Circular Economy Revolution: Why Systemic Design is the Game Changer

Systemic Design: Theory & Practices

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- Systemic Design: \rightarrow
 - SD worldwide
 - SysLab @ Politecnico di Torino, Italy
- Systemic Design & Circular Economy \rightarrow
 - from a linear production model to a circular one
 - Innovate for collaboration
- Systemic Design for industrial innovation \rightarrow
 - Systemic Design pillars
 - Systemic design methodology steps
 - What Systemic Design can do for your company



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Systemic Design Worldwide



→ Systemic design is an **approach** to the design of complex systems that considers the relations between the different elements within the system.

Through a **holistic** point of view, it considers the system as a whole rather than focusing on individual parts.









Systemic Design Schools around the world

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Oslo School Of Architecture and Design	Norway
OCAD University	Canada
Politecnico di Torino	Italia
TU Delft	Netherlands
Carnegie Mellon University	USA
Institute of Design	USA
ETH Zurich	Switzerland
OSLOMET University	Norway
National Institute of Design	India
Instituto Tecnológico y de Estudios Superiores de Monterrey	Mexico

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Systemic Design Association

The Systemic Design Association (SDA) is a **global community of practitioners, educators, researchers and students** interested in applying Systemic Design approaches to address complex challenges.

Each year, the Association organises the Relating Systems Thinking and Design Symposium (RSD).



Socio-ecological sustainability

Emergent methodology





Systemic Design & Circular Economy Worldwide





From a linear production model

- \rightarrow Product = quantity
- \rightarrow Economic value
- \rightarrow Strong competition
- \rightarrow Low interest in waste









Тоа systemic/circular production model

- \rightarrow Balanced engagement of actors
- \rightarrow Networks of local connections
- \rightarrow Waste turns into a resource











Kirchherr, J., Reike, D., & Hekkert, M. P. (2017). Conceptualizing the circular economy: an analysis of 114 definitions. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3037579



marter roduct use nd nanufacture	R0 Refuse	Make a product redundant: abandon function or use different product
	R1 Rethink	Make product use more intensive: sharing or multi-functional products
	R2 Reduce	Consume less through efficient manufacturing or use
xtend fespan of roducts and s parts	R3 Re-use	Re-use of functioning discarded products by another use
	R4 Repair	Repair and maintenance of defects to keep original function
	R5 Refurbish	Restore and update
	R6 Remanufacture	Use parts in a new product with the same function
	R7 Repurpose	Use products or parts in a new product with a different function
lseful pplication f materials	R8 Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9 Recover	Incineration of materials with energy recovery





Innovation in Production Models

Linear **Production model**

Circular **Production model**



Competition

VS



Collaboration

direct indirect asynchronous group-based

Man, A. d. (2005). Collaboration and competition: exploring the effects of alliances and networks on rivalry. Journal on Chain and Network Science, 5(1), 17-26. https://doi.org/10.3920/jcns2005.x051

OECD (2023), Competition in the Circular Economy, OECD Competition Policy Roundtable Background Note, www.oecd.org/daf/competition/competition-in-the-circular-economy-2023.p



Alliances and networks only curb competition when three specific conditions are met (Man, 2005):

- There must be a closed network with exclusive arrangements between its members.
- If group dynamics do not include elements that foster collaborative competition between firms or between firm groups, the collaboration itself may reduce or limit the competitive drive between them.
- Long-term network relations are required for a decline in competition to be likely.





SysLab approach





5 pillars



Output > Input

The outputs of a process become the inputs for another process, developing continuous flows of matter, energy and information.









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The local context is prioritized, enhancing its unique material, social, cultural and economic resources.





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Humanity centred design

Wicked and interrelated problems are seen through the lens of society and human beings, meant as part of a wider ecosystem.







Sys Lab



Our methodology is **flexible** and can be applied and adapted to different contexts, like:

- \rightarrow Value chains (SMEs, industries, sectors)
- \rightarrow territories (cities, cultural heritage sites, Regions)
- \rightarrow social systems and organizations
- \rightarrow policies





Methodology

Sys Lab









"What Systemic Design can do for your company?"

- \rightarrow Understanding the company's metabolism by mapping material flows in and out.
- \rightarrow Understanding the production system's challenges in achieving circular economy objectives.
- \rightarrow Offering an outlook on the business set in its territorial context.
- \rightarrow Designing disruptive concepts to create synergies within and between local industries by valorising waste & local knowledge.



Open Systems 2021 – Systemic Design Experiences, Sys - Systemic Design Lab (Italian only, sorry)



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COSA PUÒ FARE il Design Sistemico per la tua azienda?







Thank you.

Let's keep in touch!

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