

Appendix 1

Conditions for Circular Economy in ECIV Regions – Self Assessment

Survey, SWOT-analysis and Regional
stakeholder workshops results

Dalarna/NMS in collaboration with WSP, with
contributions from all ECIV regions

2025-03-20



Contents

The purpose of this report is to show, and discuss, results from the Survey, SWOT-analysis, and Regional Workshops investigating conditions for circular economy in the nine regions participating in ECIV.

- **Focus:** Identifying synergies/patterns between regions, and highlighting observations in need of further information/discussion

p. 3 – Policies, Incentives and Strategies

p. 7 – Funding Opportunities

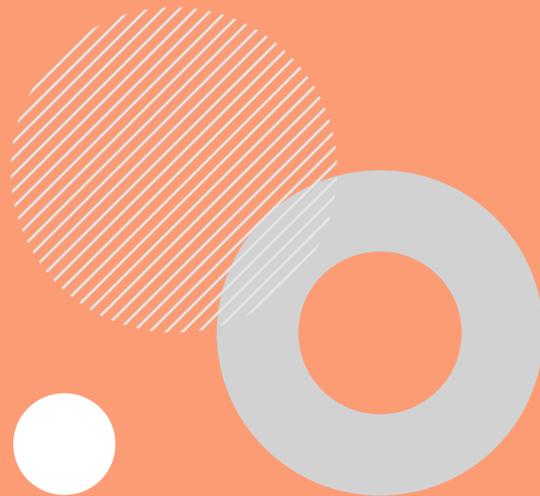
p. 10 – Sectors, Resource Flows, Industries, and Waste

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Policies, Incentives, and Strategies



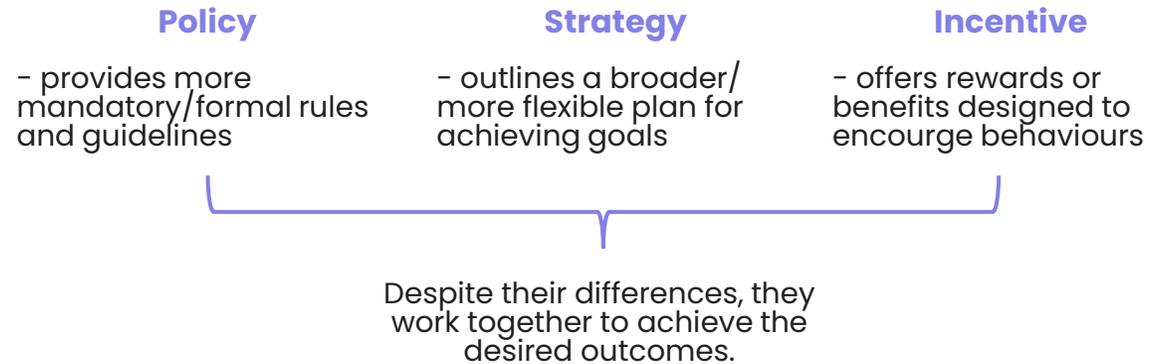
The following slides summarize results from the survey regarding

- Relevant policies (and strategies), their objectives and incentives related to circular economy
- Specific targets and the activities for reaching those targets

Point of Departure

Policies, incentives, and strategies are mentioned interchangeably across regional surveys. Strategies are mentioned more than (international, national, regional, or local) policies and incentives.

Observations have been compiled and are presented together. However, there are some distinctions between them.



Policies, Incentives, and Strategies

- **Regulatory Policies and Incentives** are highlighted by 6 regions (Normandy, North Middle Sweden, Lithuania, Scotland, Northern Netherlands, Helsinki-Uusimaa) – including laws, bills, rules and regulations
- **Financial Incentives** are highlighted by 5 regions (North Middle Sweden, Lithuania, Normandy, Scotland, and Helsinki-Uusimaa) – including grants, loans, tax incentives, and incentive pricing (for household waste collection)
- **Other Incentives** that are highlighted include public campaigns and initiatives, student and employee training, and strategic projects
- **Specific Strategies/Agendas for Circular Economy** have been developed in 7 regions (Navarra, Normandy, Gabrovo, Scotland, Wallonia, Northern Netherlands, Lithuania)
- **Objectives for Circular Economy are Integrated in Several Strategies** in many regions, e.g. regional planning and development, waste prevention, water management, smart specialization, innovation, energy and climate



- **Examples of National laws and bills:** Scotland's Circular Economy Bill, France's Anti-waste and Circular Economy Law, Spain's Anti-waste law for a circular economy
- **Extended Producer Responsibility (EPR)** is highlighted by 3 regions (North Middle Sweden, Normandy, and Scotland) – which focuses on action and accountability across entire product lifecycles
- **Green/Sustainable/Circular Public Procurement** is highlighted by 3 regions (Navarra, North Middle Sweden, and Scotland)

Targets and Activities

- **Targets and Activities** are region specific and developed in more detail in the surveys (→ and strategies)

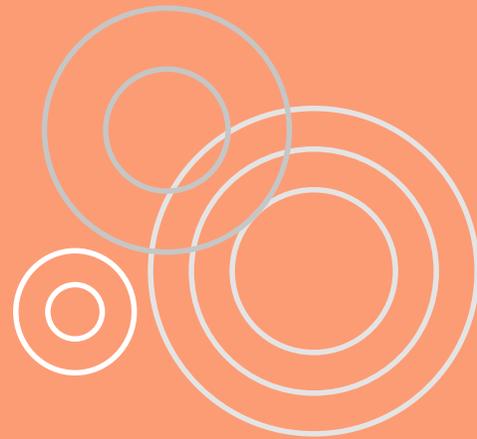
- **Common Themes – Targets:**

- *Decreasing raw material/natural resource use* (Navarra, Gabrovo, Helsinki-Uusima, Northern Netherlands)
- *Increasing waste recovery/Waste management* (Navarra, Gabrovo, Lithuania, Helsinki-Uusima)
- *Industry/business development* (all regions)
- *Innovation and research* (North Middle Sweden, Wallonia, Lithuania)
- *Stakeholder engagement and coordination* (Navarra, North Middle Sweden, Normandy)

- **Common Themes – Activities:**

- Promoting sustainable consumption, regulation
- Improving infrastructure (recycling etc.), promotion and communication, regulation
- Circular business models, funding programs, support for startups, education and training
- Research funding, test beds, platforms, networks
- PPPs, value-chain-cooperation, promotion and communication

Funding Opportunities



The following slides summarize results from the survey regarding financing and funding opportunities for the transition to the circular economy that are available in the regions.

Point of Departure

The survey results show that there are many funding opportunities available within the regions. In the next slide, regional answers have been mapped to show the variety of funding opportunities. Some overarching observations are presented to the right.

Synergies

- **EU initiatives:** several regions highlight european and EU initiatives, e.g. ERDF, Horizon, LIFE
- **governments:** all regions highlight government support (local, regional, national)
- **private sector:** several regions highlight support through e.g. green loans/bonds, venture capital

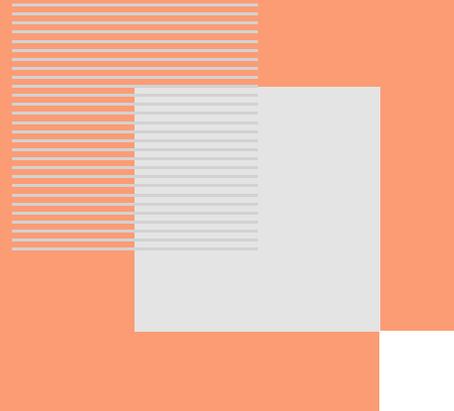
Other observations

- **differences in compilation:** it's likely several regions could complete their answers with more funding opportunities (e.g. EU-level)

Funding Opportunities

Navarra	North Middle Sweden	Normandy	Gabrovo	Scotland	Wallonia	Lithuania	Helsinki-Uusimaa	Northern Netherlands
Regional Government of Navarra (competitive regional calls for R&D projects focused on circular economy, tax incentives, aids, waste fund grants)	Region Gävleborg (support for SMEs, assessment tool for sustainable project funding)	Regional Council of Normandy & Economic Development Agency of Normandy (IDEE Action programs, ERDF support, various funds and schemes)	Support for startups: Horizon Europe, LIFE, regional initiatives with local entities for co-financing and mentorship, Public-Private Partnerships for funding and scaling startups	Circular Economy Business Support Service (consultancy, advice, funding)	Financial tools: EasyGreen loans, Chèques Economie Circulaire, and NEXT customized financing. Public aids and network of circular economy experts.	Invega (financial assistance for business development and targeted projects)	European Regional Development Fund (ERDF) and European Social Fund (ESF), Competitive calls – EU, Interreg, Horizon, Leader	NNLs regional ERDF 2021–2027 programme , with circular economy as one of the four priority areas. Plus, cofunding through Ministry of Economic Affairs
	Almi (green loans, verification fund, venture capital)							
	Tregion Startup Invest (investment company for businesses withing incubators in NMS)	ADEME (twenty schemes dedicated to circular economy support)	EU funding mechanisms: Horizon Europe, ERDF, Just Transition Fund, and LIFE Programme	Investment fund for Scotland (commercial finance options for smaller businesses)	Regional Call for Projects: Go Circular and specific calls for the construction sector	Environmental Projects Management Agency (climate change program and decarbonisation scheme)	The Research Council of Finland for academia	Just Transition Fund Programme 2021–2027 for province of Groningen and city of Emmen, with focus on energy transition
National Ministry of the Ecological Transition and the Demographic Challenge	Naturvårdsverket (The Swedish Environmental Protection Agency, investment support through Klimatklivet)	Circular Economy Fund – ORMAT (financial support for sorting and preparation of waste for recycling etc.)	National funding sources: National Trust EcoFund and Innovation Fund Bulgaria	Support for Innovation R&D <i>(guide to support for innovation, R&D by Scottish Government and UK Government)</i>	Supporting Innovation: Call for circular projects, Financing digital solutions, Encouraging circular design		Business Finland	National Programme Groningen for province of Groningen, transformation due to ending of natural gas production
	EU funds, ERDF	BPI (public investment bank, schemes dedicated to transition projects)	Regional and local opportunities: Gabrovo Municipality Development Programs, PPPs		EU and international programs: e.g. Horizon, LIFE		Cities’ own funding program like Helsinki Innovation Fund and Porvoo Climate Fund	EU 2023–2027 rural development programme for NNLs
			Private sector: Green bonds, venture capital		Regional actor AWEX (enhancing european/international visibility)			‘Waddenfonds’ : nationally funded programme for coastal areas and islands, main focus sustainability

Sectors, Resource Flows, Industries & Waste



The following slides summarize results from the survey regarding:

- Prioritized sectors and industries
- Prioritized resource flows
- Industries with largest turnovers
- Industries with largest volumes of residual resources
- Biggest volumes of waste

Point of Departure

The results show that there are many similarities among the regions. There are also detectable differences, reflecting the diverse set of industries driving regional economies.

In the following slides, regional answers have been mapped and synergies among regions have been identified. Some overarching observations are presented to the right.

Synergies

- **sectors and industries:** construction, plastics, energy, food and agriculture
- **resource flows:** plastics, steel and metal, construction materials, and textiles
- **turnovers:** manufacturing, transport/automotive, agrifood, construction, ICT
- **residual resources:** manufacturing, food, and construction
- **waste volumes:** household waste, construction waste, paper waste, and industrial waste

Other observations

- **industrial base:** regions with strong industrial bases prioritize residues from their key industries (e.g., steel and forest industry in North Middle Sweden)
- **data presentation (and access?):** variations in categorization, quantitative estimations, level of detail etc.

Prioritized resource flows

Navarra	North Middle Sweden	Normandy	Gabrovo	Scotland	Wallonia	Lithuania	Helsinki-Uusimaa	Northern Netherlands
Steel	Residual heat from pulp and paper mill industries, data centers	Plastics	Metals and metal products for machine building and tool manufacturing	Plastics	Construction and buildings	Construction waste	Food	Urban mining materials like minerals, metals , woods, and material comp.
Plastics	Bio-raw materials from sawmills	Agricultural biomass	Plastics for various industrial applications	Food and Organics	Water	Plastics	Construction	Municipal waste like packaging, plastics , organic residues, textiles
Recycled aggregates	Residues from the paper and pulp industry	Non-metallic minerals	Electricity and natural gas	Textiles	Metallurgy and batteries	Metal ores and products	Plastics	Agrifood: biobased materials to be used as raw material for biobased plastics, textiles, construction materials
Plastic waste mix	Residues from the forest industry	Agricultural and aquatic biomass	Water resources	Electronics (E-waste)	Food industry and food systems	Fossil fuels and by-products	Textiles	
Light fragmentation residues	Construction waste	Wood and wood products		Metals (including critical raw materials)	Textiles	Electronic waste	E-waste	
Road milling	Residues from the steel industry	Metal ores and products		Construction and Demolition Waste	Plastics	Chemicals		Metals and critical raw materials
Construction waste	Residues from mining waste	Non-metallic minerals and products		Glass	Biobased economy			
	Furniture, textiles	Fossil fuels and by-products						
	Residues from coffee production	Linen						

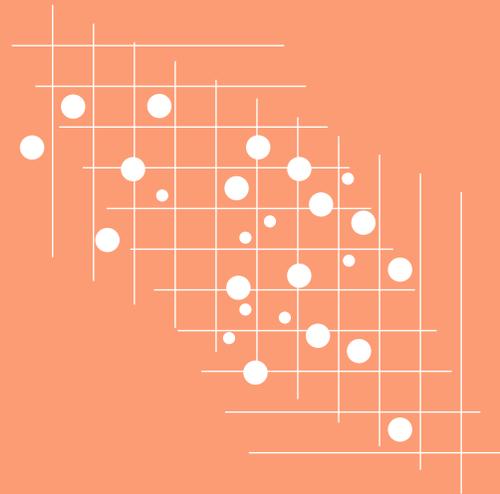
Industries with largest volumes of residual resources

Navarra	North Middle Sweden	Normandy	Gabrovo	Scotland	Wallonia	Lithuania	Helsinki-Uusimaa	Northern Netherlands
<p><i>Hazardous waste:</i> Vehicle manufacturing, manufacturing of metal products, vehicle repair workshops, metallurgy. Common waste types: chemical waste, industrial effluent sludge, oil.</p>	<p>Forest industry: residual products, branches and crowns (GROT), sawdust, chips, bark, chemical pulp</p>	Petrochemicals	<p>Manufacturing industries: metal shavings and scrap, plastic offcuts, textile scraps</p>	<p>Whiskey sector co-products: draff, pot ale, spent lees/wash, pot ale syrup, distillers dark grain</p>	<p>Steel and metallurgical industry: slag, furnace dust, metallurgical sludge</p>	<p>Manufacturing: mineral waste, black metal waste</p>	<p>Surplus land masses and asphalt from infra</p>	<p>Construction industry -> residual materials wood, packaging, concrete, minerals, metals, glass, etc.</p>
		Pharmaceuticals	<p>Food industry: organic waste, packaging materials</p>	<p>Cheese making: over 500,000 tonnes of material available</p>	<p>Construction: construction and demolition waste</p>	<p>Construction: mineral construction waste, black metal</p>	<p>Ashes from energy production</p>	<p>Chemical -> residuals are CO2 and heat</p>
		Food processing		<p>Waste water sludge</p>	<p>Chemical industry: spent solvents, chemical by-products, plastic waste</p>		<p>Concrete, tiles, metals, and wood from construction</p>	<p>Recycling industry -> minerals</p>
<p><i>Non-hazardous waste:</i> Metallurgy, manufacturing of metal products, manufacturing of vehicles, waste collection and treatment sector. Common waste types: ferrous metal waste, other mineral residues, animal and plant waste, paper and cardboard waste.</p>		Energy		<p>Animal and mixed food waste</p>	<p>Agri-food industry: organic residues</p>		<p>Industrial sidestreams from chemical and plastics industries</p>	<p>Energy -> heat and CO2</p>
		Glass		<p>Farm slurry and manure arisings</p>	<p>Paper and cardboard industry: papermaking sludge, trimming waste</p>		<p>Forest: bark, sawdust, wood chips, black liquor, green liquor</p>	<p>Metal and manufacturing -> metal, heat, CO2</p>
		Waste management						<p>Agribio: crop residues, manure, sludge, food processing by-products</p>

Biggest volumes of waste

Navarra	North Middle Sweden	Normandy	Gabrovo	Scotland	Wallonia	Lithuania	Helsinki-Uusimaa	Northern Netherlands
Hazardous waste: 38,595 tons	Household waste: residual waste, food waste, packaging waste	Inert construction waste	Industrial waste: metal, plastics	Soils	Household waste	Recyclables	General waste	Main source that still end-up in the furnace: Organic residues, household
Non-hazardous waste: 834,907 tons	Construction and demolition waste: concrete and bricks, waste from construction and demolition, wood waste, scrap metal	Plastic	Municipal solid waste: household waste , including organics, plastics, paper , and glass	Household waste	Construction and demolition waste	Construction and demolishing	Bio waste	household residual waste, packaging materials, wood residues, construction materials, textiles, metals, sludge and digestate, and dipers
		Textiles		Mineral waste from construction and demolition	Industrial waste	Domestic	Paper waste	
	Industrial waste: production waste, hazardous waste	Hazardous waste		Vegetal waste	Organic waste	Dark metal	WEEE	Main sources that are being recycled: Paper and cardboard, plastics and plastic packaging, glass, etc.
	Electronic waste: electronic devices, batteries and accumulators	Metals, glass, paper , cardboard		Mixed and undifferentiated materials	Electronic waste	Mineral waste	Wood waste	
				Animal and mixed food waste		Paper	Plastic waste	Composting and fermentation
				Wood waste		Waste treatment residues	Cardboard waste	
				Common sludges			Metal waste	
				Animal faeces, urine and manure			Glass waste	

Platforms, Programs, Projects, and Networks



The following slides summarize results from the survey regarding platforms, (research)-programs, (research)-projects and networks:

- A. That are already working with circular economy and/or innovation
- B. That engage relevant stakeholders for creating circular economy

Point of Departure

There is significant variation in compilation across regions. Some regions provide short lists, others offer longer lists, and some include extensive descriptions. The format also varies, with some regions categorizing answers into groups A and B and/or the quadruple helix, while others do not.

The initial compilation of stakeholders represents a preliminary list. Future work within ECIV will further deepen the analysis.

Synergies

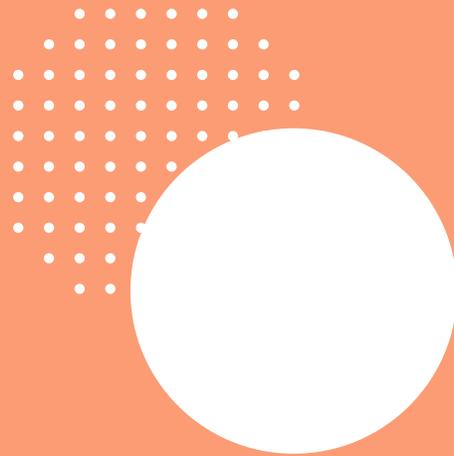
- **many platforms, programs, projects, and networks:** highlighted by majority of regions
- **categories:** detectable categories of platforms, projects, programs and networks include *academic/research institutions, governments, PPPs, innovation and technology* (e.g. hubs, clusters)

Other observations

- **differences in compilation:** it's likely several regions could complete their answers with more platforms, projects etc.

Navarra	North Middle Sweden	Normandy	Gabrovo	Scotland	Wallonia	Lithuania	Helsinki-Uusimaa	Northern Netherlands
Navarra Zirkular: a public private hub on circular economy supporting industrial transition. Promoted by multiple departments and public companies.	Byggdialog Dalarna, Dalarna Science Park, University of Dalarna, Sustainable Steel Region, and IUC Dalarna	Agri-Food: Engineering schools, industrial chairs, labcoms, and projects like Ag & Food City Lab, and Experimental Farm	Gabrovo Municipality	UK Innovate - Launchpad	Wallonia describes that there are various groups and councils to ensure effective implementation of the circular economy strategy. Including coordination units, steering committees, councils, platforms, taskforces, and thematic working groups	Government: Ministries of Environment, Economy and Innovation, Agriculture, as well as Innovation Agency (GreenTech Hub group), Environmental Projects Management Agency, and Municipalities	Helsinki-Uusimaa describes that in addition to Circular Hub, there are more than 100 projects, research programmes, networks and platforms operating in the region.	Circular Groningen (network/cluster)
			Regional Innovation Center "Ambitious Gabrovo"	IbioIC (Industrial Biotechnology Innovation Centre)				Circular Friesland (network/cluster)
	Technical University of Gabrovo	Bioeconomy Cluster Builder	Greenwise Campus (platform)					
Miljöforum, RISE, University of Gävle, Movexum, Propell, Sandbacka Science Park, Swedish Metals & Minerals, and Voxkedjan	Industrial: ECTOTECHNILIN, NATUREPLAST, DEPESTELE, ACTALIA	B: Businesses (Mechatronica SC, Impuls SC, Senstate Technologies SC, Tehnoles Ltd, Scientia, Elna Ltd, STS Electronics Ltd, Adtech Ltd, Acronis, Unitraf JSC, EmCB Ltd, Pastili Ltd), Gabrovo District Administration, and Gabrovo Chamber of Commerce and Industry	ECIV	Industry: Circular Economy Cluster, Clean Tech Cluster, and various recycling and waste management companies as well as companies using circular practices and looking for new solutions and innovations		They highlight Closed Plastic Circle – from Pilots into, SPIRIT programme, Helsinki Circular Economy Cluster Program		SUSPAC (network)
			Construction: engineering schools, industrial chairs					Chempooort (platform)
	Paper Province, Karlstad University, Glava Energy Center, CircLab, LignoCity, and various research projects and networks	Automotive: Cléon 4.0 electric mobility cluster and partnership Faurecia		Community: NGO Circular Economy, Environmental Coalition, Lithuania's Consumers Alliance, and Lithuania's Innovation Center	Relevant stakeholders include Clic Innovation, VTT, Business Finland Veturi programs, University of Helsinki, Aalto University, Posintra, Forum Virium, Business Helsinki, Haaga-Helia	Circular Drenthe (to be launched in 2025) – network/cluster		
		Chemistry: EUR XL-Chem, Carnot I2C, and various labs and projects		Academia: Kaunas University of Technology, Vilnius Tech University, Vytautas Magnus University, BioRural Project		Northern Innovation Lab Circular Economy – NICE (platform)		
		Others: ARKEMA, Ecole de Management de Normandie, Normandy IPCC, Le Dôme			Others: Miesto Laboratorija			
		B: CREC (Regional Committee of Circular Economy), Labo NECI, NEODD, SYNAPSE, Le Hangar Zéro, and more						

Local Stories: SWOT Analysis



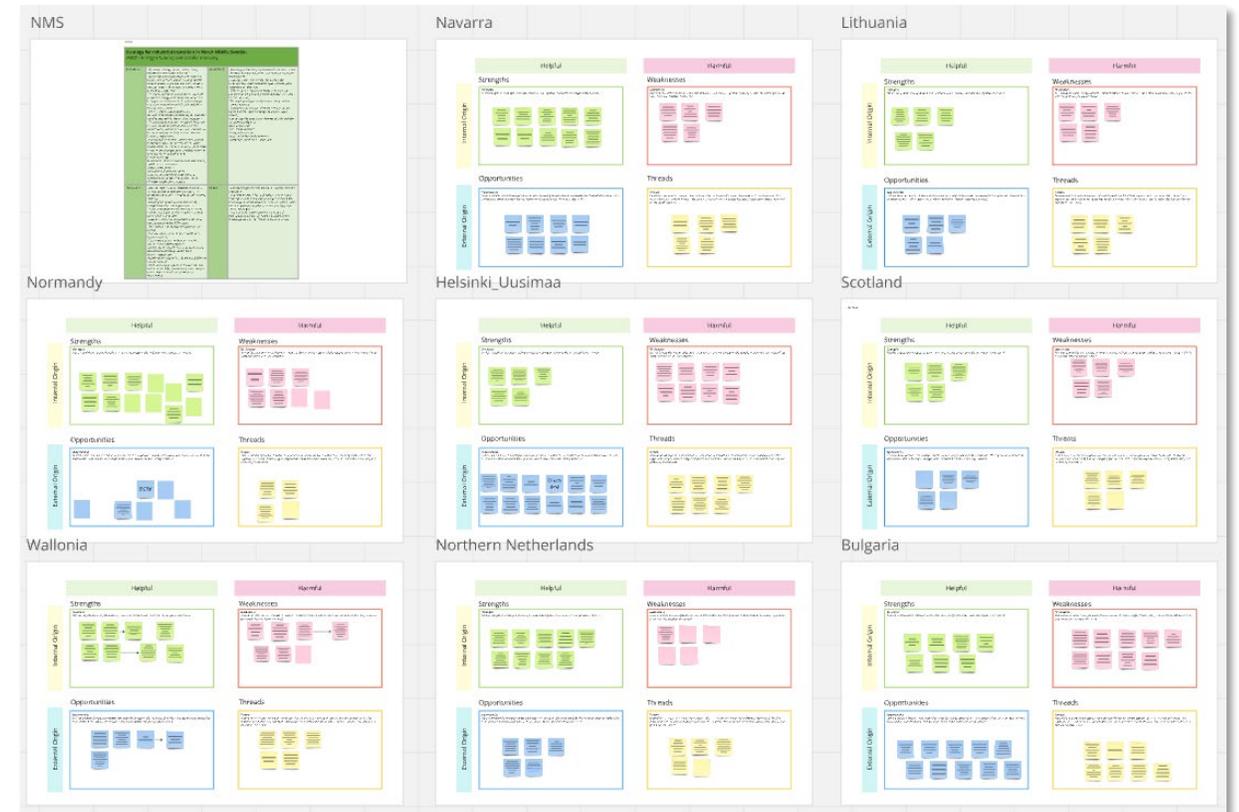
The following slides summarize results from the survey regarding the SWOT analyses for regional conditions for the transition to the circular economy. This includes:

- Strengths
- Weaknesses
- Opportunities
- Threats

Point of Departure

The results from the SWOT analysis clarify, confirm, and elaborate on local conditions for the circular economy. The SWOT analysis also makes it easier to identify patterns across different regions.

While not all regions experience the same conditions, many share commonalities. There are also differences. For example, one region's strength can be another region's weakness.



Strengths

- **Government/Institutional Support** – emphasized by majority of regions
- **Collaboration** (e.g. networks, platforms, diverse actors in different sectors) – emphasized by all regions
- **Innovation and R&D** – emphasized by majority all regions
- **Circular Economy Strategies** – emphasized by Navarra, Normandy, and Wallonia
- **Resources and Infrastructure** (e.g. raw material, recycling infra.) – emphasized by Lithuania, Helsinki-Uusimaa, North Middle Sweden, and Scotland

Weaknesses

- **Budget Constraints / Uncertainties** – emphasized by Normandy, Wallonia, Helsinki-Uusimaa, Gabrovo, and Scotland
- **Lack of Coordination / “Fragmented Facilitating Ecosystem”** – emphasized by Navarra, Wallonia, and Northern Netherlands
- **Skills and Workforce** (e.g. talent shortages, low gender equality, negative net migration and low attractiveness) – emphasized by Navarra, North Middle Sweden, and Normandy
- **Regulatory and Policy Gaps** – emphasized by Lithuania, Helsinki-Uusimaa, North Middle Sweden, and Normandy

Strenghts

Navarra

- Regional commitment
 - PPP: Navarra Zirkular
- Circular economy strategy
 - Public subsidies
- Industrial and innovative region
 - Institutional support
- Collaboration with universities

Lithuania

- Awareness between companies, policymakers, academia
- Collaboration between business and science
 - Tech-driven economy
- Participation in EU-projects
- Recycling infrastructure

Helsinki-Uusimaa

- Critical mass: population (1.7 m), infrastructure, logistics hub, material flows, business density, data
- Strong actors: R&D, funders, ministries, HQ, companies, cities
- Strong sectors and key clusters
 - Ambitious goals

North Middle Sweden

- Natural resources, particularly forests, and high renewable energy usage
- Test beds and innovation systems
- Collaboration between business, industry, public access, academia, as well as international networks

Normandy

- Circular economy strategy
- Waste management plan
- Internal coordination between departments/strategies
- Governance steer strategy: region, ADEME, French government
 - Clubs and networks
- Financial support, and skills

Northern Netherlands

- Circular economy clusters
- Cross-regional collaboration
- SME region, pragmatic oriented
 - Strong sectors
- High level of expertise, frontrunner
 - Community commitment
- Policy and policy instruments
 - Education and knowledge

Wallonia

- Expertise circular innovation
- Circular economy strategy
 - Innovation strategy
- Waste management strategy
- Ecosystem of actors, stakeholders
 - Governance within strategies
 - Mapping regional projects, stakeholders, trends

Gabrovo

- Industrialized region with developed business infrastructure
- Development of ICT sector
 - Institutional awareness
- Administration supporting entrepreneurship
 - Technical university

Scotland

- Research excellence (institutions and skilled workforce)
 - Government support
- Innovation and collaboration
 - Sustainable resources
- Small well connected place which aids collaboration

Weaknesses

Navarra

- Shortage qualified talent
- Lack of coordination/collaboration between sectors
 - Insufficient material flow/traceability
- Complex logistics in value chains
- Absence regional data/indicators

Lithuania

- Linear models still cheaper and more accessible
- Stakeholder motivation lacks
 - Lack of regulation
 - Lack of public pressure and awareness
- Lack of recycling, recover capacity

Helsinki-Uusimaa

- Silos in municipalities and cities
- Poor municipal financial situations
- No network for circular economy
 - "Information is not circulating"
 - High costs industrial land
- Waste pricing (against recycling)
- Lack of sales and branding skills

North Middle Sweden

- Involving SMEs in transition
- Procurement constraints
- Developing demonstration projects
- High energy consumption and emissions from transport
- Demographics: skilled workforce, net migration, gender

Normandy

- Budget cuts
- Difficulties finding relevant measures and indicators
- S3 Strategy insufficiently aligned with regional policies
 - Small workforce
 - Lack of regulatory powers

Northern Netherlands

- Multiple clusters and networks working parallel – fragmented facilitating ecosystem

Wallonia

- Budget uncertainty
- Lack of experience regional actors in european projects
- Difficulty internal collaboration, lack of synergies between strategies
 - Lack of knowledge
- Difficulty involving new actors

Gabrovo

- Insufficient capacity to apply modern digital technologies
- Limited access to know-how
- Low interactions bussiness-universities
- Low community awareness
- Low R&D intensity/productivity
- Limited financial resources

Scotland

- Systemic challenges affecting businesses, e.g. lack of shared understanding and language
- Public sector budgets & political change
 - Funding gaps
 - Market penetration
- Tied up waste streams / Feedstock competition

Opportunities

- **Competitiveness** (e.g. new markets and exports, industry transformation, pilot platforms, new business models) – emphasized majority of regions
- **Collaboration** (e.g. ECIV, extending PPPs) – emphasized by majority of regions
- **European Initiatives** (e.g. Green Deal, CRM act, project calls) – emphasized by Normandy, Wallonia, Lithuania, Helsinki-Uusimaa, and Northern Netherlands
- **Expertise and Skills** (e.g. employment generation, increasing attractiveness, CE study programs) – emphasized by Navarra, North Middle Sweden, Northern Netherlands, and Scotland

Threats

- **Regulatory and Policy Barriers** – emphasized by Navarra, Lithuania, Helsinki-Uusimaa, Northern Netherlands, and Wallonia
- **Economic and Political Uncertainty** – emphasized by Lithuania, North Middle Sweden, and Scotland
- **Dependence on Imports** – emphasized by Lithuania, Normandy, Wallonia, and Gabrovo
- **Climate Change** – emphasized by North Middle Sweden, and Scotland

Opportunities

Navarra

- Extended collaboration, e.g. ECIV, across sectors, interterritorial, knowledge sharing
- New funding opportunities
- Employment generation
- Industrial transformation
- Business model development

Lithuania

- EU Green deal
 - ECIV
- Synergies with decarbonisation, sustainability activities
- New markets, export possibilities
 - New R&D opportunities

Helsinki-Uusimaa

- Pilot platforms
- Co-development through PPPs
 - Public procurement
 - Green deal
 - New industries
 - Land use planning
 - Digitalization
 - Branding

North Middle Sweden

- Focused measures smart specialization
 - PPPs, e.g. procurement
- Network of test beds (bioeconomy)
- Developments in forest, construction and steel industries
 - Circular value chains & models
 - R&I environments
 - Conditions for attracting best skills

Normandy

- Industrial region with potential impact from ECIV
 - National calls targeting Normandy
 - Observatory with growing expertise
 - The Green deal, European calls, Preparatory action
- More organisations show interest

Northern Netherlands

- Circular economy priority in regional, cross regional and national policies
- Raw material transition
- Less netcongestion and less space limitation for circular industries
 - CE might decrease unemployment

Wallonia

- European trends/obligations (CRM act, NZIA, ...)
- New government – support
- ECIV collaboration, and other interregional strategic partnerships
- Studies within circular strategy could increase collaboration

Gabrovo

- Industry (and public sector) development through digitalization
 - New image for the region
- International networks/projects
- Creating successful examples R&D
 - Foreign investors
- Business dynamics in knowledge-based sectors
- Plastic field interested in circular ec.

Scotland

- Economic growth (new markets, productivity, savings)
 - Global leadership (position Scotland as leader in bioeconomy and circular economy)
 - Job creation
 - Sustainability goals

Threats

Navarra

- Regulatory constraints
- Costs and profits compared to linear products/solutions
- Insufficient coordination among stakeholders
- Lack of uniformity in how circular practices are managed

Lithuania

- Unstable geopolitical situation
- Dependence on material imports
 - Growing demand for new products
- Lack of technologies; lack of efficient ways of recycling

Helsinki-Uusimaa

- Slow operational culture
- Small actors not included
 - Activities do not scale up/replicate
- Low profits circular solutions
 - Lack of shared vision/commitment
 - Lack of skilled labor
 - Regulatory barriers

North Middle Sweden

- Climate change hampers development of forest production
- Lack of awareness/skills to handle barter (incl. balancing climate-related, social, economic goals)
- Slow political development at national and international level regarding low-carbon economy

Normandy

- Few research organizations involved in circular economy
- Scarcity of resources, sectors under pressure
- Dependence on imports for certain materials

Northern Netherlands

- Virgin materials cheaper
- Taxes and increasing loans make refurbishment and repair expensive
- Electricity grid congestion, permit limitation, and space limitations
- EU and national regulations still based on linear systems

Wallonia

- Costs and lack of labor in certain sectors
- Non-economically-viable circular solutions
- "Circularity as a threat" to some sectors (e.g. single use plastics)
 - Regulatory barriers
 - Dependence on imports

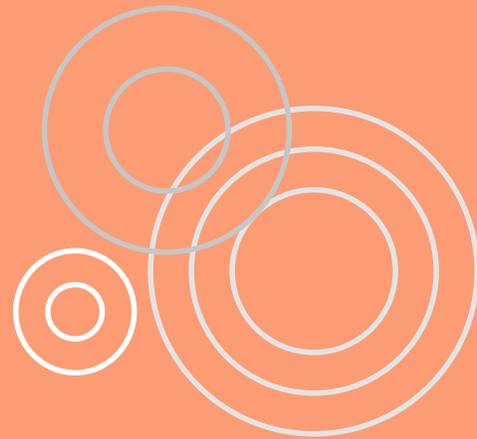
Gabrovo

- Demographic challenges, e.g. ageing workforce, migration
 - Lack of skilled workers, entrepreneurs, scientific capacity
- Low interest community actors
- Lack of funding opportunities at local level
 - Dependency on import

Scotland

- Climate crisis
- Global competition
- Economic uncertainty
- Resistance to change

Stakeholder Workshop Results



The following slides summarize results from the stakeholder workshops. Results are presented combined and by region.

Point of Departure

Eight of the nine participating ECIV regions conducted stakeholder workshops to validate and expand upon the initial circular economy analysis. These workshops aimed to engage regional stakeholders in a discussion of identified challenges and opportunities, exploring local capabilities and resources to address them.

A key objective was to gather input for the design of potential sub-missions, ensuring alignment with regional priorities and expertise. The workshops provided valuable insights into regional capabilities, informing the subsequent top-down sub-mission formulation process.

While WP2 provided a general framework for workshop structure, each region adapted the format and methodologies to best suit their specific conditions and contexts, employing diverse approaches.

Questions

- **Reflection 1: (Inter)regional analysis**

- Did the stakeholders recognize the identified challenges and opportunities?
- What were the reactions and thoughts related to the interregional analysis?
- Was there anything the stakeholders felt was missing in the analysis?
- Was there anything in the analysis that surprised any of the stakeholders?
- What do the stakeholders feel is most interesting?

- **Reflection 2: Capabilities**

- What capabilities do the stakeholders believe will be needed moving forward in the region? (e.g. skills, resources, support)
- What capabilities do the stakeholders believe will be needed moving forward in the development of circular economy in the region?
- Are these capabilities available among the stakeholders?
- Do the stakeholders feel ownership/have ability to take ownership?
- Are there any capabilities that need to be developed further in the region?

Main Take Aways

Reflection 1: (Inter)regional analysis

- **Recognition of identified challenges and opportunities:**

- The majority of stakeholders recognized identified challenges and opportunities.
- *Common challenges:* Lack of awareness and knowledge; Financial constraints; Regulatory and policy barriers; Collaboration and networking issues; Technological and infrastructure challenges
- *Common opportunities:* Public procurement; Innovation ecosystems and collaboration; Development of circular business models; Policy and regulatory support; Education and workforce development

- **Reactions and thoughts related to the interregional analysis:**

- Differing reactions among regional stakeholders. Overall indication of the analysis being too broad/surface level, and a need for more detailed information.
- Some stakeholders felt detached from the analysis due to a lack of clear purpose and practical applications. Concerns about the robustness and representativeness of the methodology were raised.
- Some stakeholders showed interest in the fact that other regions share similar potential circular challenges.

- **Missing aspects in the analysis:**

- *Specificity and Detail:* Sectoral data/challenges/opportunities: Regional economic structures, Connections between impact and dependencies
- *Policy and Regulatory Information:* At national, regional and EU level; Detailed information barriers
- *Geopolitical Context:* Geopolitical uncertainties and potential impact on CE

- **Surprising aspects in the analysis:**

- *Degree of Circularity:* A couple regions were surprised by, and questioned, circularity rates

- **Most interesting aspects in the analysis:**

- Common interesting aspects include developing practical tools (e.g. CBM), collaborative efforts, sector-specific strengths, and supportive policy frameworks to advance the circular economy across different regions

Main Take Aways

Reflection 2: Capabilities

- **Capabilities needed moving forward in the region:**
 - *Collaboration and Networking:* Between industry, municipalities and research; Cross-sector working groups; Involving stakeholders; Facilitating interconnection between companies
 - *Financial Resources and Support:* For SMEs; Developing new CBMs; Coaching, impact assessment and funding innovation; Funding instruments for high-risk investments
 - *Skills and Knowledge Development:* CA evaluation, design skills, regulatory knowledge, and marketing; Developing a toolbox for companies to create value through circular solutions; Increasing skills and workforce, especially in repair; Education and workforce development for circular economy skills
 - *Regulatory and Policy Incentives:* Need for regulations that encourage circular practices and solutions; Public Procurement
 - *Technical and Infrastructural Support:* Better waste collection and sorting systems; Improving scale-up infrastructure
 - *Market Development:* For recycled materials; Optimizing value chains within the EU context
 - *Consumer Awareness and Behavioral Change*

- **Available capabilities among the stakeholders:**
 - Majority of regions have partially available capabilities in the region, but highlight the need to develop and strengthen them.
 - A few regions have high available capabilities in the region, e.g. through many engaged stakeholders in CE.
 - One region state capabilities are low, with a need to bring professionals from other regions.
- **Stakeholder ownership:**
 - 50/50 among the regions between high and partial ownership among stakeholders.

Helsinki-Uusimaa

Methodology

- **Stakeholder interviews** validating the topics of
 - Regional SWOT
 - ECIV Interregional analyses
 - Sector-specific challenges and opportunities
- **Interviewees** include representatives from Helsinki-Uusimaa Circular Hub (General), CLIC Innovation (Plastics/Textiles), STJM (Finnish Textile Industry Association), University of Helsinki (Food), and Political appointee for the ECIV (general)
- **Continuous discussion** with policymakers and funding agencies in Spring 2025

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Challenges: Lack of industrial land and high costs, especially in urban areas like Helsinki. Financial constraints, particularly for SMEs. Lack of networks for circular economy collaboration. Limited incentives for circular business models, especially in waste management and secondary raw materials.
 - Opportunities: Public procurement as a driver for circular economy. Growing innovation ecosystems, such as the 4R Innovation Ecosystem. Support for high-level circular strategies leveraging Finland's strong policy environment. Expansion of repair and reuse business models, especially in textiles and packaging. Caution regarding the challenges in circular construction due to the sector's economic downturn.
- *Reactions and thoughts related to the interregional analysis:*
 - Some stakeholders felt detached from the analysis due to a lack of clear purpose and practical applications. Concerns about the robustness and representativeness of the methodology. General themes (e.g., plastics, construction, food) were relevant, but context-specific factors were questioned. The role of circular public procurement was underestimated.
- *Missing aspects in the analysis:*
 - Lack of specificity on strong sectors and the need for referring back to previous studies. Circular economy workforce development was underrepresented. More focus needed on business model innovation and strategic coordination between regions.
- *Surprising aspects in the analysis:*
 - The identification of textiles as a key sector was well-received. Surprised by the lack of emphasis on repair and reuse models. Geopolitical uncertainties and their potential impact on the circular transition were acknowledged but not previously emphasized. Omission of key actors like secondary education institutions and applied research organizations. Concerns over the broad and general nature of the findings.
- *Most interesting aspects in the analysis:*
 - Public procurement as a tool for circular transition. Repair and reuse business models in textiles, electronics, and packaging. Collaborative platforms like the 4R Innovation Ecosystem. Finland's potential to lead in high-level circular strategies due to its strong regulatory environment and political will.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Collaboration and networking between industry, municipalities, and research institutions. Financial resources and support mechanisms, particularly for SMEs. Development of circular economy business models, including rental and reuse strategies. Technical and infrastructural support for better waste collection and sorting systems. Regulatory and policy incentives for businesses to transition to circular practices.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - Sector-specific circular strategies for plastics, textiles, and construction. Market development for recycled materials. Public procurement to set standards and push for circular solutions. Education and workforce development for circular economy skills. Consumer awareness and behavioral change through awareness campaigns.
- *Available capabilities among the stakeholders:*
 - Partially available. Expertise exists within research institutions, industry, and public actors, but there are gaps in funding, infrastructure, and collaboration mechanisms. Strong actors include universities, research institutions (e.g., VTT), and innovation ecosystems (e.g., 4R Innovation Ecosystem). The private sector and SMEs struggle with limited resources.
- *Stakeholder ownership:*
 - Stakeholders acknowledge the importance of regional actors leading by example. Hesitation and risk-aversion among businesses, particularly SMEs, due to financial uncertainty. Lack of cross-sector coordination means no single entity fully owns the circular transition process.
- *Capabilities that need to be developed further in the region:*
 - Stronger cross-sector collaboration. Funding instruments for high-risk investments. Scaling up circular solutions beyond pilots and small-scale initiatives. Infrastructure improvements for circular economy activities. Regulatory clarity and support to address barriers like pricing structures for recycled materials.

North Middle Sweden

Methodology

- **Stakeholder workshop** including presentations in plenary and discussions in four groups during two sessions:
 - Regional analysis in session 1
 - Interregional analysis in Session 2
 - Printed material in each session with questions related to results from the analyses
 - Group leader in each group
 - Menti to get input on potential icons
 - Total 3,5 hours
- **Attendees** included Funders; Research institute; Universities; Clusters; Lab/testbed; Non profit organization; Science Parks/incubators, accelerators, innovation hubs
 - Funders: Almi, Tregion
 - Research institute: RISE
 - Universities: Högskolan i Dalarna, Högskolan i Gävle, Karlstad Universitet
 - Clusters: Glava Energy Center, Hudiksvalls Hydraulic Cluster, Paper Province, Sustainable Steel Region
 - Lab, testbed: On Demand
 - Non profit organisation: CirEko
 - Science Parks, incubators, acceleratorer, innovation-hubs: EDIH Mighty, Dalarna Science Park, Karlstad Innovation Park, Movexum, Propell, Sandbacka Science Park

North Middle Sweden

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Stakeholders recognized several challenges, including a lack of awareness and knowledge about the circular economy among producers and consumers. The need for skills and governing policies was highlighted as crucial. Challenges include working in silos and cultural norms, particularly the "utility mentality" in NMS. Opportunities include attracting new talent to the region and connecting universities with industries.
- *Reactions and thoughts related to the interregional analysis:*
 - Stakeholders found the collaboration opportunities in ECIV interesting and saw funding and European contacts as motivating factors. There was difficulty in understanding the different levels of detail in each region's analysis. Some stakeholders questioned why industrial companies were not included in the workshop.
- *Missing aspects in the analysis:*
 - Stakeholders felt a clearer connection between impact and dependencies was needed. More information on policies, regulations, and incentives, particularly EU regulations, was missing. The analysis lacked a focus on certain resource flows and sectors, such as mining waste, construction, and water issues. Leadership and economic incentives were emphasized as important.
- *Surprising aspects in the analysis:*
 - Stakeholders were surprised by the low degree of circularity in Sweden, with some doubting the accuracy of the 3.4% circular economy figure.
- *Most interesting aspects in the analysis:*
 - Policies and incentives were seen as crucial. The potential for start-ups to enter big industries and the importance of human commitment and knowledge were highlighted. Mapping residual flows and creating new business opportunities were seen as challenging but important. Learning from other regions and clusters was considered valuable.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Inspiration and learning from other countries' strategies in circular economy. Connecting circular thinking to the current situation and future goals. Developing a toolbox for companies to create value through circular solutions.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - Same as above, with a focus on circular economy.
- *Available capabilities among the stakeholders:*
 - Some ongoing projects in NMS, such as collaborations in the forest-based bioeconomy and the agro sector, indicate existing capabilities. Examples include innovation sprints and hackathons with energy-intensive industries.
- *Stakeholder ownership:*
 - This question was not discussed during the workshop.
- *Capabilities that need to be developed further in the region:*
 - Common awareness and knowledge about circular design and business models. Capacity to build diverse teams, testbeds, clear strategies, and leadership driving incentives.

Lithuania

Methodology

- **Stakeholder workshop** including
 - Presentations of ECIV project and analysis (Priority sectors, turnovers, resource flows, SWOT), circularity rate metrics, and consortium prioritized sectors
 - Group discussions in smaller groups
- **Attendees** included Public Sector; Businesses, associations; Non-governmental sector; Universities
 - 15 participants in total
 - Public sector: Parliament of the Republic of Lithuania, Research Council of Lithuania, Invest Lithuania
 - Businesses, associations: Furniture business, e-waste recycling company, waste managers, packaging design agency, engineering businesses association
 - Non-governmental sector: Educational NVO, Innovation Center of Lithuania

Lithuania

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Stakeholders partly recognized the challenges and opportunities but questioned the quality of existing data and the statements' origins. The lack of education and awareness about circularity was identified as a significant challenge. Another challenge was the lack of clear practical guidelines on the EU's new directives and policies. Opportunities included innovations for secondary raw material usage and encouraging product designs that fit circularity criteria.
- *Reactions and thoughts related to the interregional analysis:*
 - Participants mainly focused on analyzing Lithuanian sectors and market but emphasized the importance of collaborating with other regions due to Lithuania's small market for secondary raw materials. There were questions about the definitions of sectors, such as plastics.
- *Missing aspects in the analysis:*
 - Stakeholders wanted more explanation on the methodology and data sources. Suggested additions included challenges of CO2 emissions calculations, LCA incorporation, regulatory barriers, deeper analysis of technological challenges, and specific sector data.
- *Surprising aspects in the analysis:*
 - Stakeholders were surprised that higher awareness was considered a strength. They were also surprised by Lithuania's low position in the EU circularity rate and questioned the methodology.
- *Most interesting aspects in the analysis:*
 - Concepts like assembly/disassembly, regulations, policy frameworks, early preparation for regulations, lack of financing, design thinking, international partnerships, and mono-materials were highlighted as interesting.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Capabilities needed include LCA evaluation, topical knowledge for funding calls, design skills, holistic and interdisciplinary knowledge, regulatory knowledge, standardization, marketing, entrepreneurship, and circular economy concepts.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - Same as above, with a focus on circular economy.
- *Available capabilities among the stakeholders:*
 - Fragmented, sectorial knowledge exists, but most skills are not possessed by the stakeholders. There is a need to bring professionals from other regions.
- *Stakeholder ownership:*
 - While not directly stated, some stakeholders could take small parts of ownership. They are willing to participate in educational activities and promote circularity if given the tools.
- *Capabilities that need to be developed further in the region:*
 - Same capabilities as mentioned above need further development.

Scotland

Methodology

- **Stakeholder workshop** including
 - Presentations and group discussions according to format suggested by WP2 Lead
 - Briefing material with focus on challenges and opportunities
- **Attendees** included 15 representatives from
 - Enterprise Agencies (all Scottish regions represented)
 - Innovation Centres in Industrial Biotechnology and Built Environment
 - Scottish Government Circular Economy
 - Academia – Industrial Decarbonisation Research and Innovation Centre
 - Zero Waste Scotland – National Public Body for Circular Economy in Scotland
- **Reflections** centred around developing challenges and opportunities to inform ECIV going forward

Scotland

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Stakeholders recognized the challenges and opportunities, adding refreshed content and additional material. Challenges include scaling up equipment, regulatory standardization, and early-stage companies seeking 100% funding. Scotland has significant biomass feedstocks to support innovation. Process scale-up and regulatory sandbox opportunities were noted. Policy and public sector procurement are driving changes in other regions.
- *Reactions and thoughts related to the interregional analysis:*
 - Stakeholders found the interregional collaboration interesting and saw potential in funding and contacts in Europe. There was a need for clearer understanding of the different levels of detail in each region's analysis.
- *Missing aspects in the analysis:*
 - The process scale-up challenge was missing from the SWOT analysis. Investor confidence and integration of innovation into the market were also noted as missing. Challenges in dealing with businesses at different stages and the need for space to kit-out were highlighted.
- *Surprising aspects in the analysis:*
 - Additional areas of strength were identified, such as clean heat, construction materials, bio-based innovation, and offshore decommissioning.
- *Most interesting aspects in the analysis:*
 - Areas of strength where Scotland could contribute include clean heat, construction materials, bio-based innovation, and offshore decommissioning. Potential opportunities include bio-based lubricants for the offshore oil industry and valorization of fish waste.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Scotland has strengths in industrial biotechnology, wet timber, fire safety, multi-story construction, and various emergent solutions. Place-based thinking to maximize local value chains and various feedstocks like marine biomass, agri-wastes, and whisky co-products.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - Same as above, with a focus on circular economy.
- *Available capabilities among the stakeholders:*
 - Numerous stakeholders are well connected to the Scottish Government, but there is a need for insight into successful practices elsewhere in Europe and understanding harmonization post-Brexit.
- *Stakeholder ownership:*
 - Stakeholders are well connected at the national level but need to learn from international best practices and collaborate.
- *Capabilities that need to be developed further in the region:*
 - Strengthening skills provision, addressing regulatory issues, and improving scale-up infrastructure. Specific skills gaps include multi-skilled workers, construction sector skills, and bio-based skilled workers. Regulatory challenges include waste quality, waste classification, and lack of a framework for carbon accounting.

Northern Netherlands

Methodology

- **Stakeholder workshop** with triple helix stakeholders where industry was represented by two ecosystem orchestrators, 12 participants in total

Northern Netherlands

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - There was a large consensus on the recognition of challenges and opportunities, with participants eager to detail themes and sectors into more specific topics.
- *Reactions and thoughts related to the interregional analysis:*
 - Participants mentioned additional themes and believed there are more linkages to be found within the presented analysis and data.
- *Missing aspects in the analysis:*
 - Missing elements included the relation with geopolitics, opportunities from interregional EU collaboration, the role of government, the absence of water as a resource, the aspect of design, and consumer goods as a theme. Suggestions included moving from a basic SWOT analysis to a confrontation matrix and providing more insights on the economic structure of the regions, including lead firms and solution providers.
- *Surprising aspects in the analysis:*
 - No real surprises, but difficulties in interpreting the data were noted, which could lead to disregard of mentioned terms in "wrong" columns or different wording for the same topic.
- *Most interesting aspects in the analysis:*
 - The similarities and relatedness of regions within the consortium were interesting. A mission-oriented methodology was preferred over a sectoral approach, aiming to engage stakeholders on the mission rather than primarily helping themselves.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Effectiveness on challenge roadmaps towards (sub)missions and monitoring of progress.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - From the perspective of value chains, optimizing these within the EU context or even within the RIV. Support and financial resources to reverse global value chains and economies of scale. AI skills or technology to advance digitalization in process industry and materials.
- *Available capabilities among the stakeholders:*
 - Partly available, or need to be developed.
- *Stakeholder ownership:*
 - Participants have a relatively high sense of ownership. The Northern Netherlands is organized towards circular transition ambitions, and these stakeholders are part of that ecosystem.
- *Capabilities that need to be developed further in the region:*
 - Specific capabilities were not detailed, but the need for development was implied.

Normandy

Methodology

- **Stakeholder workshop** including
 - Brief presentation of the territorial analysis: Circular economy strategy, S3 strategy, sectors with highest turnover and intensive materials, main waste products, main material flows, SWOT
 - Presentation of the Normandy missions
 - Presentation of the interregional analysis: Common strategic sectors and common targets
 - Feedback on the presentation
 - Group discussion in five groups: Deploying the circular economy; The transition of the plastics industry; WEEE, batteries, metals; Construction; Circular bioeconomy
- **Attendees** included 55 representatives from research, companies, collectives, clusters, technical center and students
 - Research : bioplastic, building engineering, energy, materials, chemistry, physics, digital, management / business models
 - Companies : reuse of packaging, bioenergy, media, building (reuse), textiles, Reuse, cosmetic, pigments, CSR consultancy
 - Collectivities : Region, development agency
 - Cluster : agri-food, transport law, reuse, social enterprise, training, maritime, Ecodesign, industrial robotics, logistic, aquaculture, Incubator, sustainable territorial, development, agriculture
 - Technical center : plastic, microbiology,
 - Students in Circularity management

Normandy

- **Reflection 1: (Inter)regional analysis**

- Stakeholders recognized the identified challenges and opportunities. No particular comments on the analysis.

- **Reflection 2: Stakeholder capabilities**

- *Capabilities moving forward in the region:*
 - **Economic Models and Policies:** Develop viable economic models; Promote alternative economies (functionality, circularity, etc.); Harmonize European public policies; Engage in lobbying.
 - **Measurement and Prioritization:** Measure impacts using multiple indicators (CO2, resources, social, etc.); Prioritize impacts; Identify relevant and measurable indicators.
 - **Knowledge and Skills:** Improve observation to enhance knowledge and propose new recovery methods (connect sources and demand); Increase skills and workforce, especially in repair; Improve knowledge and monitor regulations, policies, and insurance systems; Learn from and replicate best practices in Normandy; Organize study trips; Enhance public communication and participatory science.
 - **Resource Sharing and Innovation:** Share resources (equipment, expertise, human resources, land, etc.) and knowledge; Develop micro-innovations, tailor-made innovations, tinkering, hybridization, low-tech solutions, etc.; Create a network of second-hand spare parts.
 - **Industry and Market Development:** Strengthen producer/consumer connections (e.g., plastics); Improve business waste collection and pooling; Prepare companies for new regulations; Develop recycling industries (construction, public works, textiles) and bio-sourced sectors.
 - **Collaboration and Stakeholder Involvement:** Form cross-sector working groups and involve stakeholders; Establish a joint, forward-looking, multidisciplinary observatory.
- *Stakeholder ownership:* Some stakeholders were very interested, and there have been many emails and calls since the workshop from stakeholders wanting to develop new projects

Wallonia

Methodology

- **Stakeholder workshop** including internal work based on consultation of stakeholders and partners to confirm and complete the results
- **Attendees** included stakeholders from the following sectors: Construction, Metallurgy, Water, Agri-Food, Plastics, Textiles, Biobased sector

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Yes, the challenges and opportunities were identified together with the stakeholders.
- *Reactions and thoughts related to the interregional analysis:*
 - No particular reactions were noted, as there was not enough information to imagine real opportunities.
- *Missing aspects in the analysis:*
 - Details about the capabilities of regions in terms of technological innovation were missing. However, stakeholders were willing to develop collaborations on the main interregional crossing sectors.
- *Surprising aspects in the analysis:*
 - No surprises were noted.
- *Most interesting aspects in the analysis:*
 - No information.

- **Reflection 2: Stakeholder capabilities**

- *Capabilities needed moving forward in the region:*

- Standards and regulations: Need for regulations that encourage circular practices and solutions for restrictive regulations.
- Support and funding: Need for support in coaching, impact assessment, circular potential identification, and funding for innovative solutions or collaborative projects.
- Public procurement: Need for criteria that advantage circular products and services.
- Demonstration, innovation, and digital technology: Need for funding RDI collaborative projects to exploit regional expertise and boost innovation.
- Education and training: Need for increased knowledge on circular innovation practices.
- Information and awareness: Need for regular and accessible information about circular innovation opportunities.
- Collaboration at various levels: Need for national, European, and international collaboration.
- Regional resources: Need for workforce in specific sectors and development of expertise in circular innovation.

- *Capabilities needed moving forward in the development of circular economy in the region:*

- Industrialization of circular packaging: Process technologies, bio-based materials, SSDR system, design for circularity, smart production.
- Revalorization of by-products of the food industry: Standardization, new revalorization technologies, industrialization, new markets.
- Water regeneration in industrial processes: Pretreatment, regeneration processes, post-process treatments, nutrient recovery.
- Remanufacturing of components of renewable energy: Reverse logistics, remanufacturing process, operation and maintenance, recycled materials, design for remanufacturing.

- *Available capabilities among the stakeholders:*

- Most capabilities are developed in the region but need to be strengthened. Key economic players include industries in waste collection and treatment, construction, chemical industry, and manufacturing of metal products. Other sectors like agri-food, textiles, and water have also developed capabilities.

- *Stakeholder ownership:*

- A group of stakeholders in the innovation and circularity field is consolidated in the region. Some have specific roles and already ensure a leading role in developing innovative and circular solutions.

- *Capabilities that need to be developed further in the region:*

- Construction sector: Tools and services for materials reuse, modularity in construction, focus on critical raw materials, RDI solutions, workforce training, new value chains.
- Metals and batteries sector: Identification and mapping of metals, RDI projects, circular design, regional expertise deployment.
- Water sector: Encouraging purified wastewater reuse, RDI solutions for resource extraction, water-efficient use in buildings.
- Agri-food and biomass sector: Identifying by-products, developing value chains, RDI projects for valorization.
- Cleantech: Deploying clean technologies for industry.
- Chemistry and polymers: Encouraging circular design in plastics, developing bioplastics value chains.

Navarra

Methodology

- **Stakeholder workshop** including the proposed method with an online interactive pool.
 - In the first part, the ECIV project, its objectives, and timeline were introduced
 - In the second part, focus was on regional circular economy context and existing projects in Navarra, along with common challenges
 - In the final part, an interactive poll with QR codes was used to identify main gaps in circular value chains. Participants voted on challenges and opportunities, which were then digitalized and linked to capabilities.
- **Attendees** included 50 participants with intermediate stakeholders: Clusters, universities, research centers, territorial actors, business organizations

Reflection 1: (Inter)regional analysis

- *Recognition of identified challenges and opportunities:*
 - Legal challenges: Regulation that restricts circularity with legal barriers. Excessive bureaucracy. Difficulty in understanding and staying updated on new regulations.
 - Market challenges: Supply chain problems with secondary materials in terms of quantity and quality. Increased product costs, with linear economy still being cheaper. End consumer lack of knowledge about the complexity of value chains. Lack of market demand for public, private, and industrial purchases.
 - Technological challenges: Difficulty in making changes to product design and production lines. Need for treatment technologies for preparing products, components, and materials. Problems in identifying appropriate technology or dealing with immature/non-industrialized technology.
 - Knowledge challenges: Lack of specialized technical knowledge. Lack of qualified personnel. Need for new training skills. Importance of sharing good practices and success-failure cases. General lack of knowledge and social awareness.
 - Funding challenges: Need for financial support for new circular business models or services. Complexity in aid management. Short deadlines for advancing real projects. Lack of economic incentives for joint systemic change. Need for new specialized financing lines.
 - Collaboration challenges: Beginnings of culture change towards intersectoral collaboration. Need to facilitate interconnection between companies and learn more about territorial capabilities. Stakeholders need to identify themselves within a value chain change. Lack of solutions for reverse logistics to create synergies.
- *Reactions and thoughts related to the interregional analysis:*
 - Stakeholders showed interest in the fact that other regions share similar potential circular challenges.
- *Missing aspects in the analysis:*
 - Not at the moment, as it was the first event related to ECIV directly involving stakeholders.
- *Surprising aspects in the analysis:*
 - Not at the moment.
- *Most interesting aspects in the analysis:*
 - Potential collaborative projects in circular economy among regions in Europe.

• Reflection 2: Stakeholder capabilities

- *Capabilities needed moving forward in the region:*
 - Legal challenges, Market challenges, Technological challenges, Knowledge challenges, Funding challenges, Collaboration challenges.
- *Capabilities needed moving forward in the development of circular economy in the region:*
 - Industrialization of circular packaging: Process technologies for large-scale industrialization with new materials. Packaging made from bio-based materials. SSDR system for returnable packaging. Design for circularity. Smart and digital production of recycled and recyclable packaging.
 - Revalorization of by-products of the food industry: Homogenization and standardization of usable material. Development of new revalorization technologies for animal/human food. Development of new revalorization technologies for other uses (materials, packaging, fertilizers). Industrialization of processing new products. Creation of new markets.
 - Water regeneration in industrial processes: Pretreatment before processing. Regeneration processes in industry. Post-process treatments for reuse. Recovery of nutrients from wastewater.
 - Remanufacturing of components of renewable energy: Reverse logistics of components. Remanufacturing process and certifications. Operation and maintenance of components. Recycled and recyclable raw materials. Design of components for remanufacturing.
- *Available capabilities among the stakeholders:*
 - Not detailed.
- *Stakeholder ownership:*
 - Yes, the territorial challenges will be conducted with the ownership of clusters or industrial organizations.
- *Capabilities that need to be developed further in the region:*
 - Continuing focusing on collaborative projects.



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