

DEVELOPMENT OF CIRCULAR ECONOMY IN LATVIA

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Abstract. Nowadays, to develop a sustainable, low carbon, resource-efficient and competitive economy, transition to a more circular economy is essential. Circular economy is very complex issue. The aim of the research is to investigate nature of circular economy, its status and current trends in Latvia and to develop some recommendations to improve the situation. The results of the research show that circular economy implementation milestones are: legal framework, administrative conditions, economic instruments and public education and awareness.

Keywords: circular economy, sustainable development, life cycle, Latvia

Introduction

Innovations are always driven by demand. However, achieving an effective management and implementation of innovative solutions as part of regions' smart specialisation strategies are not as simple as that. They require support from the public sector, strong backup in research and enterprises ready to take on the initiative. Nowadays, to develop a sustainable, low carbon, resource-efficient and competitive economy, transition to a more circular economy is essential.

The **purpose** of the research is to investigate nature of circular economy, its status and current trends in Latvia and to develop some recommendations to improve the situation.

The author uses theoretical and empirical study of the issue, using European Commission and Latvian institutions documents, semi-structured interviews and analysis of personal experience.

Circular economy concept

Circular economy is one of the emerging answers to the ever-growing consumption and the accompanying waste production. There are various possibilities for defining a circular economy. In line with eco-industrial development, a circular economy is understood as "realization of closed loop material flow in the whole economic system" [9]. Another definition states that a circular economy is the circular (closed) flow of materials and the use of raw materials and energy through multiple phases" [17]. The Ellen MacArthur Foundation defines circular economy as "an industrial system that is restorative or regenerative by intention and design" [8].

Unlike the traditional linear economic model based on a 'take-make-consume-throw away' pattern, a circular economy is based on sharing, leasing, reuse, repair, refurbishment and recycling, in an (almost) closed loop, where products and the materials they contain are highly valued (see in Fig.1). In practice, it implies reducing waste to a minimum [1].

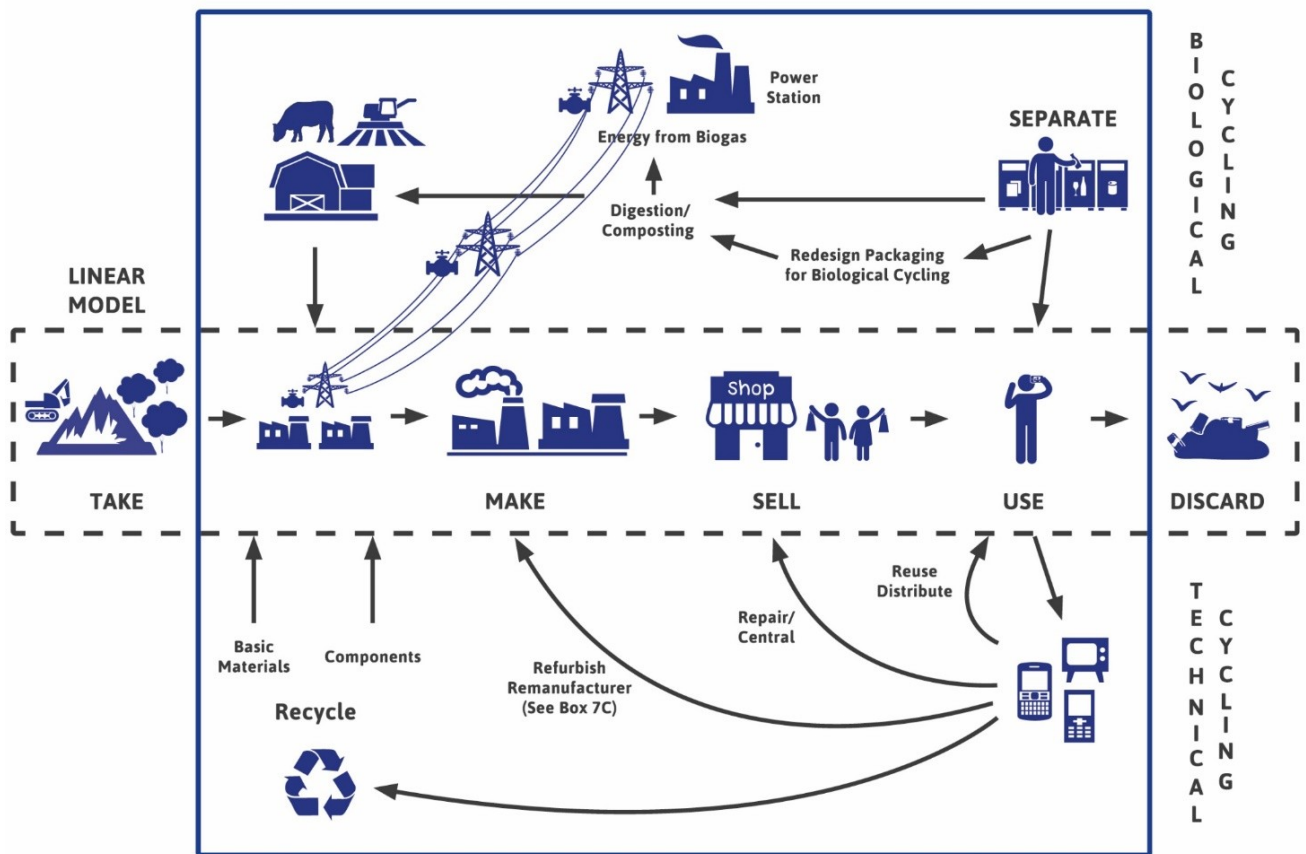


Figure 1. From the Linear to the Circular Economy: Circular Economy Model

Many other similar documented concepts which are part of the circular economy can be found, like cradle-to-cradle [2; 13], eco-design and whole process design [12], industrial ecology [5], the closed loop lifecycle management [11], zero waste [4; 18] and others. In this paper, the author uses the broad meaning of circular economy, which includes a restorative and regenerative industrial system, societal innovations necessary for implementing these systems, changes in consumer behaviour and ways to measure the success.

Circular economy legal landscape

On 2 December 2015, the European Commission presented a new circular economy package. It aims to stimulate Europe's transition towards a circular economy which will boost global competitiveness, foster sustainable economic growth and generate new jobs. The plans will extract the maximum value and use from all raw materials, products and waste, fostering energy savings and reducing green house gas emissions to be met by 2030 [7]. It is widely recognized by scholars and experts on international and EU level that waste management and waste reduction is an important resource to implement circular economy and green and sustainable growth [15; 16].

In Latvia the responsibility of the policies related to eco-innovation and circular economy is scattered among a range of institutions, primarily Ministry of Economy, Ministry of Education and Science and Ministry of Environment. The majority of RDI-related measures, but also a large share of environment-focused policy issues are financed from the EU Structural Funds.

In the Sustainable Development Strategy for Latvia until 2030 one of the priorities is "Nature as future capital", which aims to position Latvia as a leader in protection, promotion and sustainable use of ecosystem services. In addition, the National Development Plan 2014-2020 integrates sustainability concerns in a number of priority areas, including economic growth, energy efficiency and energy production, growth-oriented territorial development and sustainable management of natural and cultural capital.

The main national strategic documents that form the basis for the eco-innovation and

circular economy policy landscape in Latvia are listed below:

- Guidelines for Research, Technology Development and Innovation 2014-2020.
- Guidelines for Energy Sector Development 2014-2020 and the Latvian energy long-term strategy 2030.
- Guidelines for National Industrial Policy 2014-2020.
- Guidelines for Environment Policy 2014-2020.
- National Plan for Waste Management 2013-2020.
- Green Public Procurement Promotion Plan 2015-2017

Targeted policy documents for promoting and utilising the principles of circular economy are only in the early stages of development. The Declaration of the new Government of Latvia adopted in February 2016 highlights among its priority tasks the following action lines:

- Further development of an integrated and economically beneficial waste management system in order to fully use the opportunities of the circular economy;
- Implementation of an infrastructure plan for the use of alternative fuels, ensuring the mobility of vehicles that use alternative energy sources in the whole territory of Latvia;
- Design of a bioeconomy strategy and support mechanisms for forging synergies between traditional industries, such as agriculture and forestry, and nationally strong and established sectors, such as pharmaceuticals, construction, energy and ICT, to develop higher added value products from local resources.

Circular economy and eco-innovations development in Latvia

The key eco-innovation areas in Latvia have not changed markedly in recent years. Sectors that continue to develop include renewable energy and energy efficiency in residential buildings, forest-based industries and eco-cosmetics. In addition, service sectors that use Latvia's 'green image' as a key selling point – e.g. tourism, leisure and recreation and biological/organic agriculture – maintain their activities.

The green technology start-up scene in Latvia at the moment does not consolidate any emerging eco-innovation area in particular. There are new ideas and enterprises incubated in a wide range of thematics, including electromobility, wind energy, ecodesign, eco-innovative solutions in construction, LED lightning applications, composite materials and metalworking to develop material characteristics that are necessary to substitute rare natural resources [10].

The main drivers for eco-innovation in Latvia are certainly the energy and resource efficiency targets of the EU's Europe 2020 strategy, which have been integrated in national policy documents and corresponding funding lines, most notably the EU Structural Funds envelope. As has been already highlighted, together with national co-financing Latvia plans to invest around €550 million in research, development and innovation (RDI), €565 million in transition to lowcarbon economy and €733 million in environmental protection and resource efficiency by 2020 [14]. The Latvian Smart Specialisation Strategy emphasises the focus on developing bioeconomy, smart materials and sustainable energy solutions as three out of five key areas for RDI investment. This ensures a sustained political and financial commitment for the development of green economy – an area that previously has not been high on the political agenda in Latvia.

Equally important is the increasing support to eco-innovation from other international funding programmes, such as the Norwegian Financial Mechanism. In 2014, with the support of the Norwegian Financial Mechanism's programme, "Green Industry Innovation", the Green technology incubator was launched in Latvia, which was the first innovation support instrument specifically dedicated to the development of eco-innovative companies and eco-innovative entrepreneurship in the country.

The abundance of natural capital such as forests, soil and water can also be identified as drivers of eco-innovation. Almost half of Latvia's territory is made up of natural ecosystems that have gone largely untouched by humans. Low population density and relatively low levels of industrial pollution highlight the "green image" of the country, making it a good destination for eco-tourism and travel. Consequently, it also promotes a wide range of eco-innovation businesses

and related activities. On the other hand, the accessibility of clean natural resources could arguably foster less societal awareness about environmental issues, as ecosystem services are taken for granted and there is less societal pressure to place such issues on policy agendas.

The main barriers to eco-innovation development and diffusion in Latvia are related to the small number and size of companies active in environmental technology fields and the low innovative capacity of companies in general, especially in the medium- and high-tech fields. In addition, the very limited number of large companies that have resources to divert to RDI and new technology adoption, and the low level of early-stage investments that are available for green technology development, are important hampering factors [3].

Another reason that contributes to the fact that eco-innovation is an underexploited business niche in Latvia is the relatively low societal awareness about issues of sustainable consumption and production [8]. NGOs have been active in initiating cultural change and positive influence from Nordic countries on societal and entrepreneurial awareness should not be underestimated. While the demand for eco-innovation products has been increasing in recent years, price is still a dominant factor in consumer and producer choice, which limits incentives for entrepreneurs to engage in eco-innovative activities. Latvia does not have a targeted eco-innovation or green growth policy. Green growth and circular economy vocabulary is being adopted gradually from EU directives, but the concepts and their implications in the context of the national economy remain rather poorly understood. The lack of a targeted national policy framework and overreliance on international funding schemes create a very fragmented support landscape that is not favourable to long-term green industry development.

Overall, one can say that Latvia is gradually moving towards sustainability goals, but in an ad-hoc manner due to available financial resources, international political climate and vast abundance of natural resources. There is much scope for work in the area of societal awareness, political will, policy and regulation design, and financial planning, in order to foster a truly targeted and favourable climate for eco-innovation development in Latvia [3].

Conclusions

The results of the research show that circular economy implementation milestones are: legal framework, administrative conditions, economic instruments and public education and awareness.

There are several initiatives in Latvia which facilitate circular economy, e.g. introduction of new study courses and circular economy topics in business education, new companies for peer-to-peer car lending and peer-to-peer money lending, developed sharing, lending and re-selling platforms, popular co-working places, organized social network and meetup groups. People, who are already interested in these new possibilities, can find ways to contribute and participate in collaborative economy. Much more should be done in order to inform and educate broader audience, also businesses and policymakers about benefits and peculiarities of circular economy. Besides, gap between knowing and doing also should be filled.

The author propose the following support measures, which could promote the implementation of CE development in Latvia:

- Comprehensive concordance between Ministries, especially the Ministry of Environment and Regional development and the Ministry of Economy, should be established.
- Development of cooperation between state and industry, including various support measures from the state, as well as development of industry related NGO institutions.
- Further development of Green public procurement should have a principal catalytic impact due to promoting influence to eco-design successful implementation.
- Facilitation of feasibility studies and research activities and projects focused on eco-design understanding in Latvia and necessary measures for successful eco-design development in country. Discovering and promoting successful examples of circular economy implementation in education and society in general.
- Widespread implementation of circular-economy approaches would require deep transformation of production chains and patterns of consumption.

The further more detailed studies are needed in order to clarify the priorities and the objectives in Latvia to be achieved cost-effectively targets for sustainable green growth, based on principles of the circular economy and requirements of EU legislation in this sphere.

List of Literature

1. Bourguignon, D. Closing the loop. New circular economy package. 2016. 9 p.
[http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI\(2016\)573899_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/573899/EPRS_BRI(2016)573899_EN.pdf)
2. Braungart, M., McDonough, W. & Bollinger, A., 2007. Cradle-to-cradle design: creating healthy emissions – a strategy for eco-effective product and system design. *Journal of Cleaner Production*, Issue 15, p. 1337–1348.
3. Brieze, I., 2013, Latvia is the second most green country in Europe. A myth or reality? Interview with the manager of the INTERREG project Global
4. Connett, P., 2006. Zero waste wins. *Alternatives Journal (AJ) - Canada's Environmental Voice*, 32(1), pp. 14-15.
5. Ehrenfeld, J. R., 2000. Industrial Ecology: Paradigm Shift or Normal Science? *American Behavioural Scientist*, Volume 44, pp. 229-244.
6. Ellen MacArthur Foundation, 2012. *Towards the circular economy: Economic and business rationale for an accelerated transition*, s.l.: Ellen MacArthur Foundation.
7. European Commission. Closing the loop - An EU action plan for the Circular Economy, COM (2015) 614 final, Brussels, 2.12.2015.
8. Flash Eurobarometer, 2009, Europeans' attitudes towards the issue of sustainable consumption and production
9. Geng, Y. & Doberstein, B., 2008. Developing the circular economy in China: challenges and opportunities for achieving "leapfrog development". *International Journal Sustainable Development and World Ecology*, 15(3), pp. 37-41.
10. Griniece, E. Eco-innovation in Latvia. EIO Country Profile 2014-2015.
https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/field/field-country-files/latvia_eco-innovation_2015.pdf
11. Guide, V. D. R. J., Harrison, T. P. & Van Wassenhove, L. N., 2003. The Challenge of Closed-Loop Supply Chains. *Interfaces*, 33(6), pp. 3-6.
12. Hodgett, R., Martin, E. B., Montague, G. & Talford, M., 2014. Handling uncertain decisions in whole process design. *Production Planning & Control: The Management of Operations*, 25(12), pp. 1028-1038.
13. Kumar, S. & Putnam, V., 2008. Cradle to cradle: Reverse logistics strategies and opportunities across three industry sectors. *International Journal of Production Economics*, 115(2), p. 305–315.
14. Ministry of Finance of the Republic of Latvia, 2014, Darbības programma "Izaugsme un nodarbinātība" [Operational Programme "Growth and Employment"].http://www.esfondi.lv/upload/Planosana/FMProg_270115_DP_2.pdf
15. OECD Green Growth: Material Resources, Productivity and the Environment. Paris: OECD Publishing, 2015. 176 p.
16. World Bank. Inclusive Green Growth: The Pathway to Sustainable Development. Washington DC: World Bank, 2012. 192 p.
17. Yuan, Z., Bi, J. & Moriguchi, Y., 2006. The circular economy: a new development strategy in China. *Journal of Industrial Ecology*, 10(1-2), pp. 4-8.
18. Zwier, J., Blok, V., Lemmens, P. & Geerts, R.-J., 2015. The Ideal of a Zero-Waste Humanity: Philosophical Reflections on the demand for a Bio-Based Economy. *Journal of Agricultural and Environmental Ethics*, 28(2), pp. 353-374.