL MATERIALS?**

**GreenWin presents WASTES2CEM:**

The main challenge currently facing cement producers in Wallonia is how to remain competitive in the face of competition from imported clinker, while at the same time respecting obligations in terms of reducing $CO_2$ emissions.

To address the problem, the WASTES2CEM project will focus on two complementary courses of action: on the one hand the partial replacement of limestone with a secondary mineral material of local origin in the clinker raw mix, and on the other the reduction of the amount of clinker in cement by the addition of reactive additives obtained from secondary mineral materials.

The two secondary mineral materials that have been researched to this end are different from one another so will need to be treated by mineralurgical techniques in order to satisfy the specifications of cement producers. These materials already form part of an historical deposit: their valorisation for the cement industry will also allow for land to be freed up for alternative use (economic zones, housing, natural zones...).

Furthermore, the clinkerisation study carried out during the pilot phase will represent an asset for the project.

**THE "PLUSSES":**

- Reduction in the dependence on imported clinker.
- Freeing up of land for alternative use (economic zones, housing, natural zones).

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# REMIND - CARBOC

SECTORS:
CONSTRUCTION
ENVIRONMENT

SUSTAINABLE MATERIALS
WASTE VALORISATION
$CO_2$ TRANSFORMATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION
CLIMATE ACTION

# CARBOC

**HOW CAN YOU REDUCE THE $CO_2$ EMISSION RATE OF ROAD AND PRECAST CONCRETE MATERIALS THROUGH CAPTURE, UTILISATION, AND INDUSTRIAL CARBON SEQUESTRATION (CCUS) TECHNOLOGY?**

**GreenWin presents CARBOC:**

The demographic and economic growth of the last decades has meant increased industrial activity, resulting in a considerable rise in the greenhouse gas (GHG) emissions that are responsible for major changes in the climate.

To achieve carbon neutrality by 2050, one of the European Union's main objectives is to obtain a net reduction in European emissions of at least 55% by 2030.

Within this context, the industrial partners involved in the CARBOC project have quite logically identified a common interest in using CCUS (Carbon Capture, Use and Storage) technology in order to reduce the carbon footprint of their products by partially replacing cement with carbonated phases.

To this end, they have sought the scientific support of the CTP (Centre Terre et Pierre - Accredited Research Centre dedicated to the mineral processing of materials), and of the GeMMe and PEPs laboratories at Liège University, in order to explore the development of road materials or prefabricated concrete materials that allow for the capture of industrial $CO_2$.

**THE "PLUSSES":**

- Elaboration of innovative $CO_2$ captor materials.
- Reduction in greenhouse gas emissions.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

CO-LABELLING: **GreenWin** | **MecaTech**

SUCCESS STORY

# REPLIC

**HOW CAN YOU RECYCLE GYPSUM** (PLASTER) **AND TRANSFORM IT INTO HIGH QUALITY GYPSUM USING A PROCESS THAT IS RELIABLE AND VERSATILE?**

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
WASTE VALORISATION

CIRCULAR ECONOMY

INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

**GreenWin presents REPLIC:**

Development of an industrial unit for the treatment of post-consumption gypsum, with an initial capacity of 12.000T/year and capable of treating waste of various origins (recycling centres, deconstruction…) to produce high quality gypsum. The innovative aspect of this project comes from the novel combination of mineralurgical techniques which makes for a process that is solid and versatile.

In the light of the success of this project a new enterprise and a new industrial line will be created.

**THE "PLUSSES":**

- Efficient, solid and versatile process.
- High quality of recycled gypsum.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
ENVIRONMENT

WATER, SLUDGE, AIR
& EMISSIONS
SOILS AND SEDIMENTS

DIGITAL

SUSTAINABLE CITIES
& COMMUNITIES
LIFE BELOW WATER

# RIVIALIS

## HOW TO SIMPLIFY THE MANAGEMENT OF THE RESTORATION OF SMALL WATERCOURSES?

**GreenWin presents RIVIALIS:**

The latest extreme climatic events have demonstrated to what extent the management of waterways (restoration, improvement in flow rates, protection against flooding...) plays a crucial role. While attention is predominantly accorded to large rivers, on which most studies and improvement procedures tend to focus, smaller watercourses – although more important in terms of cumulative length – are the subject of fewer studies, usually as a consequence of the higher costs these studies imply.

The Rivialis project consists in developing, and supplying to relevant stakeholders faced with this problem, a rapid and low-cost solution for diagnosing the state of these waterways that will also allow them to simulate the consequences of carrying out any proposed improvement project. Through optimised data collection, the use of modelling algorithms, and the input of artificial intelligence, Rivialis intends to become a tool to assist with efficient decision-making that is aimed at all the different parties involved. The application will also be supported by the provision of services that focus on the restoration of waterways.

**THE "PLUSSES":**

- Novel tool for the innovative management of the environment.
- Application that rests as much on practical expertise as on symbolic AI.
- Enables the diagnosis of waterways while also forecasting the suitability and consequences of restoration work.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
CONSTRUCTION

SUSTAINABLE MATERIALS
CONSTRUCTIVE SYSTEMS

ADAPTATION
TO CLIMATE RISKS

INDUSTRY, INNOVATION
& INFRASTRUCTURE
SUSTAINABLE CITIES
& COMMUNITIES

# ROBOTRONC

**HOW CAN YOU REPLACE HIGHLY ENERGY-INTENSIVE AND POLLUTING CONSTRUCTION MATERIALS WITH A BIOSOURCED, RENEWABLE, AND LOCALLY-SOURCED ALTERNATIVE, AT A COMPETITIVE PRICE, WHILE GENERATING A FAVOURABLE CARBON FOOTPRINT?**

**GreenWin presents ROBOTRONC:**

Why is it that tree trunks are always cut into rectangular planks, when nature has spent decades shaping them to enable them to resist the most extreme storms? ROBOTRONC aims to address this paradox by developing a new method for the construction of multi-story building structures using whole tree trunks as beams, columns, and flooring, machined with the aid of robotic arms and digital tools.

This innovative project rests on a totally new conception/manufacturing approach based on combining 3 tools, that makes it possible to reduce costs:

- Real-size mechanical testing equipment in order to optimise material use and maximise structural performance.
- Large-size scanner that will allow to digitalise the exact geometry of the trunks and import it into a parametric conception software and into BIM models.
- Robots that will shape the trunks in such a way that they can easily be assembled on building sites.

**THE "PLUSSES":**

- Drastic reduction in the construction costs of wood buildings and impact on the development of digital tools and employment in Wallonia, with the creation of an estimated 60 direct or indirect new jobs by 2030.
- Maximum exploitation of the mechanical properties of wood, by far the building material that consumes the least energy and the only one that presents with a positive carbon footprint.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTORS:
CHEMISTRY
ENVIRONMENT

GREEN CHEMISTRY
WASTE VALORISATION

CIRCULAR ECONOMY

DECENT WORK
& ECONOMIC GROWTH
INDUSTRY, INNOVATION
& INFRASTRUCTURE
RESPONSIBLE CONSUMPTION
& PRODUCTION

# SAMAIN

**HOW TO OPTIMISE THE VALORISATION OF AGRICULTURAL AND FORESTRY BY-PRODUCTS AND WASTE IN AN INDUSTRIAL PROCESS FOR THE PRODUCTION OF ANIMAL LITTER?**

**GreenWin presents SAMAIN:**

Since 1996, Ets Pierre Samain, a private limited company based in Pottes (Hainaut Province), has been specialising in the valorisation of agricultural by-products; today the company produces plant-based pellets from ground straw, ground flax straw, sawdust, and wood chippings.

These pellets represent an entire range of wholly plant-based and biodegradable litters for cats, small animals, and horses; all products are available on sale from specialised merchants or well-known mass distribution retailers.

Concerned with pursuing the improvement of its products as much as with the development of new high-growth opportunities, the company is undertaking an investment programme with a view to establishing two new production lines.

If these allow for the doubling of actual production, they will also facilitate the undertaking of more regular trials on new compositions, even new products. The scheduled investments should also permit the recruitment of 1 or 2 additional employees.

**THE "PLUSSES":**

- Development of new valorisation channels for agricultural by-products in Wallonia.
- Undertaking of trials of new biodegradable products made from locally sourced and natural plant material.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

# SEED2SEED

SECTOR:
CHEMISTRY

BIO-BASED CHEMISTRY
BIOTECHNOLOGY

SUSTAINABLE FOOD
CIRCULAR ECONOMY

ZERO HUNGER
RESPONSIBLE
CONSUMPTION
& PRODUCTION

## HOW TO ENHANCE OUR FOOD SELF-SUFFICIENCY THROUGH THE ESTABLISHMENT OF A LOCAL CIRCULAR ECONOMY FOR BIOSTIMULANT PRODUCTS?

**GreenWin presents SEED2SEED:**

Within the context of the European Green Deal, and of climate change, and an increase in the costs of agricultural inputs (underlined by the situation in Ukraine), a "decarbonisation" of agriculture, notably through the introduction of bio-based biostimulants, seems like one of the paths that needs to be followed.

The goal of the SEED2SEED project is to valorise co-products derived from local grains using techniques of eco-extraction and formulation in order to validate their bio-stimulating effects on the growth and resistance of crops in the face of climate stress.

The objective is to market biostimulants with an application potential of over one million hectares in 2031 (organic or conventional agriculture) in the hope of achieving an increase in yield of between 5 to 10% for farmers, an annual turnover of 19 million Euros for consortium members involved in the project, and the maintaining of a Walloon agricultural sector that is sustainable and competitive (with a direct effect on employment via the creation of 32 jobs in consortium partner companies).

**THE "PLUSSES":**

- Creation of a circular economy sector: introducing the sale of biostimulants for agriculture derived from the valorisation of local agricultural co-products.
- Transformation of protein-rich biomass via green extraction and formulation technologies compatible with the requirements of organic farming.
- Supporting the agricultural sector in Wallonia and Europe via the development of sustainable inputs that improve yields and resistance to climate stress.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be

SECTOR:
ENVIRONMENT

WATER, SLUDGE, AIR
& EMISSIONS
CIRCULARITY OF PLASTICS

CIRCULAR ECONOMY

CLEAN WATER & SANITATION
INDUSTRY, INNOVATION
& INFRASTRUCTURE

# SFPLINER

**HOW CAN YOU SUSTAINABLY REPAIR DRINKING WATER DISTRIBUTION NETWORKS WITHOUT REPLACING THEM OR OPENING ROAD SPACES, THEREBY ELIMINATING RESOURCE WASTE AND NEIGHBOURHOOD NUISANCES?**

**GreenWin presents SFPLINER:**

For a number of years now network managers have been looking for a solution for the rehabilitation of metal canalisations used in the distribution of drinking water or steam (heating). These canalisations are often old, present a number of bends, are difficult to access and show an advanced degree of corrosion all of which implies a significant loss of their mechanical properties.

The SFPLiner project was launched with the aim of finding an urgent solution to the deterioration of these canalisations with lining technology that does not require the replacement of canalisations, nor the opening up of pavements, often for long periods of time, but which on the contrary strengthens and reinforces them from the inside. The process is also a much faster one (1 week for ± 150m).

This renovation method uses a flexible lining made from a fabric impregnated with an epoxy resin to form a composite that will harden inside the canalisation. This allows a certain number of mechanical, chemical and approval requirements to be met, offering an additional 50-year lease of life to the renovated sections.

**THE "PLUSSES":**

- Project that answers the need to reduce the volume of leaks in these times when the management of natural resources is of world-wide concern.
- Economic benefits of between 18 and 20 million Euros in the first year spread between four SMEs in the Walloon Region. Recruitment of 21 additional full-time employees once the project has proved successful.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



SOLHEATAIR

CO-LABELLING: **MecaTech** | **GreenWin**

SECTOR:
CONSTRUCTION

ENERGY EFFICIENCY

INDUSTRIAL PROCESSES
MORE RESPECTFUL
OF THE ENVIRONMENT

AFFORDABLE & CLEAN ENERGY
INDUSTRY, INNOVATION
& INFRASTRUCTURE
CLIMATE ACTION

# SOLHEATAIR

**HOW CAN YOU PRODUCE, STORE, AND HARNESS WARM AIR GENERATED BY RENEWABLE ENERGY SOURCES FOR USE IN INDUSTRIAL PROCESSES, WHILE REDUCING CARBON EMISSIONS?**

**GreenWin presents SOLHEATAIR:**

Reducing $CO_2$ emissions in general, and those linked to industry and transport in particular, constitutes one of the major challenges of this century. The last two sectors alone release more than 30 billion tonnes of $CO_2$ in the atmosphere every year.

The SOLHEATAIR projects aims to develop an integrated renewable solution for the production, storage and valorisation of heat produced by renewable energy that can then be used in industrial processes (lime or steel production for example) or converted into electricity to reduce $CO_2$ emissions.

The renewable sector presents an enormous potential in terms of reducing $CO_2$ emissions, but also when it comes to creating jobs and value, provided a certain number of economic, industrial, and technological challenges are taken into consideration.

These challenges will be met in the context of this project. The first systems should be made commercially available at the beginning of 2025, to reach a larger number of installations in 2050 with an installed capacity of 3 Gigawatts.

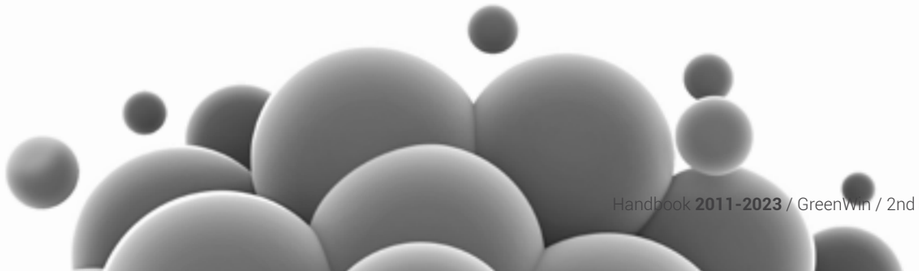
**THE "PLUSSES":**

- Project in line with Belgium's objective to play a leading role in the development of renewable energy and with the 2050 ambitions of IRENA (International Renewable Energy Agency).
- Project that will contribute to reducing not only the CAPex of renewable energies, but also, and above all, to improving their performance and reducing their OPex.

For any additional information about this project and the consortium implementing it, please contact Enrique GONZALEZ, Membership & Networking Manager at GreenWin: enrique.gonzalez@greenwin.be



# GLOSSARY



**AGORIA:**
Federation of the technology industry

**AISBL:**
International non-profit making association

**AWEX:**
Agence Wallonne à l'Exportation (Walloon Export Agency)

**BIC:**
Biobased Industry Consortium : *private sector component of the public-private partnership BBI JU*

**BBI JU:**
Biobased Industry Joint Undertaking: *European public-private partnership for the emergence of a bioeconomy in the European Union*

**CANOPEA:**
Federation of Belgian environmental associations

**CAPEX:**
Capital Expenditure

**CBE JU:**
Circular Bio-based Europe Joint Undertaking - replaced BBI JU in 2021

**CCU:**
Carbon Capture and Utilisation

**CCUS:**
Carbon Capture Utilisation and Storage

**CRA-W:**
Walloon Certified Reseach Centre

**CVBB:**
Conferences on green chemistry and white biotechnologies

**DENUO:**
Belgian Federation for the waste and recycling sector

**EPHEC:**
École Pratique des Hautes Études Commerciales (Higher Education University College offering practical Bachelor Degree Level Education across 3 campuses in Brussels and Wallonia)

**ERF:**
Energy Recovery Facility

**ESSENSCIA:**
Belgian federation for the chemical industry and life sciences sector

**FEBELCEM:**
Federation of the Belgian cement industry

**FEDUSTRIA:**
Belgian federation of the textile, wood, and furniture industries

**FEGE:**
Federation of Environmental Management companies

**FOREM:**
Public Service for Employment and Vocational Training in Wallonia

**FTE:**
Full-Time Equivalent

**HARD-TO-ABATE:**
Used to describe emissions that are prohibitively costly or impossible to reduce with currently available abatement technology.
Such emissions usually result from heavy industry (cement, steel, chemicals) and heavy-duty transport (road haulage, shipping, and aviation).
Hard-to-abate sectors contribute to approximately 30% of global emissions. This share is expected to double under business-as-usual scenarios. *source: https://www.abatable.com/ blog/hard-to-abate-emissions*

**HELMO:**
Haute Ecole Libre Mosane (Higher Education University College in Liège)

**INDUFED:**
Platform uniting 3 Belgian industrial sectors: *COBELPA (Association of the Belgian manufacturers of pulp, paper, and cardboard), FETRA (Federation of paper and cardboard processing companies), and VGI (Glass Industry Federation).*

**IFAPME:**
Walloon Institute of Dual Vocational Education and Training for Small and Medium-Sized Enterprises

**KETS:**
Key Enabling Technologies

**LCIP.**
Life Cycle in Practice

**LCA:**
Life Cycle Analysis

**LE:**
Large Enterprise

**NCP WALLONIE:**
National Contact Point

**OPEX:**
Operational Expenditure

**PEPIT:**
Polymers Ecocircularity Platform for an Industrial Transition

**PPP:**
Public-private partnership

**S3:**
Smart Specialisation Strategy.
EU initiative to support regional prioritisation in innovative sectors, fields, or technologies

**SCOT:**
Smart $CO_2$ Transformation European programme

**SDG:**
Sustainable Development Goal

**SIA:**
Strategic Innovation Areas.
There are 5, linked to flagship companies of the Walloon Economy

**SII:**
Strategic Innovation Initiative (see details below)

**SIRRIS:**
Collective centre for the Belgian technological industry

**SME:**
Small and Medium-Sized Enterprise

**SPIRE:**
Sustainable Process Industry through Resource and Energy Efficiency: *European public-private partnership*

**SPW:**
Public Service of Wallonia

**TECHNIFUTUR:**
Centre for the development of skills offering training to companies in industry, digital technologies and mobility

**TWEED:**
Technology of Wallonia Energy, Environment, and sustainable Development

**WALOSCRAP:**
Convention – in two parts – The Walloon Region has entrusted GreenWin with the task of identifying unvalorised waste deposits and proposing treatment, recycling and valorisation avenues

**WBI:**
Wallonie Bruxelles International (Agency responsible for the international relations of Wallonia and Brussels)

**WG:**
Working Group

**SYNTHETIC PRESENTATION OF THE 19 SIIS:**

CIRCULAR MATERIALS

**VALBOWAL:**
The aim of this SII is to put forward different ways to increase added value in the Walloon wood industry while reinforcing the sector and its contribution to the fight against climate change.

**WIN4C:**
The objective of this SII is to link all those involved in the circular economy of technological materials in order so that in 2030 Wallonia is recognised as the Recycling Valley at the heart of Europe.

INNOVATION FOR INCREASED WELLBEING

**ATMPWAL:**
ATMPWAL's goal is to federate those involved in genetical and cellular therapy in Wallonia in order to reinforce the Region's position in the sector nationally and internationally by developing its competitive, industrial, and scientific assets in a worldwide context. The ultimate objective is to ensure faster and cheaper access to advanced therapy medicinal products, or ATMPs, for patients.

**MEDRESYST:**
This SII on the one hand aims to reduce the costs of healthcare by 35% by better diagnostics, and the integration of all data and relevant information relating to patients to direct care towards achieving the optimum results. On the other, it targets improvement in prevention via detection and via personalised medicine, by using each patient's biological and environmental data and treating them with AI.

**MEDTECH WALLONIA:**
The ambition is to transform Wallonia into an international leader in medical technology by encouraging the creation of enterprises, increasing the growth of existing SMEs and creating a dynamic ecosystem structured from its inception through its commercialisation via the industrialisation in Wallonia of products and services resulting from medical technologies (MedTechs).

AGILE AND SAFE DESIGN AND PRODUCTION METHODS

**CYBERWALL:**
The main objective of this SII is to place Wallonia at the forefront of the cybersecurity sector. To this end, CyberWal will promote research, innovation, and training in the areas of cybersecurity, while ensuring strong coordination in order to develop synergies, and coherence with the regional policy in that sector.

**HITT:**
HITT aims to bring together key players in research and innovation centred on immersive and interactive experiences to generate a leverage effect by systematising and accelerating the transfer of these technologies towards the application sectors targeted by the SIIs.

**MADEINWALLONIA:**
The vocation of this SII is to federate a maximum of innovation initiatives covering the entire "Manufacturing" value chain with the aim of (re)developing the Walloon industrial fabric.

**TRAIL4WALLONIA:**
This SII aims at excellence in Artificial Intelligence by federating the entire Walloon ecosystem (R&D, training, companies) to seize the opportunities of today and tomorrow.

ENERGY SYSTEMS AND SUSTAINABLE HOUSING

**CETWA:**
The initiative focuses upon energy communities and their development and aims to make Wallonia a real economic player providing technological solutions and services in this field.

**CONTRIBUTE:**
This initiative aims to develop solutions for decarbonised mobility and transport, solutions for the testing and security of physical systems.

**E-WALLONHY:**
This SII aims to develop a green hydrogen economy in Wallonia, including the different components of the value chain, from the production of green hydrogen to its storage and transport, to its use in the most promising applications for this high purity hydrogen, namely mobility, buildings, and specific industrial processes.

**RENOW:**
This SII aims to structure the Walloon ecosystem around regional goals in terms of building renovation, with the ambition of deploying new technological and non-technological solutions for green energy transition and the homes of the future.

AGRI-FOOD CHAINS OF THE FUTURE AND INNOVATIVE MANAGEMENT OF THE ENVIRONMENT

**DIGIBIOCONTROL:**
By mobilising the skills of the biocontrol and digital fields in a unique and innovative way this SII aims to solve the problems which currently slow down the massive deployment of biocontrol solutionsand allow for a reduction in the use of pesticides in agriculture.

**FOODBOOSTER:**
This initiative aims to work on the entire value chain of the functional food and ingredient sector, from the collection of co-products from the food industry to the consumption of functional foods. The focus will be on prebiotics, probiotics, and bioactive peptides for use in human and animal health.

**H2O:**
There are many avenues for innovation in the fields of water resource preservation, running water production, and waste-water management, and many transversal themes in the water sector. This initiative will make it possible to call for a structured reflection at the level of Wallonia on the above matters.

**PROTEWIN:**
This initiative aims to develop new value chains for plant and alternative proteins for the food and feed sector. This SII targets not only dedicated crops but also discarded plant materials and co-products from the agri-food industry, integrating a cascade valuation model of all the by-products generated during the protein transformation processes for a multi-sectoral approach.

**WASABI 2.0:**
The objective of the WASABI 2.0 SII is to develop, in rural and (peri-)urban areas, a new innovative, sustainable, resilient, diversified, and human-sized horticultural agri-food chain by focusing upon the production and processing of underdeveloped sub-sectors (fruits, vegetables, animals with a low conversion index such as fish and poultry).

**WASTE2BIO :**
The Waste2Bio initiative aims to create, by 2026, an operational platform deploying innovative solutions based on plants and bio-based products to restore value to wastelands in Wallonia in a temporary or permanent manner.

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