SYSTEMIC DESIGN DELIVERING POLICY FOR FLOURISHING CIRCULAR REGIONS

MILANO | MEXICO CITY | BANGALORE | CAPE TOWN | CURITIBA | BEIJING

3-5 April 2019

DESIGNING SUSTAINABILITY FOR ALL

Edited by Marcelo Ambrosio and Carlo Vezzoli

Proceedings of the

3rd LeNS world distributed conference

VOL. 2

ISBN 978-88-95651-26-2

EDIZIONI POLI.DESIGN

With the support of the Erasmus+ Programme of the European Union

Designing sustainability for all

Proceedings of the 3rd LeNS World Distributed Conference,
Milano, Mexico City, Beijing, Bangalore, Curitiba, Cape Town,
3-5 April 2019

Edited by Marcelo Ambrosio and Carlo Vezzoli

LeNS - the Learning Network on Sustainabilty - is a project funded by LeNSin Erasmus+ Programme of the European Union

the Learning Network on Sustainability

With the support of the Erasmus+ Programme of the European Union

EDIZIONI
POLI.DESIGN

Edited by Marcelo Ambrosio and Carlo Vezzoli

Double-Blind Peer Review.

Graphic project by:
Roman Maranov, Politecnico di Milano, Italy
Xinrui Wang, Politecnico di Milano, Italy
Yuting Zhang, Politecnico di Milano, Italy
Giacomo Bevacqua, Politecnico di Milano, Italy

The proceedings are also available at: www.lensconference3.org

Endorsment:

cumulus
creative linking

DESIS NETWORK
Design for Social Innovation and Sustainability

ISBN: 978-88-95651-26-2

Published by © 2019 Edizioni POLI.design
Address: via Durando 38/A – 20158 Milano
Tel. 02-2399.7206 Fax 02-2399.5970
e-mail: segreteria@polidesign.net
website: www.polidesign.net

First Edition

CONTENTS

VOLUME 2 *(paper in this volume)*

4. SYSTEM AND CIRCULAR DESIGN FOR SUSTAINABILITY

VOLUME 1

VOLUME 3

6. DESIGN FOR SUSTAINABLE CULTURAL AND BEHAVIORAL CHANGE

8. DESIGN FOR SUSTAINABLE TECHNOLOGIES AND RESOURCES

VOLUME 4

9. ARCHITECTURAL AND INTERIOR DESIGN FOR SUSTAINABILITY

10. LANDSCAPE AND URBAN DESIGN FOR SUSTAINABILITY

FOREWORD

Designing sustainability for All was a call for contributions and actions to the whole world design community, which is not limited to design researchers, design educators, and design practitioners but also unites other disciplines such as architecture, engineering, economy, policy-making, and sociology.

The Conference has been a unique event hosted simultaneously in Mexico City (Mexico), Curitiba (Brazil), Cape Town (South Africa), Bangalore (India), Beijing (China) and Milan (Italy), on 3rd-5th April 2019. In fact, in each of the 6 venues, it has been possible to listen to any of the presentations happening in the other ones.

LENSIN PROJECT

LeNSin, the International Learning Network of networks on Sustainability (2015-2018), is an EU-supported (ERASMUS+) project involving 36 universities from Europe, Asia, Africa, South America and Central America, aiming at the promotion of a new generation of designers (and design educators) capable to effectively contribute to the transition towards a sustainable society for all.

LeNSin ambitions to improve the internationalisation, intercultural cross-fertilisation and accessibility of higher education on Design for Sustainability (DfS). The project focuses on Sustainable Product-Service Systems (S.PSS) and Distributed Economies (DE) – considering both as promising models to couple environmental protection with social equity, cohesion and economic prosperity – applied in different contexts around the world. LeNSin connects a multi-polar network of Higher Education Institutions adopting and promoting a learning-by-sharing knowledge generation and dissemination, with an open and copyleft ethos.

During the three years of operation, LeNSin project activities involve five seminars, ten pilot courses, the setting up of ten regional LeNS Labs, and of a (decentralised) open web platform, any students/designers and any teachers can access to download, modify/remix and reuse an articulated set of open and copyleft learning resources, i.e. courses/lectures, tools, cases, criteria, projects.

LeNSin will also promote a series of diffusion activities targeting the design community worldwide. The final event will be a decentralised conference in 2018, based simultaneously in six partner universities, organised together by the 36 project partners form four continents.

THE LENS CONFERENCE

The Conference is the 3rd edition of one of the largest design international conferences for lecturers, researchers, professionals, and relevant institutions and organizations. It has become a reference event where experts from all over the world get together to present and share their knowledge, projects, tools, and visions to diffuse sustainability for all.

The Conference is organized as a part of the LeNSin, the International Learning Network of networks on Sustainability project (2015-2019, EU funded Ersamus+ program) that aims to be both visionary and pragmatic, and to stimulate new ways of thinking.

The scope is to share the latest knowledge and experiences around the concept of sustainability for all.

This will be achieved through cross-fertilizing a wide range of disciplines: predominantly design, but also engineering, economy, policy-making, and sociology.

LENS MANIFESTO

A new ethos for a design community: towards an open source and copy left learning-by-sharing attitude/action.

We, the undersigned, aware of both the urgent changes required by sustainable development, the potential role of design (and design thinking) in promoting system innovation in the way we produce, consume and interact, as well as the opportunities offered by the ever more interconnected society, propose the adoption and diffusion of a new ethos within a worldwide design community:

To view design as a unique multi-polar learning community promoting, enabling and activating any possible learning-by-sharing process aiming at effective knowledge osmosis and cross-fertilisation in design for sustainability in an open and copy left ethos.

We, the undersigned, commit our selves in such an ethos, trying our best to apply this in our daily life as individuals or representatives of institutions in the design community.

In relation to our competencies and possibilities we will make our acquired knowledge to be, as far as possible, freely and easily accessible in a copy left and open source modality (while safeguarding our authorship and scientific recognised publication activity), that enable others in the design community to acquire them free of charge, with the possibility to replicate, modify, remix and reuse, through e.g. adopting creative commons licences.

As researchers, this knowledge includes our acquired research knowledge base (e.g. papers, books, etc.) and knowhow (e.g. methods and tools).

As educators, this knowledge includes our educational resources (slideshows, texts, video of lecture, educational support tools, etc.)

As designers and design thinkers, this knowledge includes the design for sustainability concept proposal of products, services, systems and scenarios, as well as a knowhow they used to design them.

We commit our selves to seek the commitment of other individuals or institutions in such an ethos within the design community. In relation to our competencies and possibilities we will:

do our best to commit individuals such as researchers, educators, professional designers and design thinkers as well as institutions such as research institutions, design schools, and designer's associations to adopt the same ethos

do our best to generate and/or enable open learning networking of sustainability of design researchers, design educators, professional designers and design thinkers.

4. SYSTEM AND CIRCULAR DESIGN FOR SUSTAINABILITY

SYSTEMIC DESIGN DELIVERING POLICY FOR FLOURISHING CIRCULAR REGIONS

Carolina Giraldo Nohra
Politecnico di Torino , carolina.giraldo@polito.it
Silvia Barbero
Politecnico di Torino, silvia.barbero@polito.it

ABSTRACT

Systemic Design expertise is rising as relevant on Policy Design fostering better governance towards Circular Economy. On that journey, a current coordinated work between universities, local authorities, associations and public administration where the Systemic Design is anticipating the future economy actions through policy design is RETRACE Interreg Europe project. The aim of this project is to drive regional policies towards a Circular Economy applying the Systemic Design approach developed by the research group of the Department of Architecture and Design at Politecnico di Torino. This paper describes the role of Systemic Design on the future challenges on Regional Governance towards a Circular Economy through the outcomes of the RETRACE and discusses the opportunities and wicked problems of this expertise on policymaking. Becoming a milestone on the way to a deeper awareness of the impact the implementation of Systemic Design on Policy Design processes in Europe.
Key Words: Systemic Design, Policy Design , Circular Economy , Territorial Development

1. INTRODUCTION

We live in a world that is in the midst of interconnected megatrends such as rapid urbanization, climate change, resource scarcity, changes in global economic power, technological breakthroughs and erratic demographic/social transformations, carrying out an unprecedented complex revolution (PWC, 2017). Consequently, this phenomenon has brought many increasingly pressing challenges threatening society's well-being and economic prosperity. Proving that today more than ever the world is rapidly going towards several tipping points as humanity is consuming the equivalent of 1.7 Earths (NGF, 2010). Such megatrends will have several implications on the ways mankind consumes, certainly shaping the types of products, services, and technologies that will be designed, developed and used in the future. This scenario represents a serious challenge for EU regions, which are dependent on most of the resource supply from raw materials from international markets.

Nowadays linear economy has raised the exposure of unpredictable hazards as resource prices, job instability, and supply disruptions. These situations are complex and interconnected, which means that addressing one could have positive implications towards the others. By 2030, tackling sustainability will be essential considerations in the design and development of products, services, and technologies . On that view, the transition to a Circular Economy (CE), is a chance to generate competitive advantages on a sustainable basis with the potential to generate an income benefit of EUR 1.8 trillion by 2030 (EMF , 2015) and over 1 million new jobs across at EU level by 2030 (EPRS, 2017). From a foresight perspective, applying CE principles across all sectors and industries could decrease environmental, social and economic pressures globally, and increase the EU regions strategic autonomy (EC, 2019).

These erratic shifts are underway on a vast scale with transforming economies, governments and societies in complex, interconnected in unpredictable ways. The nature of such global trends, claim to redesign the current public policy conditions in order to be more future-oriented on the way to sustainable development. The need for and the potential of innovation has never been greater.

Today is not possible to conceive or solve the so-called wicked problems individually (Jones, 2014). Mainly because the volume and complexity of such problems are growing so fast that governments are unable to catch up with them, failing with the citizen trust and business confidence. Indeed, these interconnected challenges require a structure of interconnected solutions and change-makers able to understand and visualize complexity. Given that the nature of design in encounter wicked problems, shifting an existing complex context into a new one. However, this doesn't mean that designers generate solutions to wicked problems. Instead, designers reformulate those scenarios to generate different possibilities and relationships (Rittel and Webber, 1973). From that point of view, designers could respond to this need on new anticipatory approaches on governance from a holistic and systemic point of view which fosters a cohesive transition to a CE.

To be able to conquer innovative approaches in governance, the aim of the design processes has turned into a key tool for the shaping of decisions. In the last decade, the design as a discipline has assumed an important role in the field of policy-making. Since that moment, it has been inevitable to compare both design and policy-making as they are considered problem-solving processes (Blair, Cunningham,1999). Because of this, more and more design has been comprehended as an important and practical component in the formulation of better policies and governance strategies. So, in order to solve the current wicked problems: How design can innovate in policy planning for sustainable development and the growing of circular economies?

To the best of our knowledge, the Systemic Design (SD) methodology tackles the complex phenomena delivering new relations between the local actors, through specific design tools which highlight the hidden potentialities of a scenario boosting active collaboration among the components of a system (Bistagnino, 2011). The SD expertise is rising as relevant on Policy Design fostering better governance towards CE (Barbero & Giraldo Nohra, 2018). An exemplification of this is the RETRACE Interreg Europe project (A Systemic Approach for Transition towards a Circular Economy funded by the Interreg Europe, https://www.interregeurope.eu/RETRACE/) coordinated work between universities, local authorities, associations and public administration where the SD is anticipating the future economy actions through policy design. The aim of this project is to drive EU policies towards a CE applying the SD approach developed by the research group of the Department of Architecture and Design at Politecnico di Torino.

This paper describes the role of SD on the future challenges on Regional Governance towards a CE through the outcomes of the RETRACE project such as the CE Regional Action Plans (RAPs). Also, discusses the opportunities and wicked problems of this expertise on policymaking. Focusing on how the SD approach fosters interregional experiences towards an integrated territorial development through the promotion of future productive activities and effective policies to enhance CE. Proving that at European level this expertise for policymaking will be vital to support key policy instruments Smart Specialization strategy, Corporate Social Responsibility, and Cohesion Policy.

2. SYSTEMIC APPROACHES FOR POLICY DESIGN

The last decades have demonstrated that most of the methods and tools used traditionally for public policy have not kept up with the speed of shifting in economies and societies.Even though it is true that governments are clearly adapting, progress is often done from reactive measures and sporadic rather than fostering preventive policy systems. Also, it is undeniable that as wicked problems grow exponentially, it is vital to adopt the right fore-

sight actions on governance that take policy planning one step forward.

To approach this kind of policy planning it is essential that bottom-up and top-down approaches coexist with a common goal (Krauz, 2016). In this sense, all the actors involved in this process should be able to communicate and work together with the same clear objective. Design for sure has an increased capacity to facilitate and mediate different competencies (Celaschi, 2008).

Design for sustainability has gained momentum delivering a contrasting vision on the role of the design. The discipline has shifted from a product-oriented design process towards dematerialization designing approaching solutions for complex social, environmental, and even political problems (Papanek, et al., 1972). Making the designer an active role in the optimization of resources and minimizing political, social and cultural disruption ensuring a more resilient solution (Barbero & Giraldo Nohra, 2018).

The design applications on the field of policymaking is growing exponentially. There is an increasing recognition from the public sector in acknowledging the designer's approach as effective in improving the ability of governments to manage public issues (Bailey, 2017). Supporting it with a qualitatively different approach to the process of policymaking, delivering more effectiveness and innovation. On that view, design for policy addresses a different perspective on policy issues. This is due to the combination of different research methods from systems thinking; anthropological to scientific databases, generating transdisciplinary collaboration teams that through design elements can make policy-making processes more tangible (Bason, 2014).

To achieve this, the SD method recognizes territories to be acknowledged in a profound overview, through the creation of new relations between actors of a context enabling the visualization of the so-called "sleeping assets" (Bistagnino,2011). Fostering horizontal dialogues among the actors of the territory enabling innovative and productive decision-making strategies. As a result, this will generate a new scenario of collaboration that can enhance future productive activities sustainably. This strategic thinking process leads to the definition and implementation of effective policy planning. Anticipating better governance for major local and regional development targeting environmental, social and economic benefits (Barbero, 2017).

Such situations the designer inside SD undertakes the role of "designer mediator", (Celaschi et al., 2011). On these active processes, the systemic designers have the key responsibility to enable the co-creation of strategies to foster territorial cohesion that can encourage relations between all the involved actors. Hence, the SD delivers tools that can achieve new scenarios of economic profit and cooperation in order to guarantee sustainable development (Barbero, 2017).

As SD is effective on the conceptualization of systems, it also demonstrates that is the more suitable expertise to deal with complexity at the scale of government, but also to comprehend on a wider scenario a particular policy or intervention. Furthermore, through tools like the Holistic Diagnosis (HD) through the process of problem finding by system mapping (Sevaldson, 2011), it is delivered a different starting point of analysis for the development of policy (Battistoni, Giraldo Nohra, 2017). From this detailed comprehension of systemic context, the HD delivers innovative opportunities for intervention, opening the spectrum of possibilities according to each territory.

These approaches on an EU governance scale could boost territorial cohesion and EU public policy planning process for sustainable development. On that perspective, the SD approach for territorial development includes actors from different sectors/backgrounds to co-create within a trans-disciplinary scenario from governments, civil society and the industry with the goal of creating effective policies for circular regions.

From that point of view in the case of RETRACE project, the SD enables a deeper comprehension of the complex industrial systems through the HD of each participant region. Focusing on identify potentialities to transform the system into a more circular one. It is true that within the design for policy field, the application SD has much more to explore as emergent expertise but the following will expose how it is turning in to a key element on the policymaking scenario.

3. RETRACE REGIONAL ACTION PLANS FOR CIRCULAR REGIONS

There are different paths in which the EU regions can transition to a CE these could be revolutionary or evolutionary. The EU has targeted that by 2030 most of the industry should have a transition towards a circular industrial model, so in that scenario, the current policies will have to promote a cohesive transition in EU regions (EC, 2017). A current example of this priority is the RETRACE Interreg Europe Project (2016-2020) which aims at promoting SD approach for local and regional policies to move towards a CE, according to which waste from one productive process becomes input in another, preventing waste to be released into the environment. This project includes 8 private and public partners and more than 70 stakeholders from Piedmont (IT), Basque Country (ES), Nouvelle Aquitaine (FR), North-East Romania (RO) and Slovenia (SL) to promote collaboration among EU regions towards a CE.

Cases like RETRACE a project lead by systemic designers, prove their ability to coordinate these transdisciplinary teams in order to tackle complex problems for designing innovative policies. The SD perspective enabled a wider overview of the regional systems and a profound comprehension of the complex phenomena through the HD executed for each region (Barbero,2017). This evidence was featured through the results of the 5 Regional Action Plans (RAPs) in CE for each partner region one of the main milestones of the project (Barbero & Giral-

do Nohra, 2018).This document defines the regional priorities addressing a range of CE Policy Gaps in the 5 regions. Also, it includes planned measures and support actions the implementation period (2018-2020) and beyond. These future orientated vision actions are pointless if not followed by a real implementation. The success of them relies on the quality of the path that led to RAPs' definition which was defined by the SD.

In order to elaborate a RAPs for each region, there was an assessment of the regional context on relation to the CE. Therefore, each Region regarded their current Smart Specialisation Strategies (RIS3) and development goals, among them a low-carbon CE. This lead to the identification of Policy Gaps to be overcome; a process defined by the HD and 7 Field Visits on best Good Practices CE across Europe.This analysis allowed regions to highlight their hidden assets and criticalities that could act as leverages to deliver more effective policies for CE (Battistoni & Giraldo Nohra, 2017). Despite the fact that certain potentialities and challenges are particular from each Region, the RAP approached 6 Policy Gap (PG) common to the partner regions. These ones emphasized the different aspects that implied the transition to a CE in such regions. Moreover, they explore the fields of intervention that could be tackled to support a CE (Pallaro & Pereno, 2018). The identify 6 PG where the following:

- Support collaboration between sectors: This gap was related to the eligibility rules for the open industrial calls which in many cases forbid actors from different sectors to participate. Preventing the generation of local value chains from the output-input principle and the technology transfer among actors.
- Raise and knowledge of operators concerning CE: There is a scarce amount of actions for operators to raise their participation, awareness, and knowledge on CE. This emerges as an important issue as it jeopardizes the development and success of CE related projects.
- Policy regulations on CE:The analysis delivers the unclear and disharmonized policy regulations on CE, specifically on by-products production conditions, at (regional, national and European).
- Tailored policy measures on CE: In the current European funding schemes it is clear that the CE is a transversal topic, however, it emerges from the analysis that there is required to create tailor-made policy measures and calls that address CE directly.
- Policy in support to business and market development for CE activities: At the side of executing CE projects, it is required to promote the creation of a business model for CE activities, in order to foster the market to the reuse of by-products. These actions are key to solve waste management issues towards the success of the CE.
- Policy focused on Small and Medium Enterprises (SMEs) and micro manufacturing: This aspect addressed two main issues; the one is the limited tailored support on CE for SMEs transition and the other is the scarce assistance for the generation of micro-manufacturing processes sized on the local context.

To achieve a successful outcome it was key the strong engagement of all actors of the territory in order to generate tailor-made policy measures. In that way the SD ensures the delivery of policies were all participant parties can oversee the progress of the multiple actions on CE within a short, mid and long term, where the short and medium ones are designed in order to foster future implementations. Specifically, on the long run, the execution of the RAPs aims to shift important policies instruments for regions as the EU regional operational programme, Smart Specialisation Strategies (RIS3), waste management plans, industrial development plans and Corporate Social Responsibility (CSR) (Babero & Giraldo Nohra, 2018). Such process reveals the "actionable and proactive" mindset of designers that combine with a foresight vision, can deliver tangible outcomes in the short term while pointing to activate broader actions in the long term.

4. RETRACE SUPPORTING EU GOVERNANCE

There is a considerable part of EU policies towards a CE already ongoing as the Circular Economy Package, EU Bioeconomy Strategy and the EU Plastics Strategy (EC, 2019). Nevertheless, they still require to be put into practice in an integrated across all EU regions. On the view, it is to put in action these strategies it necessary holistic understanding of the territory that can activate systematically on the promotion of sustainable local value chains. An example of how to achieve such transition is the RETRACE's CE RAPs which deliver a systemic policy approach for an effective CE policy-making, including the combination of several policy interventions to stimulate the cooperation among different actors over networks (Barbero & Giraldo Nohra, 2018). To enable this EU strategy on CE, the SD expertise for policymaking will be vital to support key policy instruments on regions such as RIS3, CSR and Cohesion Policy (EC,2017).

Considering the ambitious goals of the EU towards a CE implying tackling poor institutional management which diminishes the competitiveness and sustainable economic growth (EPSON , 2018) . Therefore, it is necessary a cohesive regional development that achieves major environmental-economical-social advantages fostering a CE. In response to that, the SD creates strategies through a territorial thinking process for an effective decision-making process. In the case of RETRACE, such Policy Design processes lead by an SD approach can support Cohesion Policy or regional policies on CSR at different levels in EU regions through a holistic overview from regions enabling a better comprehension of the needs of the territory, to consequently deliver an effective implementation of innovative regional strategies.

Hence, the RETRACE's RAPs actions propose an effective way for regions to achieve productive invest-

ments on RIS3, CSR and Cohesion Policy, to avoid wasteful investments to foster CE. These actions clarify how CE strategies can be scaled up at the European level, fostering interregional cooperation. More specifically, the RAPs are aligned with the Cohesion Policy a policy instrument that considers a long-term vision to guarantee sustainable development over time. To reach this goal the SD delivers a deep systemic understanding of EU regions allowing an appropriate diagnosis of the gaps and potential assets that can impact a sustainable development towards a CE (Pereno & Pallaro, 2018).

5.CONCLUSIONS

Transitioning towards a CE is amidst the most pressing challenges Europe has to face. Given the current panorama, actions are needed at all levels from governments to all EU Member States and institutions will have to be on board. Tangible results will be only possible through key change drivers as cities, municipalities, and regions. At the same time, it will require multidisciplinary teams from citizens, businesses, social partners and the research community. The RETRACE project has exemplified that does dynamics are disruptive but truly transformative, contributing to this collective effort in promoting the implementation of an SD approach as a practical methodology to boost the CE transition.

In order to accelerate local development towards a CE, it is essential to set up a dialogue and common ground between all the stakeholders of the policymaking process, to reach a complementarity between bottom-up and top-down making them coexist with a common goal. Ultimately, the final purpose of embrace a synergetic approach is to strength strategies and policies towards a CE (Lambi et al., 2013). Inside the project framework of RETRACE, it was possible to experience these synergies within the first two years of the project (2016-2018) across the research process with policymakers, governments, communities, industry and many innovators across Europe. This journey involved different points of view from many actors who are fostering a CE in their regions, to eventually accomplish a common ground inside the regional context of policymaking. This outcome was clearly reflected on RAPs that reflects an inspiring path across Piedmont, Biscay, Nouvelle Aquitaine, Slovenia, and North-East Romania, also by all those collaborators who have contributed their experiences to foster effective and more sustainable governance.

Through this paper has been highlighted that RETRACE's outcomes contained several successful components that could be extended into other EU regions to transition towards a CE in EU regions. The RAPs explained above acknowledge that a transition towards CE will not be possible without essential changes in fields such as :

- multi-governance coordination: focusing in synergies across different administration levels (from regional and national governments).
- multi-stakeholder collaboration: reinforcing relations between different sectors in industries clusters and value chains .
- consumption and production patterns: emphasizing in the resource efficiency preventing the production of waste, to encourage secondary raw materials.

The EU strategies as the CE Package, EU Bioeconomy Strategy and EU Plastics Strategy, underlined the important role Regions play in achieving the European transition to a CE a reality. Nevertheless, Region's challenges in this process are similar, even if the answers are multiple still this transition will carry several implications in EU regions given the various economic, productive and social contexts that will have to be addressed. On this perspective for the RAPs are relevant to underline the role that interregional cooperation for policy planning, their goal is to spread and communicate the outcomes of RETRACE beyond the internal process of the project.

More and more SD is turning into key expertise to generate effective CE strategies promoting a cohesive territorial development for Europe. On that view, the RETRACE project outcomes should not be missed on the way. By the contrary, they should be valorized to spread deep awareness on how the SD is becoming a milestone in the implementation of Policy Design processes in Europe. Also delivering an overview of the disruptive character towards the traditional paradigms on governance and new ways for territorial cohesion and EU policymaking for sustainable development.

BIBLIOGRAPHY

1. Bailey, J. (2017). The RETRACE Holistic Diagnosis. In Barbero, S. (Ed.).1.5 Elements of Novelty: Designer as Policy-Maker (pp. 43-49) Turin, Italy: Allemandi.
2. Bason, C. (ed). (2014). Design for Policy. Aldershot: Gower.
3. Barbero, S. (Ed.) (2017). Systemic Design Method Guide for Policymaking: A Circular Europe on the Way. Turin, Italy: Allemandi.
4. Barbero, S., Giraldo Nohra C. (Ed.) (2018). RETRACE Policy Road Map : A systemic apporach for circular regions. Turin, Italy: Allemandi.
5. Battistoni, C., Giraldo Nohra C. (2017). The RETRACE Holistic Diagnosis. In Barbero, S. (Ed.). Systemic Design Method Guide for Policymaking: A Circular Europe on the Way. (pp. 112-120) Turin, Italy: Allemandi.

6. Bistagnino, L. (2011). Systemic Design: Designing the Productive and Environmental Sustainability. Bra (CN), Italy: Slow Food.
7. Blair, T., Cunningham, J. (1999). Modernising Government, Presented to Parliament by the Prime Minister and the Minister for the Cabinet Office by Command of Her Majesty.
8. Considine, M. (2012). Thinking outside the box? Applying design theory to public policy. Politics & Policy, 40(4), 704-724.
9. Celaschi, F., (2008). Il design come mediatore tra saperi, e, Il design come mediatore tra bisogni. AA. VV., L'uomo al centro del progetto, Allemandi editore, Torino.
10. Celaschi, F., Formia, L., Lupo, E. (2011). From Trans-disciplinary to Undisciplined Design Learning: Educating through/to Disruption. In Third International Forum of Design as a Process, Torino, 2-5 November 2011, 370–88.
11. EMF, (2015). Delivering the Circular Economy: A Toolkit for Policymakers, Available at: https://www.ellenmacarthurfoundation.org/publications .
12. EPRS, European Parliamentary Research Service (2017) Towards a circular economy - Waste management in the EU Science and Technology Options Assessment. Available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2017/581913/EPRS_STU%282017%29581913_EN.pdf
13. European Commission (2017), My Region, My Europe, Our Future. Seventh report on economic, social and territorial cohesion. Publications Office of the European Union: Luxembourg.
14. European Commission (2019) Reflection Paper Towards A Sustainable Europe By 2030. Available at: https://ec.europa.eu/commission/sites/beta-political/files/rp_sustainable_europe_30-01_en_web.pdf
15. ESPON EGTC (2018) The territorial dimension of future policies. Editorial: Ilona Raugze, Magdalena Zagrzejewska, ESPON EGTC.
16. Jones, P. H. (2014b). Systemic design principles for complex social systems. In G. Metcalf (Ed.), Social systems and design (pp. 91–128). Tokyo: Springer.
17. Krauz, A., (2016). Transition management in Montreuil: towards perspectives of hybridization between 'top-down' and 'bottom-up' transitions. In:Loorbach, D., Wittmayer, J., Shiroyama, H.,
18. Lambi, L., Lindemann, T., Morra, D. (2013). Policy Brief 9. Top-Down and Bottom-Up Approaches. Rome, Italy:Food and Agriculture Organization of the United Nations.
19. Network, G. F. (2010). Ecological footprint. Footprint Network web site: http://www. footprintnetwork. org.
20. Papanek, V., & Fuller, R. B. (1972). Design for the real world (p. 22). London: Thames and Hudson.
21. PWC (2017), PwC Annual Report 2016/2017. PricewaterhouseCoopers B.V. Available : https://www.pwc.nl/nl/assets/documents/pwc-annualreport2016-2017-print-totaal.pdf
22. Rittel and Weber. (1973). Dilemmas in a general theory of planning. Policy Sciences, 4, 155-169.
23. Sevaldson, B. (2011). Gigamapping: Visualization for complexity and systems thinking in design. Helsinki: Nordic Design Research Conference.

the Learning Network on Sustainability

The proceedings are also available at www.lensconference3.org

The conference was organized by:

Politecnico di Milano
Aalto University
Brunel University London
Cape Peninsula University of Technology
Hunan University
Indian Institute of Technology Guwahati
Srishti Institute of Art, Design and Technology
Technische Universiteit Delft
Tsinghua University
Universidad Autónoma Metropolitana
Universidad del Valle de México
Universidade Federal de Pernanbuco
Universidade Federal do Paraná
Universiteit Stellenbosch

Other LeNSin associate partners cooperating with the organization are

- Londrina State University, Fluminense Federal University, Federal University of Alagoas, Federal University of Uberlândia, Federal University of Santa Catarina (**Brasil**)
- C.A.R.E. School of Architecture, Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Indian Institute Of Technology Gandhinagar, Goa College of Architecture, Hunnarshala Foundation for Building Technology & Innovations, Vastu Shilpa Foundation (**India**)
- Wuhan University of Technology, Jiangnan University, The University of Science and Technology Beijing, Beijing Information Science and Technology University, The Hong Kong Polytechnic University, Guangzhou academy of fine arts, Tongji University (**China**)
- Farm and Garden National Trust, Cape Craft and Design Institute NPC (**South Africa**)
- Univesidad National Autónoma Metropolitana, Instituto Tecnológico de Monterrey Campus Ciudad de México (**Mexico**)

Scientific Commetee:

Carlo Vezzoli
Aguinaldo dos Santos
Leonardo Castillo
Claudio Pereira Sampaio
Ranjani Balasubramanian
Ravi Mokashi
Brenda Garcia
Rodrigo Lepez Vela
Ephias Ruhode
Elmarie Costandius
Xin Liu
Jun Zhang
Fabrizio Ceschin
Cindy Kohtala,
Jan Carel Diehl

LeNSin main partners: