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Regional ecosystem Cradle2Cradle maturity analysis Switzerland

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Executive Summary

This deliverable document is the results of the analysis of the ecosystem for the region Switzerland with respect to circular economy in general and the cradle-to-cradle principles in particular.

The analysis has been performed in the 3 dimensions covered by the Cradle-ALP project:

- Policies and business support
- Technologies
- Business models

With the aim to take stock of the status quo, identify gaps and barriers for the circular transformation of the economy, as well as opportunities for fostering this transformation.

In each region, the analysis focused on the industrial sectors to be involved later in the project in industrial transformation pilot activities. In the case of the region Switzerland, those sectors are polymers, chemistry and sometimes textiles and wood while the data are available.

Contents

1. Introduction to the Cradle-Alp project

Cradle-ALP aims for mainstreaming cradle to cradle (C2C) approaches, circular design and circular substitutions (from the alpine region) for linear products in industrial processes, in different industrial sectors. The Alpine Space has many natural resources and the technologies to substitute fossil raw materials and toxic substances from production with circular and environmentally friendly alternatives. This should lead to the fact that materials and products can be led back into a healthy cycle after use. The focus of this project shall be on the substitution of chemical and fossil based/unsustainable materials with more circular, sustainable and bio-degradable ones.

First, the partners will build a broad awareness and understanding in the public, the relevant industries as well as among stakeholders from policy and innovation intermediaries, for the opportunities, barriers and mechanisms of the transformation of industrial products towards higher circularity by means of C2C approaches, circular design and circular substitutions. Business support providers shall be trained to accompany the transformation of businesses along more circular value chains.

In a second step, the partners will explore in details and test opportunities for implementing C2C approaches, circular design and circular substitutions along specific value chains in the chemistry/plastics and wood/forestry sectors supported by digital technologies. Building on a thorough multidimensional (technology, policy, economy, etc.) roadmapping exercise, transnational groupings of stakeholders – including businesses – will be installed, with the aim to transfer the C2C roadmaps into industrial practice along exemplary value chains.

Finally, the partners will work towards ensuring a transnational policy convergence towards transnational S4 strategies in the priority sectors of the project and initiate common cross border funding instruments for the industrial C2C transformation.

2. Objective and scope of the regional ecosystem Cradle2Cradle maturity analysis

The regional ecosystem maturity analysis performed in each project region is part of a larger set of activities, building together a transnational ecosystem Cradle2Cradle maturity analysis. The latter comprises:

- A regional ecosystem maturity analysis, performed in each project region,
- A transnational survey on the consumers' perspective on Cradle2Cradle in the Alpine Space,
- A transnational comparison/benchmarking in the dimensions policies/business support, technologies and business models.

The overarching aim of the transnational ecosystem maturity analysis is to is to understand the relevance of circular economy and more specifically the Cradle 2 Cradle principles in each of the project region within the triangle: policies/business support, technologies/knowledge, and business models/practices.

Practical implementation in the context of the Cradle-ALP project

In order to ensure a high relevance of the regional ecosystem maturity analysis for a successful implementation of the Cradle-ALP activities, the partners decided to focus the analysis on the

industrial sectors to be addressed in the roadmaps to Cradle2Cradle transformation. Those sectors are polymers/plastics, wood/furniture, chemistry/materials, fibres/textiles, packaging.

The results of the analysis shall provide the basis for the development of sectoral Cradle2Cradle industrial transformation roadmaps in the five selected sectors (WP2), thus ensuring a smooth transition between WP1 - Capacity building for Cradle2Cradle transformation and WP2 - Roadmaps to Cradle2Cradle transformation.

Remark: this practical approach represents a deviation from the Application Form, where the analysis was described as more generic and meant to provide input for capacity building activities to performed in WP1.

Scope of the analysis in the Cradle-ALP project

The analysis integrates status quo, gaps and barriers, potentials for transformation, as well as good practices and failures to learn from within the triangle policies/business support, technologies/knowledge, and business models/practices.

It has been performed through a combination of desktop research, building on the knowledge already available among project partners and the previously performed identification of good practices, and interviews/workshops with regional experts and representatives of companies.

- **Status quo and good practices analysis**

The scope of the status quo and good practices/failures analysis in the dimensions policies/business support, technologies/knowledge, and business models/practices was aligned with the topics identified as a result of the identification of good practices and lessons learned (D.1.1.2) and the capitalisation workshops (D.1.1.3).

The following table shows the scope of the status quo analysis for the transnational ecosystem maturity analysis:

Policies and business support	Technologies	Business models and practices
▪ Regional strategies/policies fostering circular economy and more specifically C2C principles (fully closed loops). ▪ European and national/regional strategic documents (e.g. technology roadmaps). ▪ Funding schemes ▪ Further business support measures	▪ Significant technology and knowledge providers (Higher education and research organisations, technical centers, pilot infrastructures, innovation platforms, etc.) located in the project regions	▪ Role model companies ▪ Relevant industrial clusters and industrial networks

The partners performed a mapping for each project region according to the items listed here above.

- **Gaps and barriers – potentials for transformation**

At project level, the identification of gaps and barriers for a better uptake of the cradle-to-cradle principles in industrial practices, as well as the identification of potentials or opportunities for such a transformation is a core result of the transnational comparison/benchmarking in the dimensions policies/business support, technologies and business models.

The partners collected input for the transformation ecosystem analysis by collecting such gaps and barriers as well as potentials for transformation at the regional level. This was done through a series of direct interaction with regional experts and representatives of companies, either in bilateral discussions (interviews) or in the context of event, such as workshops, group discussions and fairs. The partners in each region organized those activities according to their local context. For example, industrial fairs could be used to interview several companies on the same day, cluster board meetings or awareness could be used to have a group discussion with the participants.

Scope of the regional analysis in the region Switzerland

The analysis in the region Switzerland focused on the following sectors: polymers, chemistry. And textiles, wood while the data is available. The results of the analysis are displayed in the following chapters of this deliverable.

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3. Policies and business support

Policies

The following relevant policies were identified:

Generic level	▪ Switzerland does not have yet a dedicated national circular economy legal framework. However, the ordinance on the avoidance and the disposal of waste based on the Environmental Protection Act (Umweltschutzgesetz, USG) is considered by the experts as a political framework. This ordinance aims to limit environmental pollution by waste through measures and to encourage the sustainable use of natural raw materials. ▪ A parliamentary initiative 20.433 to strengthen the circular economy. Among other things, the draft includes the possibility of imposing requirements on the circulation of products and their packaging based on their environmental impacts. These requirements cover provisions on recycling, lifespan extension of products, repair, consumer information, etc. The bill also foresees the promotion of innovative initiatives by business, science and society by means of platforms, pilot projects and industry agreements. ▪ The ordinance on climate disclosures (corporate sustainability reporting directive) which will come in force on 1 January 2024 include the reporting of qualitative and quantitative information on the material topics of the entire value chain. ▪ The ordinance of beverage packaging target the recycling of at least 75% of PET, Alu and Glass. ▪ The 2030 sustainable development strategy targets the reduced of materials footprint substantially and in harmony with the 1.5-degree target set in the Paris Climate Agreement. ▪ ISO 14021: definition of recyclable
Sector Polymers/Plastics	No specific policy
Sector Chemistry	No specific policy

National/regional strategic documents

The following relevant European and national/regional strategic documents identified:

Generic level	▪ EU Circular Economy strategy: presented on 11 March 2020, this strategy focuses on: - Stricter requirements for more sustainable design and production - Consumers responsibility - From 2021, a ban on certain single-use products - Financial incentives for companies that choose to develop solutions based on the circular economy Circular economy action plan (europa.eu) ▪ The EU's Bioeconomy Strategy encourages biogenic raw materials' sustainable and circular use. ▪ The Circularity Gap Report for Switzerland published in 2023, by Deloitte, circular economy Switzerland and experts from circle Economy provides the status-quo of the Swiss circularity and valuable insights on the crucial its role in tackling climate change. It underscores the challenges and highlights the opportunities of the circular economy. According to this report only 7% is circular, the industries need to develop alternatives to non-renewable biomass and inputs. 230320_CGR-Switzerland-Report_8mb.pdf (circular-economy-switzerland.ch) ▪ The cantonal sustainable development strategy 2021-2031 - Fribourg aims to make Fribourg an exemplary sustainable canton by integrating environmental responsibility, economic efficiency, and social solidarity into public policies. Stratégie de Développement durable 2021-2031 | État de Fribourg ▪ The circular strategy in Zurich and other Switzerland' cantons. ▪ The circularities declaration: can help have a clear and shared definition/vision of what is a circular city. It allows local and regional governments across Europe to communicate their commitment to supporting the circular transition. https://circularcitiesdeclaration.eu/
Sector Plastics / Polymers	▪ The European Commission published the roadmap strategy on plastics in a CE. The roadmap identifies 3 mains issues that need to be addressed: - A large portion of fossil materials-based plastics. - The low rate of recycling and re-use plastics - And the lack of waste plastic disposals They proposed to promote secondary plastics market though bio-

	designing products (durable or better recyclability properties), to develop a clear sustainability framework for biodegradable plastics, and to invest in educational programs toward public and consumers. ▪ EU Circular economy with a focus on plastics and textiles A 2030 & 2050 Roadmap
Sector wood/Furniture	▪ The Circular Economy Roadmap of the Canton of Fribourg giving a clear definition of circular economy, the advantages, and the drawbacks of its implementation in Fribourg, with a strong focus on the Nutrition/Foods and Buildings/construction sectors.
Sector Chemistry	▪ No specific sectoral policy

Funding schemes and further business support measures

The following relevant funding schemes were identified:

Generic level	▪ The circular Bio-Based Europe Joint Undertaking: a €2 billion partnership between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries under Horizon Europe https://www.cbe.europa.eu/ ▪ The programs of the Federal Office for Territorial Development support projects that meet the UN's sustainable development goals. In 2018-2019, for example, they funded Business Sustainability Today, an independent digital information and discussion platform dedicated to corporate sustainability and sustainable development goals, and "Box ton Lunch", which aims to encourage using reusable containers instead of disposable plastics for food. In 2023 the state of Fribourg is confidently leading a project to completely overhaul the sustainable action portfolio of Fribourg's communes. The goal of this project is to ensure that the communes confidently align with the objectives of the 2030 sustainability agenda. https://www.are.admin.ch/are/fr/home/developpement-durable/ ▪ Swiss National Science Foundation (SNSF) play a key role in shaping research in Switzerland, in different technology sectors. A large number of collaborative projects in fundamental research are fund by the SNSF.

	▪ Swiss innovation agency (Innosuisse), the first funding schemes in Switzerland to support innovation projects between companies and research institutes. ▪ The Novel Regional Policy (NRP) of the canton of Fribourg provides financial support for innovative projects aimed at improving the attractiveness of the canton and increasing added value, while aiming for qualitative and sustainable growth. This program enables all economic, academic, tourism and political players to work together towards a common goal: increasing competitiveness in the regions of the canton of Fribourg. ▪ Intereg A, B and C program which strengthens economic and social cooperation within the EU and its neighboring countries, including Switzerland and its various cantons. ▪ HES-SO Ra&D Funds ▪ The Zewil startup Accelerator funding program supports startups and companies dedicated to the sustainable development goals by enabling them to develop their ideas and reach their goals. ▪ Minerva Stiftung Foundation https://minerva-stiftung.org/ ▪ Mava foundation https://mava-foundation.org/fr/ ▪ Ellen MacArthur Foundation What is a circular economy? | Ellen MacArthur Foundation
Sector Polymers/Plastics	No specific funding scheme
Sector Chemistry	No specific funding scheme

The following relevant business support initiatives and alliance were identified:

Generic level	▪ The circular economy transition – a Swiss-wide business lab for SME's offers a large network of scientists and experts to help industrials explore opportunities in field of sustainability and circular economy. Every year they host the business lab core group programme tailored for Swiss SME's. the project is subdivided in 4 parts: Swiss wide startup incubators, a business lab, a large network towards circularity and R&D policies requirements. https://www.cetransition.ch/en/business-lab ▪ The Zero Waste Innovation Lab – Switzerland was created by Impact Hub Basel in collaboration with FHNW, Innosuisse and the foundation Christoph Merian Stiftung to promote economic processes and zero waste innovations that lead to a far-reaching, ideally even complete reduction of waste and resource consumption at every stage of the supply chain. The regional branches are created such as in Basel, Zewill etc … https://zerowasteswitzerland.ch/en/ ▪ The Swiss Recycle Platform: The Swiss center of competence for recycling and circular economy. Its mission is to communicate to raise awareness of recycling and the circular economy. It supports the exchange of experience among members and partners and facilitates synergy. Swiss Recycling is an independent non-profit organization that services as the expert contact for all matters relating to source-separated collection and recycling. Swiss Recycling is funded completely by annual and project-related contributions from its members and revenue from services. It works with the federal government and the cantons on an informal basis but does not receive any public-sector funding. https://swissrecycle.ch/fr/actuel ▪ La fabrique circulaire: a circular economy platform supported by the Migros Pioneer Fund and the DSS+ company, offers multi-year support to companies in their transformation and implementation of circular economy principles. https://lafabriquecirculaire.ch/ . You can carry out a circularity check on their website https://check.lafabriquecirculaire.ch/ ▪ The Zero carbon academy: they provide insights research reports with deep analysis of market, trends, growth drivers, competitive landscapes, and consumers behavior, ensuring a strategic edge in today's rapidly evolving journey to a net Zero carbon future and a sustainable business basis. The latest report about Net zero & textiles: industry attitudes and challenges is available on their website. https://www.zerocarbonacademy.com/ ▪ Go for impact encourages the dissemination of methods enabling companies to set credible climate targets. Companies are thus

	supported in their process of transforming from a linear economy to a circular economy. https://go-for-impact.ch/ ▪ Sanu Durabilitas: Foundation focusing on circular engagement in policy work and practical research Kreislaufwirtschaft - sanu durabilitas ▪ CE123: Toolox for the promotion of CE in companies ▪ EPEA Switzerland
Sector Polymers	No specific support
Sector chemistry	No specific support
Sector Wood/ Furniture	PUSCH: In collaboration with the Migros Pioneer Fund, Pusch launched the MAKE FURNITURE CIRCULAR (MFC) initiative in 2019. For three years, office furniture and mattresses were used as examples to demonstrate the potential of circular design, sourcing, production and economy for the Swiss economy. Économie circulaire du meuble (pusch.ch)

4. Technologies and knowledge providers

Technology and knowledge providers

The following relevant technology and knowledge providers were identified:

Generic level	▪ The national Research Program "sustainable Economy: resource-friendly, future-oriented innovative NPR 73 aims to generate scientific knowledge about sustainable economy that uses natural resources sparingly, creates welfare and increases the competitiveness of the Swiss economy. ▪ University of st Gallen: - Author of the Circular Ecosystems: Business Model Innovation for the Circular Economy published in 2020. - Laboratory for Applied Circular Economy (LACE) project funds by the SNSF, aims at consolidating practical knowledge for the transition towards a circular economy. By demonstrating that the principles of circular economy are applicable to an industrial production system, the LACE gained the interest of eight renowned Swiss companies: Bien-Air dental AG; Losinger-Marazzi AG; Logitech; V-ZUG AG; Tisca Tiara; SV Group; Nespresso and Dr.Gab's. With those partners, the LACE will enable a bottom-up implementation of circular economy principles on a company or a product level. https://data.snf.ch/grants/grant/172471 ▪ Swiss Federal Institute of Technology (EPFL): - TECH4IMPACT: A "data-driven circular economy research and innovation is going to turn the scarce data challenge in opportunities with the objective to transform linear value chains into regenerative value circles. https://www.epfl.ch/innovation/domains/t4i . -The certificate od Advanced Studies in Circular Value Networks Certificate of Advanced Studies in Circular Value Networks at EPFL. (epfl-executive-education.ch) ▪ EMPA the Swiss Federal Laboratories for Materials Science and Technology, conducts cutting-edge materials and technology research. Through its Technology and society laboratory TSL EMPA creates and transfers knowledge supporting sustainability transition.

	▪ ZHAW (Institute of Product Development and Production Technologies IPP) -Center for International Industrial Solutions -Institute of sustainable development institute of natural resource sciences and center for product and process development, LCA research group -Master in Circular Economy, Certificate of advanced studies in Managing Circular Economy ▪ HES-SO (University of Applied Sciences and Arts Western Switzerland) through several calls for thematic projects as well as collaborative projects with companies and SMES affirms its commitment to the development of more sustainable and circular solutions for the planet. The latest call for project (Driving Urban Transition) in 2022 aims to propose a circular urban pathway by urban resource sharing and circularity and Nature based solutions. -HEIA-FR develops several collaborative projects with industrial partners towards circularity goals within our institutes Biofactory Competence Center (BCC) Bioprozesstechnik - Fribourg - Biofactory Competence Center (bcc.ch) , Institute of Applied Plastics Research (IRAP), Plastics Innovation Competence Center PICC Home | PICC and Institute of Chemical Technology: Chemtech ChemTech - Institute of Chemical Technology - HEIA-FR. Others programs are also develop with academics in University of Fribourg and FHNW (Institute of polymer Engineering) -HEG-FR proposes a certificate of advanced Studies circular economy towards circular business models and transition to a linear to circular value chain. ▪ Innovation Booster Applied Circular Sustainability: from 2021 to 2024, this program supports the pre-development of radical solution ideas for 100 % recyclable products and systems for all industries and economic sectors in Switzerland.
Sector Chemistry	▪ COUNTLESS (EU program): a cost-effective production of lignin platform chemicals extending the biobased chemicals portfolio. Involving partners covering the entire value chain, COUNTLESS will demonstrate the first continuous process of its kind in industrially relevant conditions for the cost-effective and sustainable production of lignin-based platform chemicals. It will also show how such chemicals can be applied to a variety of end uses, leading to the conclusion of licensing agreements and generation of revenue streams. https://www.cbe.europa.eu/projects/countless

	▪ Institute of Chemical Technology: Chemtech specialized in developing news materials. -Innosuisse 105.737IP: developing new lignin and its derivates as additives, fillers and reagent for bio-based high-performance materials and composite for the plastics industry. ▪ Biofactory Competence Center (BCC)
Sector Polymers	▪ CHAMPION: a Research and Innovation Action (RIA) aiming to replace conventional polymers with novel bio-based polymers for their application in coatings, textiles, home care uses and structural adhesives. The CHAMPION project includes 14 partners from 6 European countries coordinated by the University of York Home | Champion Project (champion-project.eu) ▪ No Agro Waste: Eu research program to develop alternatives to fossil plastics, one of its potential solutions is to extract component of unavoidable waste from different food production sectors and use them to make biosourced and biodegradable plastics. ▪ Institute of Applied Plastics Research (IRAP)- Fribourg ▪ Plastics Innovation Competence center (PICC) - Fribourg aims to improve the circularity of existing plastics through ecodesign-recycling and digitalisation. -Rcoins: Plastics Packaging Recycling system, smart bins to address the issue of plastic recycling in an innovative and novel way -Bio based smart packaging for enhanced preservation of food quality. The bio-based and compostable packages address the needs of fresh and pretreated foods. -innovative thermoplastic made from chicken feathers. ▪ ETH Zurich: Group for Sustainability and Technology - SusTec: circular economy group starting out with research related to packaging and plastics, building sector, textiles, electrical and electronic equipment, and many other fields. - SusTec: OREO project in collaboration with the petrochemical industry to evaluate optimization strategies for plastic waste streams and the role of mechanical and chemical recycling technologies. - SusTec: INCREASE EU project focused on the uptake of recycled plastics in Electrical and Electronic Equipment.
Sector wood /furniture	▪ BFH institute of material and wood technology ▪ ETH Zurich institute of building material: Sus.Lab brings sustainability research into practice in building construction.

5. Business models and practices

The following role model companies were identified:

Sector Polymers/Plastics	▪ Huhtamaki's innovative packaging solutions for good and beverages will be recyclable, reusable, or compostable as of 2030 https://www.huhtamaki.com/ ▪ Ponera Group' unique logistics solution based on an innovative and reuseable modular system of cost – and weight-saving bio-polymer-based pallets. https://www.poneragroup.com/ ▪ ReCircle is replacing single-use packaging with reusable, high-quality and more eco-friendly alternatives, which can be purchased and returned by all partners https://www.recircle.ch/ ▪ Early bird ski produces the worlds most advanced skis (eco freeride skis). All skis are built with bio-based and recycled materials. They use sustainably sourced wood for the core, sidewall and wooden topsheets, biobased PA topsheets, bio based and recyclable resin and all-natural ski wax. Earlybird skis are delaminatable and recyclable at the end of the lifetime. https://earlybirdskis.com/ecotech/ ▪ Coop is switching from plastic produce nets to biodegradable cellulose ones for its organic onions, oranges and lemons. ▪ BioApply makes biodegradable and compostable plant -based bags and packaging. ▪ Re-source program by SCOTT was set up to develop and promote corporate responsibility. This program offers products that comply with sustainability criteria that stipulate that the product concerned must contain a minimum of 50% recycled materials, or that it must be made from 100% certified renewable materials. This means the absence of non-biodegradable perfluorinated and polyfluorinated compounds (PFCs) in their clothing and sports equipment, the use of recycled materials of organic origin and/or renewable materials certified by third parties, and a minimum of 40% eco-responsible materials. Programme Re-Source by SCOTT | Scott (scott-sports.com)
Sector wood/furniture	▪ Swico Recycling offers a pick-up service for used IT & office equipment, communication, and medical technological devices. With qualified recycling companies they give these products a new life. https://www.swico.ch/de/recycling/ ▪ Swiss National Railway SBB renovates its coaches rather than replacing and builds wood-based and easy to de deconstruct engineering buildings, aiding future reuse. SBB is creating a digital material registry, so that older structures can act as Bank, providing secondary materials for use.

	https://www.sbb.ch/en/home.html
Sector Textile/outdoor sport	▪ Niuway is a tent rental service for festivals. The tents can be easily cleaned, repaired or completed with spare parts. https://niuway.ch/ ▪ Revario: Marly-based start-up produces High-quality. Eco-friendly trail running clothing that is 100% made in the canton of Fribourg. In addition, Revario offers a free lifetime repair service in case of damage to the clothing (except for natural wear and tear). The project is innovative, sustainable, and fully in line with the circular economy. https://www.revario.ch ▪ Ocean Safe AG is a Swiss textile technology company which helps brands and retailers develop fully circular products. Part of their concept is establishing fully certified and transparent value chains from fibre to finished products. It has developed proprietary synthetic textile fibres and yarns, which are circular, biodegradable, toxin-free and Cradle to Cradle Certified Gold. https://www.oceansafe.co/ ▪ wear2wear is an innovative partnership between companies that have committed to running their businesses in a sustainable and environmentally-friendly manner. Each partner makes an individual contribution to the closed textile loop. https://www.wear2wear.org/en/ : the consortium gathers all the specialist of the functional textile supply chain from the fiber producer to the washing service and dismantling or upcycling services. ▪ Climatex specialize in climatizing and regenerative textiles. They are cradle to cradle certified https://www.climatex.com/en/ ▪ Texaid: has extensive know-how in the collection , sorting and recycling of used textiles https://www.texaid.ch/fr/
Sector Chemistry	▪ Impossible Materials is a deep-tech spinoff company from the Chemistry Department at the University of Cambridge (UK). The company's mission is to enable businesses to work towards a circular economy by providing plant-based formulation ingredients for colouring applications. They produce a 100% cellulose-based white pigment to replace the controversial market leader titanium dioxide (TiO2) for use in paints, inks, cosmetics, pharma, and food. https://www.impossiblematerials.com/

	▪ Bloom renewables: Created in 2019, Bloom Biorenewables SA is a spin-off from the École Polytechnique Fédérale de Lausanne (EPFL). Bloom has developed the first technology to selectively convert the most abundant biopolymers on Earth – cellulose & lignin – into added-value chemical products. They also act on a technological level by developing an aldehyde assisted fractionation (AAF) relevant for depolymerisation and deoxygenation. They can actually count onto 5 patents in their Intellectual Property assest to promote this shift towards a green circular society. https://www.bloombiorenewables.com/ ▪ Bcomp: Founded by two ski enthusiasts and two young researchers, this Fribourg-based start-up specializes in the development of composite materials based on natural fibers. From sports to car bodies and watches, they have a wide range of applications. Through high-performance bio-based materials, they offer sustainable solution without compromising performance. https://www.bcomp.ch/ ▪ UCB Farchim in the canton of Bulle has halved its CO2 footprint thanks to a system for recovering and treating its waste water.
Generic sector	▪ Metawaste - Genius: the first Digital waste management platform launched in Fribourg in 2022 as a solution to a growing demand from national and international companies to optimize their waste management, optimize collection, track recovery and disposals and ultimately measure CO2 emissions via a digital tool. https://www.metawaste.com/en/platform

Relevant industrial groupings and networks

The following industrial groupings and networks were identified:

Sector Polymers/Plastics	▪ ClusterProcess4sustainability https://www.process4sustainability.eu/en ▪ Cleantech-alps: They promote western Switzerland industry and institutes as a European hub for clean technologies in order to foster the sustainability https://www.cleantech-alps.com/fr/index.php ▪ Bio-Alps Association : western Switzerland Life science Cluster https://bioalps.org/ ▪ Swiss Plastics Cluster created in 2005 in collaboration with the university of Engineering and Architecture of Fribourg. Their mission is to foster innovation and new technologies through collaborative applied research projects with companies including developing biobased alternatives for plastics. ▪ Innosquare, a platform for collaboration between businesses and universities, encourages inter-company "research & innovation" projects and the initiation of intelligent transformations. Home | INNOSQUARE
Sector Chemistry	▪ Cluster Food Nutrition ▪ Innosquare

6. Gaps and barriers – potentials for transformation

The following table summarizes the gaps and barriers as well as potentials for an industrial transformation towards an economy following the cradle-to-cradle principles in the relevant sectors for the region Switzerland.

Sector	Gaps and barriers	Potentials for transformation
Sector Polymers/Plastics	▪ Lack of legal framework and obligation towards CE ▪ Lack of CE vision, strategy, or roadmap: a challenge to develop policy for a complex cross-sectoral issue. ▪ Low prices for unsustainable products and primary resources ▪ Lack of transparency in supply chains ▪ Market barriers - Low acceptance of secondary raw materials on the market / CE business models ▪ Lack of CE indicators and targets ▪ Low compatibility or performance of bio-based materials with technical requirements ▪ High price of bio-based raw materials ▪ Lack of biobased alternatives materials. ▪ Secondary non-toxic materials ▪ Need of digital sorting technology to promote recycling. ▪ Advanced circular & resource -efficient manufacturing ▪ Advanced plastic recycling process / technologies ▪ Low performance or quality of certain bio-based materials. ▪ High R&D costs	▪ Parliamentary initiatives are going on to establish a legal and harmonious framework. ▪ Incentives tax on recycling materials ▪ Proposition of financial support for information and consulting services as well as education and training towards CE by business lab, platform, and competence center ▪ Consumer information and circular economy Logo (or sustainable) on products ▪ Extend producer responsibility to material recovery. ▪ Availability of funding for circular transformation projects ▪ Promoting development of new and safe competitive technologies and materials in alternatives of fossil and raw materials. ▪ Use clear targets on different levels (recycling rates or content, consumption footprints etc. ▪ Foster access to relevant CE knowledge by financing R&D and innovation projects. ▪ Development of hybrid materials to help keeping the performance in certain applications.

	▪ The high level of outsourcing and subcontracting inherent in circular strategies: product reconditioning and re-use of raw materials are not always carried out locally.	
Textiles	▪ Advanced recycling process / technologies/ Business model ▪ New biodegradable and biosourced materials ▪ Legal uncertainties related to new business models. ▪ Information to consumers ▪ Alternatives for perfluorinated and polyfluorinated compounds ▪ Implementation of certifications	▪ More efficient use of materials ▪ Striving for autonomy in terms of resources ▪ High innovation stimulation ▪ SME's Competitivity stimulation
Chemistry	▪ Strong safety requirement	▪ More efficient use of materials ▪ Striving for autonomy in terms of resources ▪ High innovation stimulation ▪ SME's Competitivity stimulation

7. Conclusions

The Switzerland Circularity Gap report of 2023 revealed that only 6.9% of materials used in Switzerland are sourced from recycling or other secondary sources. This leaves a 63% gap that needs to be filled, which is a cause for concern. It is worth noting that Switzerland is often criticized for its lack of legally binding measures regarding sustainability and circular economy.

Parliamentary initiatives are being taken to address the gap in achieving the United Nations' sustainable development goals through the circular economy. The initiatives focus on defining clear circular objectives and promoting greater accountability among consumers and producers.

Each canton is currently implementing its own circular economy strategy while waiting for a national policy to be put in place. In the state of Fribourg, both the circular economy roadmap and the sustainable strategy focus on the agri-food and building sectors due to the local ecosystems and their high growth rates. Companies or SMEs in other sectors such as plastics and chemicals are receiving support for their circularity initiatives through several HES-SO FR institutes, including PICC, IRAP, and Chemtech, as well as the Swiss plastic cluster and the Innosquare innovation platform. The objective of these collaborative research projects is to increase the lifespan of current materials and develop new biodegradable materials using processes that are eco-friendly and sustainable. There are many ongoing projects that are focused on reducing waste and promoting sustainability. These projects aim to use various forms of biomass (such as wood, feathers, and food residues) and smart devices (like recycling-sorting machines and shelf-life-extending tools) to achieve their goals. They are also aimed at encouraging the reuse of materials. There is a high demand for new biodegradable materials that can maintain their performance while ensuring safety in their use. It's worth mentioning that the first waste digitization platform in Switzerland has been developed in Fribourg.

Although there is no legal obligation, companies and manufacturers are spearheading the integration of the circular economy in the creation of their products and services, as well as in production and recycling or reusing of materials. However, implementing these practices requires a considerable financial investment. Funding schemes that support innovation and research and development projects in the circular economy can help facilitate the shift towards a circular economy. These schemes are available at both national and regional levels, such as Innosuisse, SNSF, NPR, OFEN, and Interreg at a transnational level. The federal government has allocated 217 million francs of funds, which may be doubled by the cantons, over the next eight years to finance circular projects. Regardless of the different sectors, these schemes can play a significant role in promoting the circular economy.

Collaborative projects that involve industry players, competence centers, and academics play a crucial role in driving innovation. Switzerland is making sustained efforts to promote circular economy principles through multidisciplinary initiatives and collaborative platforms for

startups and SMEs. These initiatives and platforms are significant assets in the journey towards achieving net zero waste. Leading universities in Switzerland, including ETH Zurich, EPFL, the University of St Gallen and the University of Zurich offer high-level degree courses on sustainability and the circular economy. These universities are at the forefront of both technology development and industrially viable business models, ensuring the future industry players competitiveness.

Extensive communication with the public is crucial for companies and politics to prepare for implementing circular business models and engaging in the circular economy. Interestingly, the demand for eco-friendly products and technologies comes from consumers who are increasingly concerned about the planet, putting pressure on companies to adopt sustainable practices. Swiss companies, particularly those located in the canton of Fribourg, are pleased to be able to delegate the additional responsibility of innovation to institutes, competence centers and clusters. This can be done with the help of public funding or funding from foundations that are active in the circular economy. However, before introducing any binding measures or incentives, it is important to ensure that the necessary infrastructure is in place.

The aim of achieving zero waste by 2050 has been set on a national and political level. However, the specific measures required to attain this ambitious but realistic objective and make Switzerland self-reliant in terms of natural resources supply still need to be defined.

8. Annexes

No annexes