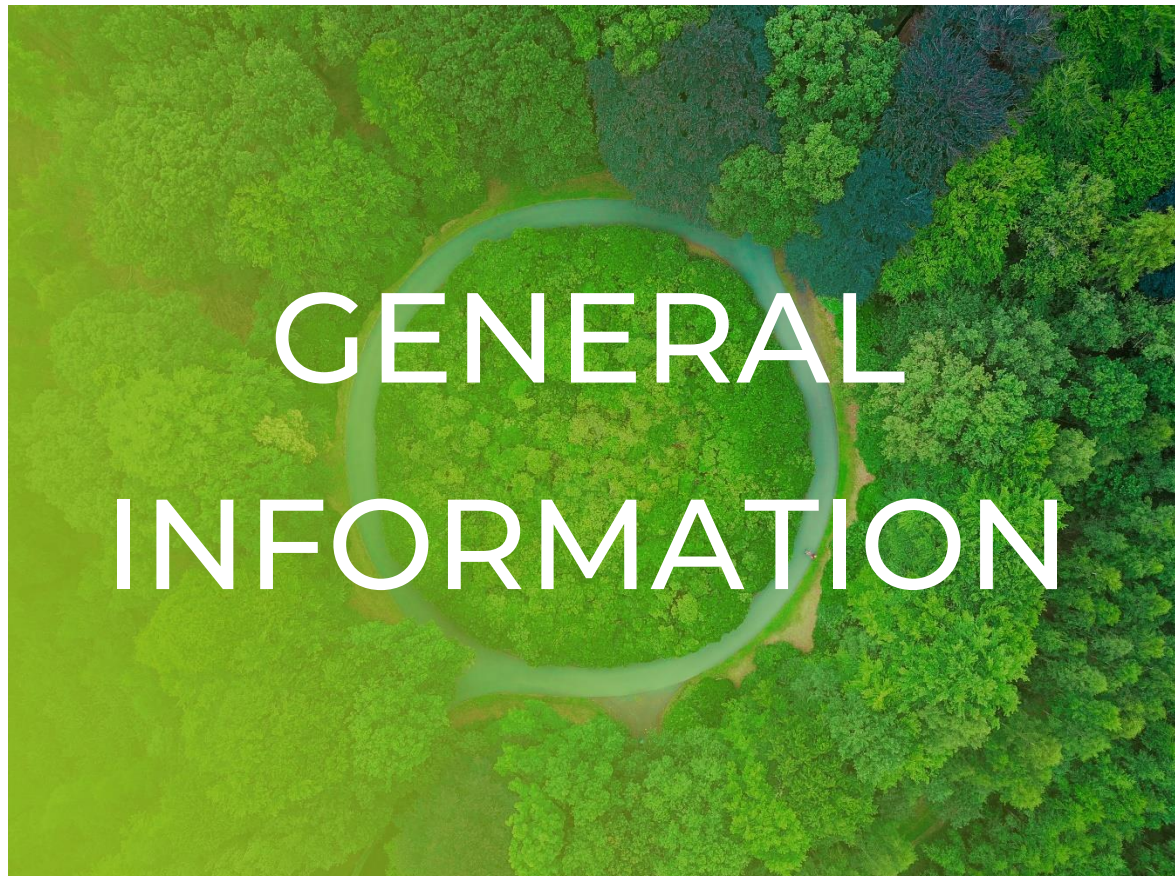


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Part I



Project

COLOR CIRCLE - COncecting and empowering LOcal authorities with Research capacities to unlock the full potential of CIRCular economy

COLOR CIRCLE project goals

The overall objective of the COLOR CIRCLE project is to unlock the full potential of circular economy by reinforcing the role and capacities of local authorities thanks to strengthened cooperation with local research communities. The project focuses on rural and small cities areas. It relies on sharing good practices of cooperation between research and local authorities that boost and tool territorial intelligence. COLOR CIRCLE contributes to improve the role of local governance in regional circular economy policies by recognising circular economy as a cross-cutting priority, by strengthening the connection between research and local communities and by empowering local authorities.

Good practices methodology as base for the action plans

The Interreg Europe programme supports the exchange of good practices and experience between public authorities, managing authorities, research institutes, as well as non-profit organisations to develop and deliver better public policy. During the first phase of the project, partners have to set up a stakeholder group, contribute to the policy learning platform and produce an action plan based on the good practices identified by the other partners in their regions. This action plan is implemented during phase two.

During three interregional learning events, the partners presented their situation according to a case study methodology that enabled different stakeholders - regional and local authorities, research centres, circular economy solution providers, civil society - to cross views on good practices.

Glossary

Action plan

“Produced by each region, the action plan is a document providing details on how the lessons learnt from the cooperation will be implemented in order to improve the policy instrument addressed within their region. It specifies the nature of the actions to be implemented, their timeframe, the stakeholders involved, the costs and funding sources as well as the way the action derives from the project. If the same policy instrument is addressed by several partners (...), only one action plan is required.”

Interreg Europe, *Programme Manual*, 24 February 2021 (version 9), p.39.

Good practice

“A good practice is defined as an initiative (e.g., project, process, technique) undertaken in one of the programme’s priority axes which has proved to be successful in a region and which is of potential interest to other regions. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective. Although the Interreg Europe programme primarily refers to good practices, valuable learning also derives from bad practices where lessons learnt can be taken into consideration in the exchange of experience process.”

Interreg Europe, *Programme Manual*, 24 February 2021 (version 9), p.37.

Interreg Europe

Interreg Europe is a European Union programme from the European Regional Development Fund, which works towards correcting imbalances between EU regions and strengthening economic, social, and territorial cohesion. The Interreg Europe programme is based on the exchanges of good practices, which the partners adapt and transfer to their territories via an action plan.

Policy Learning Platform (PLP)

The Policy Learning Platform is an Interreg Europe action which supports continuous learning for policymakers at the EU scale. It acts as a knowledge hub and encourages peer learning by connecting different kinds of actors throughout Europe. Lastly, its thematic experts are identifying good practices from the Interreg Europe projects, which are directly linked to regional policies, to publish them on the PLP database.

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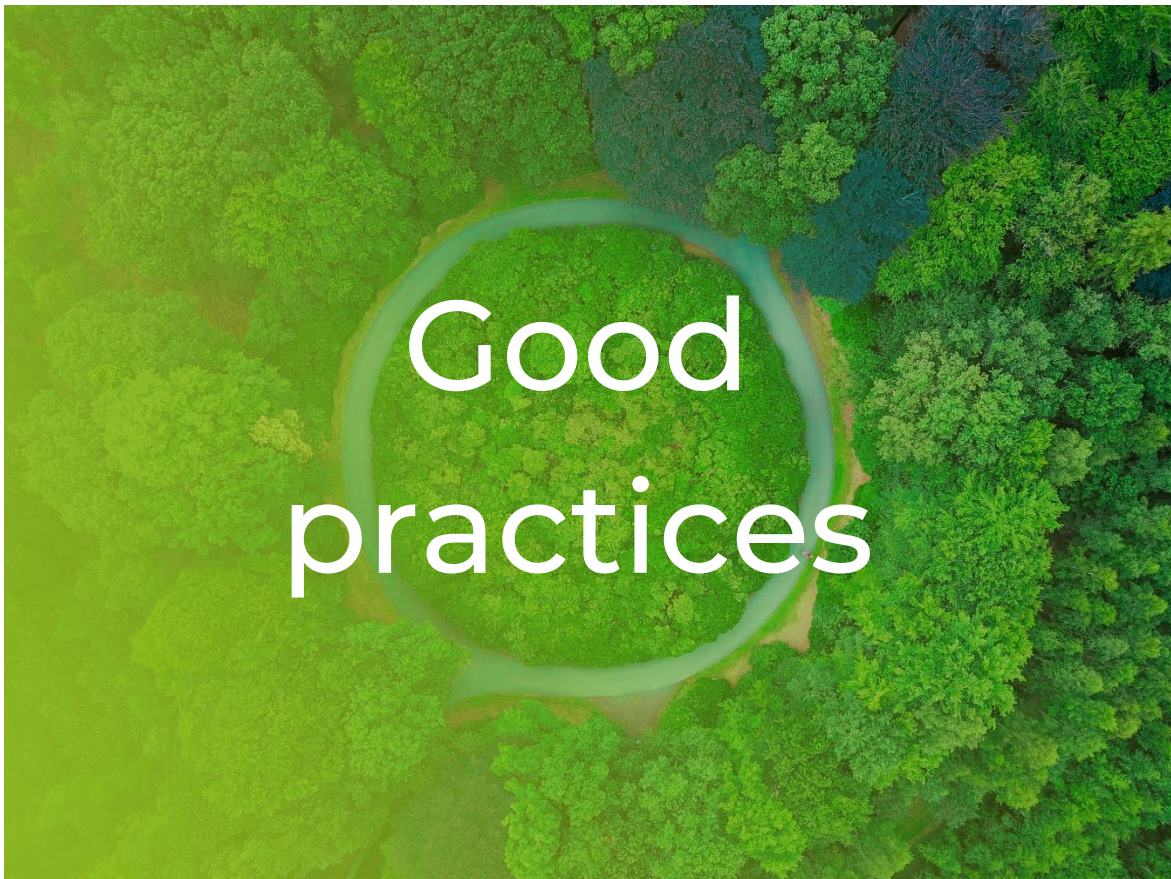



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Part II



An aerial photograph of a dense forest with a circular path or clearing in the center. A semi-transparent green circle is overlaid on the path, and the text "Advisory tools, methodological support" is centered within this circle in white font.

Advisory tools, methodological support

Circular itineraries using biomimetic canvas

Tool and work methodology for carrying out business itineraries following the fundamentals of the circular economy.

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An increasing number of public administrations, companies, and entrepreneurs are willing to move towards circular economy, while no specific methodology for modelling circular businesses exists. This initiative developed enabling tools and a working method to carry out consulting and advisory work for this public. The NextGenerationEU recovery funds indeed educated new entities about circular economy, which had no previous knowledge of this area. They thus need a greater support to correctly interpret its benefits (financing formulas, marketing, logistics, symbiosis...).

To do this, a very intuitive itinerary has been enabled that guides the business or public management strategy towards circular principles, which can be completed, for greater fluidity, through apps and whose information is analysed to detect, devise, and validate circular opportunities. A process that is based on the biomimetic canvas for the modelling of circular businesses, prioritising eco-design, virtualisation, servitization, and the optimisation of resources to achieve high economic, social, and environmental profitability; as well as in various creative methodologies (coaching, design thinking, gamification...) to find disruptive solutions with few resources.

All this complies with the main standards and indicators that allow the certification or external audit of the process.

Adaptation to another regional context

Thanks to the tools implemented, such as the biomimetic canvas, a comprehensive approach to circularity is adopted, offering resources at very low cost to devise, develop and validate circular solutions. Based on this good practice discovered during the COLOR CIRCLE project, the Central Bohemia Region will enlarge its portfolio of expert services intended for SMEs by including circular economy. A more sustainable production and an increased competitiveness of SMES due to the new skills is thus expected.

Difficulties

The main difficulty is the lack of knowledge of the concept of circular economy in its broadest sense, remaining in many cases, limited to waste management, which reduces the potential application of circularity to areas such as digitisation or gender equality, among others.

Resources needed

To develop the circular itinerary, the participation of three environmental consultants was required, with a budget of 35,000 euros.

Opinion of the Interreg Europe Policy Learning Platform experts

This good practice is in line with the EU Circular Economy Action Plan which targets the entire life cycle of products. It targets how products are designed, promotes circular economy processes, encourages sustainable consumption, and aims to ensure that waste is prevented, and the resources used are kept in the EU economy for as long as possible. The good practice addresses a common barrier: a lack of understanding and imagination what could be a circular economy reality in a given context, beyond the management of waste. An interesting approach is given in this good practice from Andalucía. This is of interest to other Spanish territories, and as well transferable in its principles to other parts of Europe.

Astrid SEVERIN, thematic expert - Environment and resource efficiency, Interreg Europe

Online course on circular public procurement

The course addresses the issue of circular public and purchase in the wider context of sustainable and responsible consumption.

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The course addresses the issue of circular public and purchase in the wider context of sustainable and responsible consumption. Even though the concept of sustainable procurement is not new, the term “circular public procurement” is unknown in Czechia. In 2021, there was an amendment to the Public Procurement Act stating that public authorities are obliged to comply with the principles of socially responsible procurement, environmentally responsible procurement, and innovation, provided that the nature and meaning of the contract allow it. Thus, guidelines and cases of good practices are needed to help public authorities to introduce circular economy principles in their procurement. The course is meant for both business companies and individuals interested in circular purchases, while it facilitates networking as well between all involved participants.

The 30-hours course consists of 12 online lectures. Participants are then provided with recordings of every lecture, additional materials. High-level experts present their cases from different fields: circular economy in general, circular procurement, energy, materials, food, law, construction, IT, textile, or furniture, etc. Each lecture is based on both a theoretical part and concrete practical cases. The online format was selected as online modules appeared during the pandemic to be effective tools of teaching and awareness raising, thus saving time in contrast to classical on spot teaching.

In the pilot course realised in 2020/21, 45 participants took part in the course and INCIEN - a non-profit organisation promoting circular economy, responsible for the course - received highly positive feedbacks. For the second year 2021/22, a scholarship was offered to parents on maternity leave to increase their skills.

Adaptation to another regional context

The topic of public procurement is highly actual as the European Commission issues its plans and strategies within the European Green Deal. Circular public procurement must be the first step of public authorities to materialise circular economy. Implementing courses on circular economy could be hindered by a lack of experts within a specific country, however methodologies are being produced to overcome this problem.

Resources needed

Five employees of INCIEN worked on the project.

The costs are fully covered by participants, except for the scholarship granted to parents on maternity leave. The registration fees differ according to the type of client (public sector vs. NGOs vs. private sector) and varies between 380 – 900 EUR incl. VAT per participant.

Opinion of the Interreg Europe Policy Learning Platform experts

Initiatives like this good practice from the Czech Republic are useful to foster the implementation of green public procurement and circular procurement on the ground. The lack of knowledge and experience of practitioners who procure every day in administrations or other organisations is a formidable barrier to the wide uptake of GPP. Building expertise through online courses with practical relevance that address practical issues and legal issues are suitable tools to overcome this barrier. This good practice is implemented by the Institute of Circular Economy, which is a non-governmental, non-profit organization. The business model relies on fees for participation in the courses and is thus sustainable independently of public subsidies in the long term. This makes the practice even more interesting and relevant for replication at similar bodies in other countries.

Astrid SEVERIN, thematic expert - Environment and resource efficiency, Interreg Europe

PhD students in local administrations to address climate, economic, and social challenges

To help local and regional authorities to address challenges ahead, project '1000 doctorants pour les territoires' sends PhD students in local administrations. '1000 doctorants pour les territoires' is a national programme to increase the number of young researchers doing their PhDs in local governments or NGOs.

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The programme and the PhD students help local and regional authorities address challenges ahead, including circular economy. The project '1000 doctorants pour les territoires' supports PhDs in humanities in financing their research, while it also gives doctors new opportunities outside academia. PhD students are employed by the municipality or a local public institution for 3 years (i.e., the entire time of their doctoral studies). Their time is split between the university and the local administration, which receives a state grant that covers half of the doctoral student's salary. The project '1000 doctorants pour les territoires' relies on three main actions :

1. Informing students and local institutions.
2. Connecting local governments with PhD Candidates.
3. Support in setting up the research project.

Adaptation to another regional context

Within the framework of the COLOR CIRCLE project, the initiative has been transferred in Granada, Spain as the 'Puentes' (Bridges) project. It allows the transfer of knowledge from the academy to the territory, thanks to extracurricular internships of university students in their last year of their degree or master's degree for a 6-month period. The internships are done in the framework of actions of Local Urban Agenda of municipalities. Students receive a specific training in local development and circular economy.

Difficulties encountered

- Find local funding partners. Despite the subsidy, some local authorities, especially the smallest ones, find it difficult to cover the remaining costs.
- Anticipate the time needed to set up the project (6 to 18 months from the information phase to the actual recruitment)

Resources needed

120k€ is allocated by the French Ministry of Research per year for the matchmaking programme management. The minimum wage for a PhD student is 23 484 € (about 33 200 € for the hiring local authority), while the state subsidy of 14 000 € per year covers half of the doctoral student's salary.

Opinion of the Interreg Europe Policy Learning Platform experts

Connecting PhD candidates with local municipalities is a win win solution. Over the course of three years, the PhD students have an opportunity to apply their research in practice, through development and implementation together with the municipality. The young researchers carry out their doctoral thesis on a public policy issue. The local municipalities benefit from having the latest know-how and innovative solutions to sustainability challenges. This successful good practice from France demonstrates the potential for collaboration between academia and public sector, with the interest and number of participants increasing each year. The program is financed by the French Ministry of Research; however, a similar program could potentially access funding elsewhere. The '1000 doctorants pour les territoires' can serve as an inspiration to other regions and municipalities, who wish to address new challenges.

Magda MICHALIKOVÁ, thematic expert - Environment and resource efficiency, Interreg Europe

The circular economy project booster: a regional call for proposals to support local circular economy projects

The Regional Council of Burgundy-Franche-Comté and the regional antenna of the State Agency for the ecological transition support local projects on circular economy *via* a yearly call for proposals.

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Since 2018 the Regional Council of Burgundy-Franche-Comté has been cooperating with the regional antenna of the State Agency for the ecological transition (ADEME) to organise an annual call for proposals to support local authorities, public and private organisations in the development of their projects related to circular economy. The funds can be used for project leadership, studies, or investment. Projects are funded over a period of approximately 1 to 3 years. The financially supported projects are at different stages of advancement, from initial state to advanced state.

The selection criteria are based on the innovative character of the project, its contribution to the reduction of the use of resources, its replicability, and its local impact.

The call for proposals enables local stakeholders to express their needs and thus allows the Region to adapt its answer and the development of innovative way to act fostering circular economy.

Adaptation to another regional context

Within the framework of the COLOR CIRCLE project, the initiative has been transferred in the Central Bohemia, in Czech Republic, where it will contribute to the development of cross-sectoral co-operation between municipalities and academia and in Friesland, in the Netherlands. The role of partners - involved to monitor, learn, influence, and shape the actions – was of particular interest for the Dutch partner, the Van Hall Larenstein University of Applied sciences (VHL) and its stakeholders.

Difficulties encountered

The most challenging point is to ensure the diffusion of the call, to prove how relevant it is.

Resources needed

In 2021, 500 000 € were allocated to operating activities, while 500 000 € for investment. The circular economy project booster needs a dedicated staff member in each institution to organise the call. More staff members are required to examine the submitted applications.



Bokashi: upgrading local organic residues

Bokashi is a fertilizer and soil improver, which is made from local biomass flows.

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Bokashi is an organic fertilizer that is created after fermentation under anaerobic conditions (without oxygen) and can be used to restore soil fertility. This allows the organic matter content and the humus content to increase. The carrying capacity of the soil and the water storage capacity are enhanced by means of higher organic matter contents. Making Bokashi is an effective way to convert organic materials into a rich soil conditioner. In addition, Bokashi also offers potential financial benefits for municipalities and water boards. Municipalities and water boards often have to incur high costs for the disposal and processing of the biomass flows that are released from roadside, ditch and pruning management. Land management organisations often have to incur additional costs to be able to sell natural streams. These residual flows can be valuable raw materials for Bokashi. The initiative then cares about processing these local green flows locally (on farm) and thus closing local cycles.

In the Noordelijke Friese Wouden area, various parties: municipality, water board, SMEs, Noardlike Fryske Wâlden (representing 800 farmers in the area) and knowledge institutions, did research to the effect of Bokashi on soils and crops and are setting up local 'Green stations' on farm. These 'Green stations' function as a small biomass hub for processing and reusing local biomass flows for soil.

Adaptation to another regional context

In the Netherlands approximately 40 Bokashi projects/ initiatives have started. They are monitored by and share their results with the Dutch organisation *Circulair Terreinbeheer*. www.circulairterreinbeheer.nl.

Difficulties

Bokashi has officially a 'waste status' in the Netherlands, which makes applying and testing Bokashi challenging. A permit by the municipality was requested to launch the project, which is part of a national program monitoring the effects of Bokashi and setting up guidelines for quality control.

Resources needed

The partner identified the following basis for implementing Bokashi:

- sufficient biomass flows in the region from different sources.
- partners that: own biomass flows, have knowledge of Bokashi making process and legislation, landowners to apply Bokashi.

The project is based on two types of costs: input (minerals and bacteria) and labour and machinery. Each represents €10 per ton. In total, bokashi production costs are €20 per ton.

Opinion of the Interreg Europe Policy Learning Platform experts

Healthy soils are essential for achieving climate neutrality, a circular economy and for halting desertification and land degradation. They are also essential to reverse biodiversity loss, provide healthy food and safeguard human health. The European Soil Strategy for 2030 as a key deliverable of the EU Biodiversity Strategy for 2030 and the European Circular Economy Action Plan are all calling for the protection and restoration of soils, and their sustainable use. The excellent good practice of the Bokashi fertilizer to restore soil fertility using local organic residues, paves the way for other communities to adopt a similar approach. This good practice should be widely replicated.

Astrid SEVERIN, thematic expert - Environment and resource efficiency, Interreg Europe

Ecolana: straw rich manure

Ecolana: a partnership between two arable farmers, a dairy farmer, and a sheep farmer, in the north of Friesland (NL) to achieve a sustainable agricultural cycle.

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Ecolana is an association of down-to-earth farmers who, through collaboration, form a modern, mixed company in the area between the coastal villages of Holwerd and Ternaard in the Netherlands. The total acreage consists of approximately 360 hectares of clay soil inside the dike and 50 hectares of salt marsh outside the dike. Food safety, quality, animal welfare, the environment, nature, and recreation are central to this. Switching from traditional agriculture to a socially responsible production method is and remains their goal. They work towards closing the cycle.

The association is currently experimenting the use of straw rich manure to enhance soils. The dairy farmer builds a new bar in such a way that straw rich manure comes out. The straw used is produced by the arable farmers. On grassland straw rich manure can be applied all year round, which is more difficult on the arable land of the arable farmers. As the latter are obliged to work straw rich manure in the soil, large quantities of manure are indeed scattered at once. Smaller amounts per fertilisation are preferred, since over-fertilisation is not good for soil life. Less tillage is also important. Therefore, farmers have been granted legal room to experiment with different amounts and ways of administering straw rich manure. This experiment is monitored by researchers including 20 students.

In short, Ecolana has become a demo farm for applied research and education for vocational education and academic education.

Adaptation to another regional context

The cooperation between farmers, as well as between farmers and research and policy stakeholders to tackle problems about closing local agri-cycles certainly does have potential for transfer.

Resources needed

The project is based on:

- farmers that are willing to collaborate in closing agricultural cycles.
- back-up by politics (law/ legal room if required).
- advisors or researchers for content.
- funding for experiment/research.

'Fjildlab', fieldlab for implementing circular agriculture in Northeast Fryslân

Fjildlab is a field laboratory (living lab) for the strengthening of the circular economy and a sustainable agricultural sector in Northeast Fryslân (NL).

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The aim of Fjildlab is to help building an economically lean and ecologically responsible agricultural sector in Northeast Fryslân as circular as possible, which can function as a knowledge lab for the rest of the Netherlands ("from shrinking to nursing"). The connection between agri and food to form an agri-food cluster also matters. The region is characterised by a variety of agriculture and livestock, large and small-scale businesses, organic and traditional agriculture, and livestock breeding. Fjildlab is applied in the areas of four municipalities with a focus on improving system understanding, product knowledge and quality and knowledge about agricultural practices, combined with all conceivable technologies. Steps are taken towards implementation plans and revenue models that fit in a biodiverse and attractive landscape. The project focuses on 8 themes:

- 1) Nature, biodiversity, landscape, and recreational sector: converting into new products and services.
- 2) Healthy soil: as the basis for the circular economy.
- 3) Water and agriculture: adding value to blue and green ecosystem services.
- 4) Renewable energy: produced and sold regionally.
- 5) Manure: regional processing.
- 6) Feed: value residual flows.
- 7) Sweet and Salt: cash-cropping in more saline conditions and producing new services.
- 8) Nutrition: healthy food, regionally produced.

Adaptation to another regional context

The Circular Urban Living Lab, adapted from the Fjildlab in the Centru Region, is organised around the development of an environment suitable for innovation, like platforms which give rise to several circular economy initiatives and conditions for support and facilitation for the stakeholders.

Difficulties

The main difficulty in the process is the organisation of the governance on the side of the funding parties. As this involves national, regional levels and 4 municipalities, this is a quite complex regulatory environment. Main lesson learned is to streamline as much as possible the funding line to the project.

Resources needed

The funding of the Fjildlab structure and facilities amounts to 1.7 million euros for 4 years. The office consists of a part-time project leader, secretariat, and communications officer. The Fjildlab projects on circular economy will amount to a total of approximately 8-10 million euros excluding co-financing 35-50%.

Opinion of the Interreg Europe Policy Learning Platform experts

This good practice is in line with the Farm to Fork strategy, part of the EU Green Deal, focusing on the challenges of sustainable food systems and the inextricable links between healthy people, healthy societies and a healthy planet. By making agriculture more sustainable, the strategy should reduce dependency on pesticides and antimicrobials, reduce excess fertilisation, increase organic farming, improve animal welfare, and reverse biodiversity loss. The presented good practice is an excellent way to fulfil these aims, focusing on eight different themes all under the objective of a circular agricultural system. The field laboratory supports implementation of new projects and circular business models, as well as inter-regional collaboration opportunities. For that it can serve as an example from which other EU regions can learn.

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Innovative agricultural production: La Caña Business Group

A business group that, through strategic business alliances including research sector, achieves innovation and sustainability in the agricultural sector.

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La Caña Business Group is a group of affiliated companies that has more than 40 years of experience as a marketer, producer, exporter and importer of fruit and vegetable products. It is located on the tropical coast of Granada and Almería. It is a company in constant transformation, expanding its cultivation areas and modernising its activities and production lines. It carries out different R&D activities with a specific department that is supported by a network of entities related to the world of research, both technology centres and university research groups. It currently collaborates with the Universities of Granada, Almería and Málaga and works with several technology centres such as Tecnova, Ainia, CIDAF, CTA, CNTA or Tecnalía. The business practice stands out for three aspects: its vocation for environmental sustainability, its innovation in processes and the establishment of alliances, both with companies and with research centres.

It participates directly in projects related to the improvement of crops, product quality, process optimisation and especially the revaluation of by-products and the creation of new products, both in fresh produce and in its fifth range Caña Nature industry. With these practices, the main beneficiaries are both the farmers and the clients, consumers, companies in the sector and the company itself. It provides both local farmers and their clients with innovative solutions. Besides, it stands as a benchmark in terms of food safety and environmental sustainability, forming part of the circular bioeconomy.

Adaptation to another regional context

This business model can be exported to other territories, learning from the lessons as a flexible business system, technology validator and generator of new products.

Difficulties

The project faced two main difficulties: achieve a balance between general work dynamics and conjunctural coordination between areas was a challenge, while going from pilot to industrial scale is complex.

Resources needed

The project relied on the group's technical and HR capabilities, including more than 40,000 square meters of warehouses, its own production farms and 9 collection centres. In terms of human resources, the group has more than 200 employees distributed in varied departments.

Turning wool into eco-fertilizer

A small company capitalises on the unused wool from Centru region, Romania, and transforms it into an eco-fertilizer, ideal for all types of crops.

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With over 2.3 million sheep, the Centru Region ranks the first place among Romanian regions on wool production (21.3 % of the total Romanian wool). Therefore, innovative solutions for using the wool are needed. One of these solutions was implemented by two young entrepreneurs from Sibiu County in Romania who made a business from transforming the wool into a valuable eco-fertilizer. The project idea started after they talked with the shepherds in the area, who complained that they were throwing away the wool after each shearing. After intensive research, they discovered that producing fertilizer pellets allows the best use of this wool, which leads them to start a small pellets factory.

The wool is harvested from the sheep from all around the Carpathian Mountains. The product is 100% organic and stays in the soil for up to six months, where it constantly releases fertilizer for the plant. The plant needs low-capacity irrigation, the pellet absorbing up to four times its own weight water. In addition, after the period of use, the pellet is biodegradable. Eco-fertilizer functions as a physical substrate to which the plant attaches, bringing nutritional values of nitrogen, phosphorus, and other elements. The product is ideal for any type of crop, from greenhouse to field. It can be used mainly as an alternative for periods and places where crops are affected by drought. Besides, the innovative product highlights a possible sustainable use of wool.

Adaptation to another regional context

Considering that the European Union has a substantial livestock population (over 63 million sheep) this practice can be implemented in any area with sheep breeders. This practice is affordable and has a high transfer potential as only raw material (wool), a wool pelleting machine, and two employees per shift are necessary.

Resources needed

The initial investment amounted to 200.000 euro, while four employees are still needed to implement the action. Besides, raw material for producing the pellets, such as unused wool like in the Centru Region, is required.



Citizens and researchers elaborate a local food democracy in France: POPSU Territoires in Tournus

Researchers support citizens and elected officials in elaborating a local food system and democracy in the area of Tournus, in France.

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The research project started in 2019 and is addressing a specific topic of circular economy: territorial food system. Food is an everyday experience that touches on the dimensions of sensitivity, sociability, and even opinion. Therefore, the project aims at building a local food system integrating social, ecological, and economic issues. How to provide everyone with access to healthy food? How to develop local production that promotes food self-sufficiency in the area?

The whole process relied on creating a friendly cooperation between researchers and local actors, with the idea of breaking the usual asymmetries between the field of research on the one hand and citizens / elected representatives on the other. A participatory action research collective was formed with participatory research workshops led by researchers involving elected representatives, associations, citizens to create a scientific but also actionable knowledge. Researchers trained audiences of investigators to elaborate a participatory territorial diagnosis and identify concrete actions. Students from the local university with various profiles are involved in the project as well. A student in agronomy did her master's course on the issue of access to quality food for the population. She conducted three workshops with different groups (engaged citizens, families, and a small village community). Social work students conducted interviews with people in precarious situations who use the social grocery shop. Sociology and geography master students carried out a questionnaire on gardening.

Adaptation to another regional context

The project can be replicated in another territory as building a local food system is currently a shared objective for many local entities currently.

Difficulties

The limited financial means of the municipality prevent the project from recruiting a project manager.

Resources needed

The project involves 2 researchers spending 30 % of their time, 1 PhD student which has a coordinating role, an end-of-study internship in agronomy, a collective work of students in agronomy. The budget needed amounts to 30 000 euros. Besides, 20 persons contributed to the choice of survey methods and analysis of results: researchers, students, citizens, associations, and elected representatives.

Social and solidarity grocery stores on the way to new food places

Support to two social and solidarity grocery stores through a project group tackling five dimensions: territorial, social, economic, governance, environmental.

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Active, a social economy organisation based in Bourgogne-Franche-Comté, established various “third food places” such as:

- laboratory of agricultural and food transition.
- lever of social and territorial transition.
- educate and raise awareness of food issues.
- regenerate peri-urban and rural areas.
- relocate local market gardening.

The project was based on five main objectives:

- Produce differently, collectively.
- Promote food transition and innovation.
- Consume differently.
- Diversity.
- Set up waste recovery circuits.

The social and solidarity grocery stores’ partners defined three sub-objectives: develop a new range of food products (sustainable food) and non-food products (second-hand or do-it-yourself), act for a course of social support for beneficiaries with time for consultation, decisions, and shared evaluation and mobilise actors in the various services offered.

Audiences from complementary backgrounds - such as employees, volunteers, community technicians, students, researchers, citizens, farmers, business leaders, employees of traditional companies, members of other associations - contributed to the project. The participants were split into working groups. The project took place in two phases: the first allowed an internal diagnosis of social and solidarity grocery stores, while during the second a territorial diagnosis was made, and a working group established. Within the framework of an event in 2021, the stores reported on the support as well as on strategic and operational implementation during this transition process. The project aims to achieve a synthesis to be used as a political lever by proposing a transmission tool from which one can learn. All food aid actors, public and associative actors can rely on this methodology.

Difficulties

The partners had to quickly experiment the collectively agreed solutions to decide whether to implement them in the long-term within the stores’ activities.

Resources needed

Three employees and a methodology support on the solidarity and ecological transition are requested to implement a similar project.



Catalogue of Construction Waste and recycled products

Catalogue of possible usages in various waste materials made by UCEEB (University Centre for Energy Efficient Buildings, CTU in Prague)

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The “catalogue of construction waste and recycled products” aims to the adaptation of recycling technology to achieve the highest quality input material with stable properties and thus ensure efficient use of all components of recycled waste concrete. This catalogue has now become a market standard. The initiative indeed brings the various stakeholders a catalogue of possible usages in various materials:

- Recycled / recyclable material.
- Secondary raw material.
- Inert waste, hazardous waste etc.
- The recycled materials with potential of the use in construction industry.
- The products containing recycled materials.
- EU and Czech law documents.
- Certification, Requirements and Standards.

Resources needed

The project was financed within the standard research activities of UCEEB.

Difficulties encountered

The project partners struggled with administration and the final dissemination, including enabling final users to know about the catalogue and use it.

Adaptation to another regional context

This best practice has brought a clarity into a usage of various construction materials. Setting a market standard and communicating all the advantages of using recycled contents facilitates for final users to choose recycled content instead of raw materials.

Within the framework of the COLOR CIRCLE project, the initiative has been transferred in the Burgundy-Franche-Comté, in France, which is working towards a better waste management of the construction industry.

Erc-Tech – cutting edge use case of recycling concrete

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Revolutionary patented solution to the construction industry

ERC-TECH (Effective Recycling Concrete-Technology) brings a revolutionary patented solution to the construction industry that tackles the problem of construction and demolition waste (C&DW)

- ERC-TECH is a global innovator in the development of first-class concrete mixes and concrete construction elements from 100% recycled aggregates which replaces 100% of natural aggregates (sand and crushed stones)
- ERC-TECH has developed a functional system where the endless process of raw material and material flow utilisation is fully realised.

Solution for concrete production

- ERC-TECH technology solution is complete, industry-proven, and ready for implementation on the world market
- All classes of concrete meet the requirements and quality in accordance with the testing standards EN 206+A1
- Concretes was tested by TZÚS (CZ/EU) and BASF laboratory (CZ) and have valid certificates.

The production of fresh concretes takes place on the existing mixing equipment on stationary or mobile concrete mixing plants

- No additional investment in new equipment and technologies is required
- Only minor modifications of the concrete/precast plant are required (software, silo)
- Different way of mixing concrete mixture and dosing of individual components

Adaptation to another regional context

The transfer of complete technology and know-how for particular market/country will be in accordance with the patent solution. The assignee will thus have a full right to sublicense the technology within the licensed territory in accordance with the agreement terms.

Resources needed

Individual pricing

Fjild: Food Waste Market

Fjild creates new products out of rejected food residues to have citizens aware of the food waste problem and encourage them to act.

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When it comes to food waste, we come across many different products that do not match the needs of the market for 'cosmetic' reasons. These products come from agriculture, arable farming, (greenhouse) horticulture and fisheries and are not used for direct consumption due to deviating shape, size, cracks, or spots. While the products do not meet the needs of the market, they are fit for human consumption.

Fjild is based on the following facts: one third of the food produced worldwide is thrown away, which represents 1.6 billion tons of food per year. In the Netherlands, we throw away an average of 50 kg of food per person, which represents 150 euros. Together, we throw away 4.4 billion euros and worldwide this is even 550 billion euros.

Fjild creates products in which the rejected residues are given a new destination. It also does research on residual flows, side flows and loss and identifies alternative products which can be made from it. Fjild is also actively working towards bringing food waste to the attention of students, the consumers of the future. The project intends to make students aware of the food waste problem and to encourage them to act about it. Finally, Fjild has set up a platform on which the supply and demand of food waste products can be displayed. Fjild plans to connect farmers with entrepreneurs in order to reduce residual flows in the food industry. Together with researchers and students, Fjild has already developed 28 new products from residual flows. These products are sold commercially to show that farmers can earn money from their residual flows, which can be fit for human consumption.

Adaptation to another regional context

The approach developed in Fjild is applicable in each EU region to reuse local food residues and transform them in new products. The Fjild approach and products have been presented to EU partners of COLOR CIRCLE during an interregional learning event in Fryslan, during a knowledge exchange event in Romania and during an EU webinar.

Resources needed

The project requires the involvement of students and researchers from an applied university with knowledge on food production, food quality and food safety and of four entrepreneurs.

The project was granted a €300.000- subsidy for four years by local and national governments, *via* the Regional Deal NO Fryslan, which supports research and the organisation of events (including location such as kitchen, sales point).

Opinion of the Interreg Europe Policy Learning Platform experts

This good practice is in line with the Farm to Fork strategy, part of the EU Green Deal, focusing on the challenges of sustainable food systems and the inextricable links between healthy people, healthy societies and a healthy planet. The European Commission aims to take action to scale-up and promote sustainable and socially responsible production methods and circular business models, including those focusing on food waste prevention and reduction. The Commission is committed to halving per capita food waste at retail and consumer levels by 2030 and should propose legally binding targets by the end 2023 to fulfill that aspiration. Proper management of surplus food is key to food waste reduction, as it prevents edible food from being thrown away. In this excellent example, the Fjild platform connects farmers with surplus harvest and entrepreneurs who turn this surplus food into new products with added value. Given the large problem food waste represents, this good practice has a potential to be replicated in any EU region.

Magda MICHALIKOVÁ, thematic expert - Environment and resource efficiency, Interreg Europe

La Retornable- Factory of organic drinks and preserved vegetables in returnable containers

La Retornable is a business initiative (transformation, distribution, and sale) of organic products bought from local producers and sold in returnable containers.

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This business initiative carries out its activity through short supply channels, food production and processing on an agroecological basis adopting the following actions:

- Eliminate waste related to packaging thanks to the packaging in reusable glass containers, which return to the chain through a return system at the points of sale.
- Using food products from certified agroecological origin and short supply channels
- The investment is made through collective and cooperative participation. This model is extended (on a voluntary basis) to the management of processes, product development, promotion, distribution, and sale.

This practice impacts the agri-food model of the area, due to the improvement of agronomic practices, improvement of biodiversity and groups linked to agricultural production, as well as the incorporation of responsible habits in food consumption by part of some consumers. Therefore, the main beneficiaries are directly all those involved in the production process, farmers who supply the factory, retailers who benefit from the advantages of a short channel, and direct consumers who access quality and sustainable products. Indirectly, the general population benefits from sustainable agricultural practices, which generate employment, and which consolidate the population in rural areas with a tendency to depopulation. This initiative shows that through the local social economy, with small contributions of collective capital, a viable and sustainable business activity can be achieved. La Retornable is the result of the combination of collective financing, voluntary cooperative work, inputs from local producers, the use of a local store network, and the use of returnable packaging. This model can be transferred to any local industry for activities that do not require high initial capital investments and can acquire locally raw materials.

Difficulties encountered

The project faced some difficulties related to cost-effectiveness, diversification of products, cooperative work management, as well as financing while maintaining founding values.

Resources needed

Formed by 27 partners who invested approximately 100,000 euros of their own funds. A financing of 12,000 euros was also obtained thanks to the Granada Solidarity Fund, linked to Fiare Banca Cooperativa Ética.

Part of the partners collaborate voluntarily in all production and selling phases.

Smart circular economy solution for the management of plastic wastes

This pilot project implemented in Alba Iulia aims to improve the plastic packaging waste chain from a circular economy approach.

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Only 29.7% of the plastic waste produced in the EU (25.8 million tonnes) is recycled, which is mainly due to the packaging waste. Through this project, a holistic process for increasing the recycling rates of packaging waste is envisaged. Public authorities, innovators, the local business community as well as the citizens took part in the project, which involves four key steps:

- the first step refers to innovative collection systems - smart containers developed within the project, which identify the quantity (using ultrasonic level sensors) and the quality (using a labelling system and RFID card) of packaging deposited into the containers, ensures better separation of plastic waste, and reduces the amount of mixed waste generated.
- the second step focuses on transport - by using a special CAN-Buss device, optimised routes, skipping empty containers route, and eco-driving, all integrated into a mobile application – transport fees are reduced, and fuel costs are minimised.
- the third step refers to sorting – using innovative technologies (spectrometers), the project aims to increase the quality of the recovered plastic using better separation solutions for different plastics in treatment plants, including multilayer and multi-material packaging.
- the fourth and final step involves reprocessing the materials into products such as automotive parts, foam boards for wind turbines, roofing structures, rubbish bags, asphalt, fences, and benches — helping to ensure items remain in a closed-loop model.

Adaptation to another regional context

The project can be easily scaled up at the city level as currently in Utrecht (outside COLOR CIRCLE) and thus replicated by following the fourth-steps methodology. Within the framework of the COLOR CIRCLE project, the initiative is transferred in the Burgundy-Franche-Comté, in France to increase active citizenship.

Difficulties

The Municipality of Alba Iulia in partnership with the waste operator encountered several challenges related to the implementation of the raising awareness activities during the pandemic and several technical specificities of the district selected for the implementation of the pilot.

Resources needed

Fifteen people are directly implicated in local project activities, including six for support. The projects requests stakeholders support, smart prototypes and IoT platform developed by partners (estimated at > 50,000 euro), a truck, CAN-Buss and applications, dedicated containers. Communication is also a condition for the project success. Additional costs up to 30.000 euro must be considered.

Opinion of the Interreg Europe Policy Learning Platform experts

This practice is in line with the EU Waste Framework Directive, which has set ambitious targets for the preparing for re-use and the recycling of municipal waste of 65% by weight by 2035. Citizens must be engaged in sorting waste and throwing it into the right container. The pilot in Alba Iulia uses a very advanced IT and IoT-based approach to get citizens to sort more and in better quality. Experience shows that the more individualised the containers, the better the quality of the sorted waste fractions. But the smarter solutions come with higher costs, and it is interesting to see where there is a trade-off. For countries that have low separate sorting traditions, it might be an interesting way forward to rely on highly individualised and controlling waste bins able to identify both user and the fraction thrown into the bin. Optimisation of waste collection logistics through communicating containers is an otherwise proven good practice to bring down collection costs.

Astrid SEVERIN, thematic expert - Environment and resource efficiency, Interreg Europe

The Ecopark, an inclusive recycling benchmark

A recycling, awareness, and training centre, with an inclusive labour approach employing people with intellectual disabilities.

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In 2005, ASPROGRADES (Association for People with Intellectual Disabilities of Granada), a non-profit association answered a tender for the management of waste from the city of Granada from the Granada City Council. ASPROGRADES works towards improving the quality of life of people with intellectual disabilities and their families, including the incorporation of this social group into the labour market. This answer relied on:

1. Environmental Management-Recycling Plant.
2. Economic Growth- Varied opportunities for green employment and Revaluation of waste.
3. Social action - training and social inclusion.

Using the recycling plant as a starting point, a series of activities have been generated (construction of furniture with recycled wood, green spaces and urban gardens, mobile waste collection...) that promote changes, both in the environmental education of specific groups and in general awareness of recycling as well as labour inclusion. Based on the interrelationship between different agents (public administrations, citizens, research centres and companies), a circular and inclusive economic activity is developed, which gradually diversifies, improving its achievements and expanding the number of circular economy and sustainable work activities. The main beneficiaries are the citizens, who enjoy the social advantages generated by sustainable recycling, and people with intellectual disabilities who manage to join working life.

Adaptation to another regional context

The project shows how the interaction between different actors is beneficial for themselves but also for society in general. The need to address recycling exists in any territory, which can be carried out effectively, based on an inclusive approach.

Difficulties

The main challenges faced by the project are:

- Increase resources and knowledge to be able to make a better valorisation of the products.
- The existence of illegal waste collection and treatment activities in the vicinity of our facilities.

Resources needed

Currently, the centre has 11 workers with intellectual disabilities and a technical support team. In addition, within the facilities, the Ecoparque Occupational Day Centre provides direct care, pre-employment training and personal adjustment to 38 people with intellectual disabilities.

Opinion of the Interreg Europe Policy Learning Platform experts

Making use of the secondary materials contained in waste are key elements of the EU's environmental policy enshrined in the EU Waste Framework Directive. EU waste policy aims to protect the environment and human health and help the EU's transition to a circular economy. It sets objectives and targets a.o. for recycling. The European Green Deal also calls for transforming the EU into a fair, inclusive society. The good practice from Granada combines both elements by linking recycling and inclusion in a nice, coherent, beneconsideredble model. It appears that all over Europe, recycling and repair activities are considered particularly compatible with and suitable for inclusion of people in the work place that are otherwise marginalised or excluded from the formal labour market due to different reasons. This shows the high replication potential of this nice, good practice that is suitable for implementation in any urban centre.

Astrid SEVERIN, thematic expert - Environment and resource efficiency, Interreg Europe



From low quality wood to Engineered Wood Products: Wood Material and Machining in Cluny

The design and the development of adapted Engineered Wood Product as a tool to use this local resource efficiently to limit carbon footprint.

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The projects developed by the Wood team of the Campus Arts et Métiers de Cluny are directly linked to the process with local industrial and institutional partners:

- Valorisation of the local wood resource by manufacturing windows from quality oak type "firewood".
- Use of local oak for massive partitions (Cross Laminated Timber).
- Mixed wood-concrete bridge, in a short circuit, making possible to reduce infrastructure renovation costs for communities by reducing the proportion of concrete and use of local wood.

Research axes developed in the LaBoMaP are related to the study of manufacturing processes by material removal and the relationship with the processed material. These investigations rely heavily on experimentation, with an increasing numerical part and concern mainly:

- The on-line control of processes (turning, milling, veneer cutting).
- The elaboration and the characterisation of engineered wood products (glulam, structural composite lumber, structural panels).

A large part of the wood resource could be used for applications in structures with specific care in sorting local woods which exhibit great natural variability. To move up the scale of production by using these products adapted to the specificities of the resource, the sector needs all the players: researchers to imagine innovative and adapted products, manufacturers (many SMEs and very small businesses in the sector) to develop their manufacturing, the standards bodies to support the definition of the framework for the use of these products, the prescribers and of course consumers who can choose to invest in the local and circular economy and favour natural materials from their land with the cheapest products. The "Bois croisés de Bourgogne" association is working on this subject and promotes secondary quality Burgundy oaks by associating sawyers, manufacturers, and specifiers.

Difficulties

The limited financial means of the municipality prevent from recruiting a project manager.

Resources needed

The Wood Material and Machining Team of the LaBoMaP is composed of five assistant Professors, one researcher, three engineers, one assistant engineer, one technical assistant, six PhD students, and one post-doc student.

Recovery of poplar groves to boost biodiversity and carbon capture through structural bioproducts

Poplar groves offer an ecological raw material for a building sector with a low ecological footprint and circular practice.

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For decades, construction in many European floodplains, particularly in Granada, has turned its back from a local ecological resource with a high capacity to absorb carbon: poplar plantations. Today, technical wood derived from innovative manufacturing processes offers a great opportunity to develop a local industry and a building sector with a low ecological footprint and circular economy practices. LIFE Wood for Future aims to the recovery of poplar groves, instead of the extension of intensive herbaceous crops, to absorb more CO₂ and fight against climate change and promote a circular economy in the building sector. The project relies on a chain practice approach by involving the entire value chain: the primary sector (nurseries and poplar growers), the processing industry, public administrations, and the construction sector. The initiative aims to demonstrate and commercialise new structural bioproducts in order to provide a negative CO₂ footprint to the timber building sector; increase the value and the demand of local wood to boost the poplar forest sector; boost the circular economy.

The LIFE Wood for Future project is funded by the LIFE programme.

Adaptation to another regional context

A plan for replicability and transferability to other regions of Europe was drafted including transfer of lessons related to the carbon farming model for the sale of carbon credits, the life cycle of the products (recyclability and carbon sequestration), as well as the enhancement in society of the environmental values of poplar plantations and their cultural identity. Within the COLOR CIRCLE project, the LIFE Wood for Future echoes the concern of the Burgundy-Franche-Comté as both territories are working towards wood valorisation. The French partner acquired a new knowledge of structural bioproducts, whose use in the timber building sector is currently under adaptation.

Difficulties

The Wood for future project partners identified three main challenges:

- To bring all stakeholders together, from the primary forestry sector to the industrial and building ones, as well as the policymakers.
- To search for industrial investors.
- To support the construction sector's transition towards a low-carbon circular paradigm.

Resources needed

The project involves more than 30 people from 5 partners and associates regional and national administrations, and primary and construction sectors. The budget dedicated for the Wood for Future project ((LIFE 20 CCA/ES/001656) amounts to 2,985,886€ including a cofunding by the LIFE programme amounting to 1,642,073€.

Opinion of the Interreg Europe Policy Learning Platform experts

This good practice from Spain addresses biodiversity and carbon capture through carbon sinks policy priorities relating to several key areas of the EU Green Deal. The focus on poplar is of particular added value. It is a wood typically disregarded by commercial forestry. However, as pioneer plant after wood fires, poplars are among the first trees to return on a recently burnt area. Even when burnt, they sprout again from underneath - and sometimes form metre-long root runners from which new shoots sprout again. In calculations of how much carbon forests store in their biomass, the underground shoots and roots are often not taken into account. In the perspective, it is useful to examine local value chains for poplar as done in this good practice from Granada. Replication should be directed in particular at areas devastated by wild fires.

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