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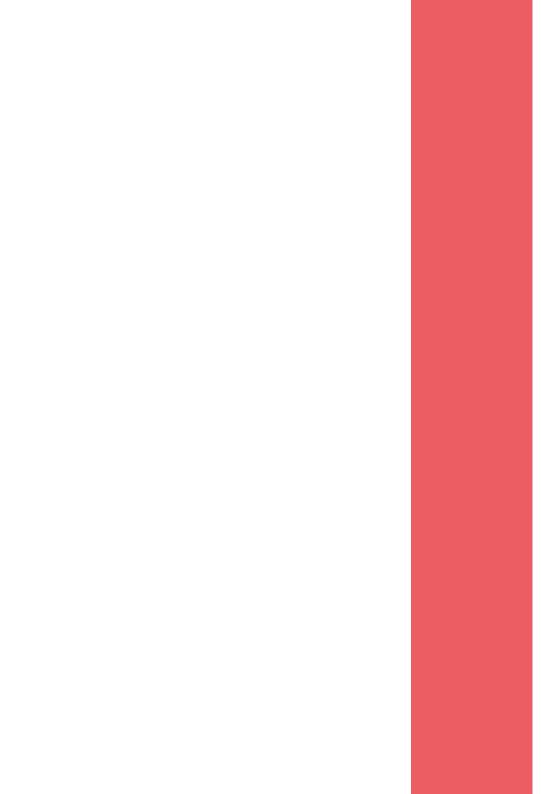


A STRONGER VOICE IN EUROPE

Examples of applied research tackling global challenges

2025

www.uasnl.eu



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Dear reader,

Applied research sits at the intersection of innovation and impact. By aligning academic inquiry with real-world challenges, it translates theory into solutions that matter—whether for communities, industries, or ecosystems. This booklet showcases a range of EU-funded applied research projects driven by Dutch Universities of Applied Sciences (UASNL) and their partners, illustrating how localized knowledge and practical experimentation can generate global change.

Applied research is uniquely positioned to

Applied research is uniquely positioned to bridge policy, practice, and people. It is inherently collaborative, embedding students, researchers, citizens, and enterprises in a continuous cycle of co-creation and learning.

This approach yields results that are not only scientifically sound but also socially relevant and immediately usable.

Each of the projects in this booklet exemplifies the added value of applied research: it is agile, multidisciplinary, and grounded in the contexts it seeks to transform. By connecting education with innovation ecosystems, applied research strengthens Europe's capacity to respond to pressing societal challenges—from sustainability and digital transition to health and social cohesion.

We invite you to see this not merely as a collection of projects, but as a call to champion a form of research that is purpose-driven, participatory, and powerful. Applied research is not just about knowledge—it's about enabling change, one solution at a time.

On behalf of the 22 Dutch universities of applied sciences that comprises UASNL, Dr. Geleyn Meijer, Chair of UASNL





SERENE

Sustainable and Integrated Energy Systems in Local Communities

Aalborg University, Denmark

UASNL Saxion University of partner Applied Science's

Research group "Sustainable Energy Knowledge Center involved

from UASNL partner

institution

Granting European Union's Horizon 2020 research and innovation programme under grant agreement No 957682 agency

Duration Start: 5-2021 End: 2025 Empowering Local Communities with Sustainable Energy Solutions The SERENE Project - A New Era in Community Energy Systems

The H2020 SERENE project is reshaping the future of local energy—successfully delivering sustainable, integrated, cost-effective, and community-focused energy solutions across Europe.

By combining diverse energy carriers and renewable generation technologies, SERENE addresses the technical and social needs of modern communities. The result? Smarter, greener, and more resilient energy systems, which is designed to meet today's needs and tomorrow's challenges.

SERENE prioritized citizen engagement at every step. Residents were informed, involved, and encouraged to take part in shaping their energy future. As a result, communities showed high levels of trust and enthusiasm for transitioning to cleaner energy. Demonstration projects were successfully rolled out in local villages across Denmark, the Netherlands, and Poland, proving that energy systems can be adapted to different contexts.

Each site was designed with local needs in mind, featuring:

- 🔋 Advanced Energy Storage
- Smart Demand Response Systems
- Electric Mobility Integration
- ূ Innovative Heating Solutions
- Renewable Energy Generation

Universities of Applied Sciences played a key role by connecting education, research, and industry. Their hands-on research, public outreach, and collaboration with local stakeholders helped ensure that innovations weren't just tested but successfully adopted and scaled.

Learn more at: www.h2020serene.eu



SOILCRATES

SOil Innovation Labs: Co-Regenerating And Transforming European Soils

Lead institution

Provincie Fryslân

UASNL partner

Van Hall Larenstein University of Applied Sciences

Knowledge involved from UASNL

Lectoraat Sustainable Soil Management

partner Granting

Horizon Europe -

Agency Duration

Start: 1- 10- 2024 End: 30- 09- 2028

Did you know? Around 60-70% of soils across the EU are severely degraded as the result of decades of unsustainable land practices and pollution. But there's hope.

SOILCRATES is an initiative uniting 21 partners from across Europe researchers, farmers, businesses, and citizens – all working together to bring our soils back to life.

Uniting 21 partners from across Europe, SOILCRATES supports the EU Mission "A Soil Deal for Europe." The goal is simple yet ambitious: to bring soils back to life through innovation, collaboration, and community engagement. At the heart of SOILCRATES are four dynamic Living Labs based in the Netherlands, France, Ireland, and Spain. These labs serve as real-world spaces for experimentation and co-creation, where researchers and farmers monitor soil health, foster sustainable practices, and learn from one another. Working closely with local land managers at dedicated Experimental Sites, the LLs focus on practical solutions, relevant to their regional context.

From exploring crop diversity and vegetative cover, to applying organic amendments and testing innovative irrigation techniques, the project promotes a holistic approach to soil care. By combining these practices at the farm level, the project aims to improve soil structure, biodiversity, and overall ecosystem resilience.

But SOILCRATES is about more than just science - it's about people. Through a variety of educational tools and outreach efforts, it is increasing soil literacy across Europe. The findings will help shape better farming methods, inform smart policies, and inspire communities to value and protect the ground beneath their feet.

By the end of the project, the four regional Living Labs will be fully operational and sustainable – setting the stage for longterm impact across Europe.

Learn more about it: www.cordis.europa.eu/project/id/101157354





NEST

Empowering sustainable health ecosystems in Europe

Lead institution (UASNL partner) Hanze University of Applied Sciences

Knowledge Center

Healthy Ageing

involved from UASNL partner

Granting agency Erasmus +

Duration

Start: 1-6-2023 End: 31-08-2026 Health is a fundamental right — and achieving healthy living for all is one of Europe's most complex challenges. Today's health sector is often fragmented, making collaboration across disciplines more essential than ever. That's why the **European Innovation Alliance on Healthy Living** unites ten partners from six countries (plus one European network partner) from higher education, vocational training, research, and business. Together, we're developing innovative, sustainable, and community-driven solutions to promote healthier lives across Europe.

Our alliance is built around two central learning questions: How can we build and sustain social innovation ecosystems that support long-term societal transitions? And how can we grow and maintain collective knowledge and agency among diverse stakeholders in healthy living?

To answer these, we've launched four international Communities of Practice focused on social business development, engaged community science, reflexive monitoring, and knowledge creation. Through this collaborative approach, we are codeveloping a blueprint for a Social Innovation Ecosystem for Healthy Living (SIEHL). This includes smart governance structures, effective leadership strategies, sustainable implementation tools, and transformative educational approaches. A key feature of our work is integrating our learnings directly into existing educational frameworks—empowering a new generation of change agents equipped to lead innovation in their communities.

Ultimately, our work strengthens the capacity of educational institutions to co-create with citizens, businesses, and policymakers—building a "quintuple helix" of innovation that connects people, planet, policy, education, and the economy. The result is a more inclusive, innovative, and resilient Europe where healthy living becomes not just an aspiration, but a shared and sustainable reality.

Learn more about it: www.nesterasmus.eu





Extended Reality for Society

Lead institution

UASNL partner University of South-Eastern Norway and 12 partners across Europe. Fontys University of Applied Sciences

Knowledge Center involved from UASNL partner Fontys University of Applied Sciences` Professorship for Moral Design Strategy

Granting Agency European Commission, Directorate-General for Communications Networks, Content and Technology, CNECT

Duration

Start: 11-2022 Fnd: 10-2025 XR4Human is a Horizon Europe project focused on one big question:

How can we develop and use extended reality (XR) technologies in ways that truly benefit people—without leaving anyone behind?

This initiative brings together researchers, experts, and everyday citizens to ensure XR is inclusive, and human-centered. Through collaborative research and knowledge exchange, XR4Human will deliver practical tools like:

★ Easy-to-use guidelines

II Transparent ranking systems

Educational materials and toolkits

All of them designed to help businesses, policymakers, and communities across Europe to make smart, and ethical decisions about XR. A key part of the project is a Europe-wide digital dialogue platform, where citizens can actively take part in shaping the moral and ethical future of XR.

Fontys University adds a unique layer to the project with its Meta-Ethical Programming Model, turning ethical theory into practical action. This model helps XR developers design technology that's not only innovative, but also responsible, transparent, and aligned with our shared human values.

Learn more about it: www.xr4human.eu





WOODCIRCLES

Unlocking the Potential of Wood in Construction

What if yesterday's wood waste could build tomorrow's cities?

Woodcircles is turning that vision into reality.

Danish Technological Institute

This initiative focuses on circular economy principles in the construction sector by giving wood a second life. Instead of sending wood waste to incinerators, Woodcircles transforms it into high-quality, eco-friendly building materials—dramatically reducing the construction industry's carbon footprint.

Through smart solutions and local action, the project is closing the loop and building a greener future.

What We Deliver:

Repurposing Wood Waste

We rescue discarded wood—from buildings, furniture, and other structures—and turn it into valuable construction materials that are built to last.

Smart Digital Tools

Lead institution

UASNL

Center involved from UASNL

partner

Granting

agency

Knowledge

With advanced mapping tools, cities can now locate and assess reusable wood in their urban landscapes. It's innovation that turns waste into opportunity.

We're not just recycling—we're reimagining. From engineered wood to natural insulation, our products prove that sustainability and performance go hand in hand.

👪 Urban Sawmill Prototype

Woodcircles is developing a compact, flexible urban sawmill—a game-changer that transforms low-value wood waste into standardized, reusable products right where it's needed most.

Rebuild-Ready Construction System

Amsterdam University of

Amsterdam University

of Applied Sciences, Centre of Expertise: City

Applied Sciences

Horizon Europe

Net Zero

Start: 2023

Our modular system is made for the future: easy to disassemble, simple to reuse, and designed for minimal waste from the start

🚚 Touring Demonstration Building

See it in action! Our fully recyclable pilot building will tour Rotterdam, Tartu, and Turin, showcasing just how powerful circular construction can be.

Learn more about it: www.woodcircles.eu



ENGAGE4BIO

Better understanding, intensified engagement, training and development in regional bio-based systems

Lead institution The Centre for Social Innovation and Stichting Wageningen Research

UASNL partner ArtEZ University of the Arts

Knowledge Center The Professorship Tactic Design at ArtEZ

involved from UASNL partner

Granting Agency Horizon Europe / European Research Executive Agency (REA)

Duration

Start: 10-2022 End: 09-2025 What if local innovation could fuel a sustainable bio-based future across Europe? Engage4BIO is here to make it happen.

This initiative's main goal is empowering regions to build circular, sustainable bioeconomies—by combining creativity, collaboration, and cutting-edge skills development. Through design thinking, co-creation, and hands-on (re)training, Engage4BIO helps regions tap into their unique strengths to drive real change from the ground up.

Engage4BIO is active in five key value chains across Europe:

TNetherlands – Circular and bio-based textiles

🌾 Hungary – Sustainable agriculture and agro-food

🗑 Austria – Wood and interior design

Finland – Bio-based packaging solutions

💪 Italy – Blue bioeconomy and marine resources

Each region brings its own natural, cultural, and economic assets to the table — Engage4BIO helps turn these into engines of sustainable innovation.

By embedding art and design into every step of the process, Engage4BIO boosts creativity and citizen engagement. This fresh approach strengthens local governance, builds trust, and turns ideas into action. Whether it's co-creating training programs or designing awareness campaigns, the initiative makes sustainability understandable, relatable, and inspiring for all. Engage4BIO is a flexible, transferable framework that adapts to each region's needs—ready to be replicated across Europe, from city hubs to rural communities.

Learn more about it: <u>www.engage4bio.eu</u>





CYANOTYPES

Strategic Skills for Creative Futures

HKU University of the Arts Utrecht

institution (UASNL partner)

Knowledge Center involved from UASNL

partner Granting

agency

EC ERASMUS+ Alliances for Innovation

Duration Start: 2022 End: 2026

What if artists and creatives held the keys to Europe's transformation?

CYANOTYPES believes they do—and it is building the ecosystem to support them.

CYANOTYPES is a pan-European initiative dedicated to reimagining how the Cultural and Creative Industries grow and lead in the face of Europe's digital transitions. At its core, CYANOTYPES envisions new competence ecosystems that empower artists, designers, and creatives to become agents of change-equipped with the skills and mindset to shape a more sustainable, inclusive, and innovative future.

Uniting a diverse network of organisations, educators, researchers, and European stakeholders, CYANOTYPES addresses the evolving needs and skills gaps within the creative sector. By harnessing multidisciplinary approaches and embracing the full potential of the CCIs, the project supports innovation, competitiveness, and resilience across Europe.

CYANOTYPES is building a dynamic, future-facing training ecosystem that includes:

- * Transversal Competences Skills that cut across disciplines and fuel creative leadership.
- Microlearning & Workplace Training Designed for agility, accessibility, and real-world impact.

Through applied research and co-creation, CYANOTYPES is developing a training programme that delivers future-oriented, transversal competences. These include transnational learning modules tailored to a wide range of qualification levels—from vocational education and training (EQF levels 3 to 5) to higher education (EQF levels 6 to 8)—as well as flexible formats for workplace training and microlearning suited to both emerging and existing creative roles.

Learn more about it: www.cyanotypes.website





Natural colours for a growing economy

Lead N

MNEXT

UASNL partner Avans University of Applied Sciences

Knowledge Center involved Avans University of Applied Sciences

involved from UASNL partner

Granting Agency Interreg NWE

Duration St

Start: 4-2020

Every year, Europe generates 87 million tons of packaging waste. Even with the rise of bio-based materials like PLA, one problem remains largely overlooked: the synthetic colourants used in packaging production. These colours don't break down, and many contain harmful substances that linger in our environment -polluting compost, contaminating wastewater, and undermining sustainability efforts.

CurCol is an Interreg North-West Europe project that explores the full potential of Curcumin, a natural yellow dye extracted from turmeric. Already used in food and pharmaceuticals, Curcumin is safe, biodegradable, and packed with promise. But until now, its broader use – especially in packaging – has been limited due to challenges like poor UV stability.

Thanks to recent research, we now know that Curcumin's properties can be enhanced to last longer and even generate other vibrant colours such as red and blue.

CurCol is taking these innovations further—by testing and scaling Curcumine-based dyes in real-world packaging solutions for both plastic and paper.

CurCol brings together partners from Ireland, Germany, Belgium, and the Netherlands to create a truly sustainable solution. Through pilot studies, the project is developing business cases, identifying technical and commercial barriers, and laying out clear action plans for implementation.

But CurCol goes beyond just colour. It's also about building new regional supply chains, introducing valuable crops into greenhouse agriculture, and creating green jobs that support a circular bioeconomy across Europe.

The long-term vision of CurCol includes:

- g Broad application of biobased colourants in packaging, textiles, cosmetics, and more.
- 듣 Building transnational knowledge to support sustainable transitions.
- Contributing to a healthier, circular economy for future generations.

Learn more about it: <u>www.mnext.nl/projecten/curcol/</u>





BRAINS

Advancing Data Learning for Smart Automation in Manufacturing

institution (UASNL partner) Windesheim University of Applied Sciences

Knowledge Center involved from UASNL Lectoraat Digital Business & Society

from UASNL partner

FFRO

Granting agency

Duration

Start: 4-2020 End: 4-2023 The objective of **BRAINS** is to generate new knowledge and insights in the field of data learning (as a part of Artificial Intelligence), which will be consolidated into a newly developed data learning module or platform. This platform will be applied across a wide range of industrial use cases, targeting various stages of process automation. BRAINS focuses on the digital transition and automation within the manufacturing industry—ranging from manual production processes to semi-automatic, fully automatic, and even machine learning-based automation.

BRAINS builds upon the successful foundation of PRISMA (an EFRO project, October 2019 – April 2022). PRISMA focused on advancing vision technologies by capturing production data through cameras and sensors, then analyzing that data to fine-tune process parameters in real time. BRAINS takes this one step further—transforming smart data use into the driving force behind next-generation manufacturing.

BRAINS takes this further by focusing, through vision and sensing technologies, on the advanced adjustment of process parameters—ranging from smart operator instructions to automatic machine adjustments and even self-learning process optimizations. To achieve its goals, BRAINS will develop a generic Data Learning platform based on cutting-edge AI research. For each industrial partner, this platform will be integrated into a tailored demonstrator, enabling:

- ✓ Technical performance testing
- Q Validation of specific use cases
- Finalization of the generic DL platform

The main challenge lies in developing applications that are robust and future-proof, specifically focusing on:

- Reliability
- Consistent product quality
- Autonomous process and parameter optimization

Learn more about it: www.windesheim.nl/onderzoek/onderzoeksprojecten/digital-business-society/brains



DISCO

Data-driven and Dynamic Space and Assets for Physical Internet-led Urban Logistics and Planning

institution

FIT Consulting Srl

UASNI partner

Breda University of Applied Sciences

Knowledge Center involved from UASNL Professorship Smart Cities and Logistics

Granting agency

Horizon Europe

Duration

Start 20-04-2023 End 31-10-2026

Transforming urban logistics to a different beat

DISCO is a Horizon Europe co-funded project supporting European cities in fast-tracking upscaling to a new generation of urban logistics and smart planning frameworks, enabling the transition to decarbonised and digital cities, delivering innovative tools and methods, and changing the urban logistics and planning paradigm with a Physical Internet (PI) - led approach. DISCO will contribute to the definition of a new generation of Sustainable Urban Logistics Plans (SULPs) in the short, medium, and long-term, in several strategic sector areas. It will support cities and regions in achieving their local policy objectives such as reaching emission reduction by demonstrating zero-emission data-driven urban logistic solutions

How? By demonstrating a combination of 23 data driven innovative measures, that will be supported by our Meta Model Suite and enabled by the Urban Freight Data Space

DISCO is a collaboration between 47 partners: cities, technology and service providers, industry and SMEs, real estate companies, research organisations and universities, and network organisations.

Learn more about DISCO: www.discoprojecteu.com





SUM4RE

Creating materials banks from digital urban mining

institution (UASNL partner)

The Hague University of Applied Sciences

Knowledge Center

Mission Zero

involved from UASNL

Granting agency Duration

Horizon Europe Start 1-06-2024 End 30-11-2027 The construction industry in Europe is at a turning point. It is the foundation of our built environment, but it also contributes significantly to greenhouse gas emissions because it uses over 40% of all new raw materials. However, the majority of waste from construction and demolition ends up in landfills or low-value applications, making it the largest waste stream in the EU by mass.

A drastic change is required if the EU is to become carbon neutral by 2050. And the first step in that change is circularity, which involves reconsidering how we plan, construct, utilize, and ultimately demolish our buildings.

Rather than digging deeper into the earth for raw materials, we can take a look at our cities. The buildings around us are full of valuable resources-steel, concrete, wood, glass, and more-that can be reused. This concept is called urban mining. The construction industry is moving toward a circular, digital, and data-driven future thanks to SUM4Re (Smart Urban Mining for Reuse).

The project transforms our understanding and reuse of materials from existing buildings by combining state-of-the-art research in urban mining, digital technology, and open data. Fundamentally, SUM4Re is about building "material banks" in-depth digital inventories of the materials that make up our buildings, their locations, and their current states.

What SUM4Re Will Deliver:

- Faster and less labor-intensive identification and digitization of materials in existing buildings.
- ✓ More secondary materials available for reuse—reducing the need for virgin resources.
- Less construction and demolition waste, and more options for repair and reuse.
- Boosted labor productivity, thanks to automation and better data.
- Stronger foundations for a truly circular economy in construction.

Learn more about SUM4Re: www.sum4re.eu

A STRONGER VOICE IN EUROPE LIASIL