THE KEY ELEMENTS OF THE CIRCULAR ECONOMY

A COMPREHENSIVE LANDSCAPE OF CIRCULAR ECONOMY

The circular economy is coming. Governments across the world, from the EU[1], to China, Japan[2] and Latin America[3] are adopting circular strategies as part of their environmental action plans. The list of pioneering businesses adopting the circular economy as a means to reduce linear risks, generate new revenues, and reduce costs continues to grow[4,5,6]. However, despite—or rather because of—circular innovations happening at every scale around the world, more specific definitions and categorisations of what does or does not belong under the umbrella term 'circular economy' remain ambiguous.[7]

The principles of a circular economy concern designing out waste, regenerating ecosystems and keeping items in use. Decoupling the economy from material flows—improving the rate of resource productivity faster than the economic growth rate—is also a consistent guide[8,9]. By evolving with the growing number of applications of circular economy principles, and consolidating these strategies across thematic areas, Circle Economy's Key Elements Framework (KE) renders the elements of the circular economy salient and serves as a basis to derive contextual strategies and interventions. The Framework consists of:

- **Core Elements:** Activities directly handling product or material flows; and uniquely,

- **Enabling Elements:** those that remove obstacles for core actors.

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WHAT IS IT?

The Key Elements framework is a conceptual framework of eight elements of circularity that can be applied at different intervention levels (for example, national, regional, sector, business, product, process, or material) towards a circular economy.

The KE framework consists of three core elements and five enabling elements. Core elements deal with physical flows directly, whilst enabling elements deal with creating the conditions or removing barriers, for a circular transition.

Core elements:

The core elements align with other common frameworks related to the circular economy, concerning resource cycling. In the below table, we show the core elements related to strategies for resource cycling[10]. Further, we show the link between the core elements and the 10R Framework, and 5R Framework (a simplified 10R) most commonly applied to supply chains and manufacturing[11,12].

CIRCLE ECONOMY'S CORE ELEMENTS	STRATEGIES FOR RESOURCE CYCLING[13]	10R FRAMEWORK	5R FRAMEWORK	ELLEN MACARTHUR FOUNDATION
Prioritise Regenerative Resources	Regenerate flows			Regenerate ecosystems
	Narrow flows	Refuse		Design out waste
		Reduce	Reduce	
		Rethink		
Stretch the Lifetime	Slow flows	Reuse	Reuse	Keep products in use for longer
		Repair	Repair	
		Refurbish	Refurbish	
		Remanufacture		
Use Waste as a Resource	Close flows	Repurpose		Design out waste
		Recycle	Recycle	
		Recover		

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Enabling elements:

The KE are thus unique because they include enabling elements. Despite the increased interest in, and efforts towards, executing core elements of the circular economy, there are persistent obstacles to their implementation. Some of the main obstacles to achieving the transition are that dominant economic incentives largely rely on traditional, linear ways of creating value. A lack of systems that keep track of cycled resources; recover resources from existing products, and a general lack of awareness and knowledge about the circular economy all hinder the transition.

Enabling elements can accelerate uptake of circularity by removing some of these obstacles. These are represented in the following table.

CIRCLE ECONOMY'S ENABLING ELEMENTS	DESCRIPTION	BARRIER ADDRESSED
Design for the Future	Account for the systems perspective during the design process, to use the right materials, to design for appropriate lifetime and to design for extended future use	Ability to disassemble products and reuse components or materials due to design flaws Ability to recover value from waste due to contamination, lack of knowledge, or legislation
Rethink the Business Model	Consider opportunities to create greater value and align incentives that build on the interaction between products and services	Economic incentives are misaligned to a regenerative ecosystem and the wellbeing of society
Incorporate Digital Technology	Use digital, online platforms and technologies that provide insights to track and optimise resource use, strengthen connections between supply chain actors, and enable the implementation of circular models	Incomplete information about location and condition of assets or resource usage leads to inability to optimise resource usage within and across organisations
Team Up to Create Joint Value	Work together throughout the supply chain, internally within organisations and with the public sector and communities to increase transparency and create joint value	Conflicting interests and misaligned goals between stakeholders in the value chain stymies progress and/or generates wasted resources
Strengthen and Advance Knowledge	Develop research, structure knowledge, encourage innovation networks and disseminate findings with integrity	Lack of knowledge, information silos and asymmetries, and generally disaggregated and unstructured information

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HOW CAN IT BE USED IN PRACTICE?

Frameworks based on the circular economy can make the concept more accessible, easier to compare to other systems and, in this way, encourage its application across diverse contexts.

The KE framework can be used at a high level, but can also be applied at different levels to design strategies or structure research. The KE framework has been a prominent framework across a variety of Circle Economy's projects in the past few years.

NATIONS	NATIONAL STRATEGIES FRAMEWORK
CITIES	URBAN OPPORTUNITIES FRAMEWORK
PRODUCTS	DISRUPT
SECTORS	CIRCULAR SECTORS CLASSIFICATION

The list below demonstrates the vast variety of its applications, both in terms of scale and intervention level.

1. REGIONAL APPLICATION

Developing circular strategies that can be applied globally, such as in the Global **Circularity Gap Reports**.

- Developing circular strategies at the country level, such as in the National **Circularity Gap Reports**;
- Developing circular strategies for cities in the **City Scan Process**.

2. BUSINESSES APPLICATION STRATEGY

- To structure and develop KPIs such as in the Rockwool **Business Scan**;
- To educate and inspire businesses such as in this **Miro Brainstorming Tool**;
- As a framework underpinning the **Circular Design Workshops** for cohorts of businesses.

3. RESEARCH APPLICATION

- Classifying sectors to circularity for use in modelling such as in the **Circularity Gap Reports**;
- Aggregating different types of circular jobs in the **Circular Jobs** Monitor.

4. DIGITAL APPLICATION

- The basis of aggregating an organisation's or a community of organisations' opportunities for circularity such as:
  - in the **Circle Assessment Tool** or
  - the **Circle Fashion Tool** which is specific to Textiles organisations;
- Classifying companies and case studies in the **Knowledge Hub**, an online repository of over 3000 case studies.

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WHO IS IT FOR?

The KE Framework is suitable for a wide audience who require a comprehensive framework that is easy to remember and communicate to different audiences. It is fitting for speakers, policymakers, and journalists to guide conversations, as well as for educators to design workshops, exercises and learning resources for circularity. It can also be used by strategists, analysts and researchers who are looking to perform novel research about circularity in a given context. In this case, such a comprehensive framework helps to structure research and catalogue information.

HOW WAS IT DEVELOPED?

Initially, the KE was created by mapping the various terms and definitions used by **over 20 organisations**—NGOs, government agencies, academia, consultancies, and more—working on elements of the topic. After interpreting and grouping these various terms, seven key elements **emerged** that defined the majority of terms linked to the circular economy.

Since then, the KE has been continuously researched in line with the ever-growing literature on defining circularity and its enabling conditions. A recent literature review of circular economy strategies in play today uncovered the gap of strategies related to knowledge. This literature review houses a detailed description of each element and will be released in the coming weeks and can be found in a summarised form in our upcoming updated **Knowledge Hub**. With its addition, our seven key elements will become the eight key elements.

The ongoing practical work of **our organisation** also complements the development process of the KE Framework. This ranges from developing circular strategies, delivering training and workshops, and designing and developing methodologies and digital products across more than 125 nations, cities and businesses around the world with over 3000 stakeholders.[14]

DISCUSSION

The KE Framework is robust in its structure of core and enabling elements and has proven its success across a variety of contexts. We have developed, or are currently developing, related strategy frameworks for nations, cities and products. However, these need to be continuously reviewed with stakeholders and updated accordingly. Related strategy frameworks for other territorial units— such as regions, businesses, sector analysis, materials— should also be researched and created.

The core elements are consistent across intervention levels, although the strategies differ according to the context. Enabling elements differ according to the context and scale of application of circularity and may not need to be applied in every context. These applications need to be researched continuously in line with the evolution and maturity of circular economies.

Elements, or applied strategy frameworks, need to be linked to appropriate success monitoring frameworks. This will allow us to track the successful implementation of circular strategies in different contexts. They need to also be linked to appropriate impact frameworks, first qualitatively (conceptually) and then enhanced through linking of quantitative indicators per scale. Coupled with the above success metrics for circular strategy implementation, this will allow us to track the impact of elements across different scales over time.

WANT TO GET INVOLVED?

This framework is under constant iteration. We are always looking to improve based on feedback from practical use of the framework. Please let us know your feedback!

hello@circle-lab.com

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REFERENCES

1. https://ec.europa.eu/environment/circular-economy/

2. https://www.mdpi.com/2313-4321/4/3/27

3. https://www.ctc-n.org/technical-assistance/projects/assessment-current-status-circular-economy-developing-roadmap

4. https://www.circle-economy.com/news/linear-risks-how-business-as-usual-is-a-threat-to-companies-and-investors

5. https://www.weforum.org/agenda/2019/02/companies-leading-way-to-circular-economy/

6. https://mailchi.mp/circle-economy.com/knowledge-hub-3-0-access

7. https://www.sciencedirect.com/science/article/pii/S0921344917302835

8. https://www.resourcepanel.org/reports/decoupling-natural-resource-use-and-environmental-impacts-economic-growth

9. https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy

10. https://www.tandfonline.com/doi/full/10.1080/21681015.2016.1172124

11. https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy

12. https://www.researchgate.net/publication/335602859_Circular_Economy_30_-_Solving_confusion_around_new_conceptions_of_circularity_by_synthesising_and_re-organising_the_3R's_concept_into_a_10R_hierarchy

13. https://circulareconomy.europa.eu/platform/sites/default/files/1-s2.0-s0921344917302756-main.pdf

14. https://impact.circle-economy.com/

CONTRIBUTORS

Laxmi Haigh - In House Journalist

Marijana Novak - Data Strategist

Esther Goodwin Brown - Circular Jobs Initiative Lead

Max Russell - Project Manager - Cities Programme

Caspar von Daniels - Consultant

Gwen Cunningham - Lead Textiles Programme

Jade Wilting - Project Manager – Textiles Programme

Marc de Wit - Insights Director

Alexandru Grigoras - Visual Designer

Nicolas Raspail - Design Lead

Ana Sutherland - Research and Writing Intern

Dino Wildi - Research and Writing Intern

Sophie Wynaendts - Research and Writing Intern

Fieke de Haan, Joke Dufourmont , Shyaam Ramkumar, Kinge Gardien - former colleagues

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