Circular Economy and Smart Cities: taking advantage from local peculiarities

Prof. Gian Marco Revel

Università Politecnica delle Marche
Deputy Rector for European Research
Coordinator of the Materials&Sustainability Committee of ECTP

Dipartimento di Ingegneria Industriale e Scienze Matematiche
gm.revel@univpm.it

Circular economy:

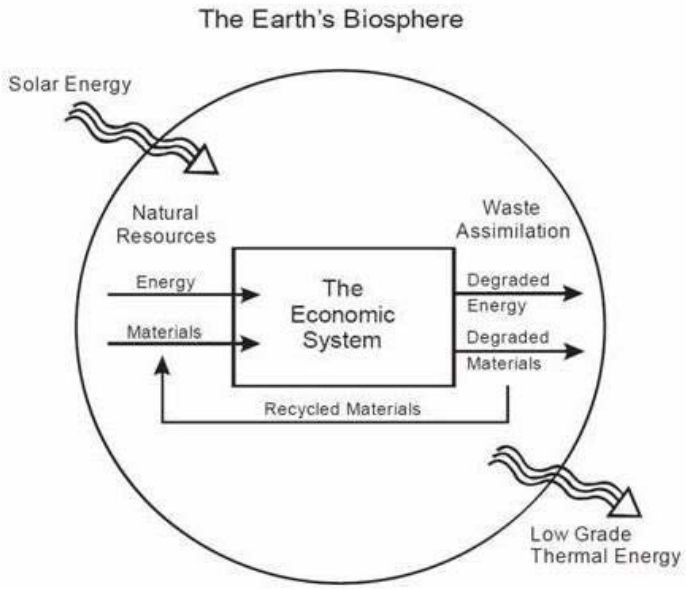
It's an economy where:

- the **value** of products, materials and resources is maintained in the economy for **as long as possible**

- the generation of **waste** is **minimised**

..representing a crucial effort towards a smart society, through a holistic approach which regards:

- Production
- Consumption
- Waste management
- From waste to resources



Smart outcomes of the **circular economy**

Axes	Actions	Smart outcomes
Better product design	The **Ecodesign working plan** : reparability, durability, upgradability, recyclability	**Smart Environment:** saving resources; **Smart Economy**: fostering knowledge and creative economy
Production processes	**Sustainable sourcing** of raw material; **Industrial symbiosis** (waste or by-products of one industry to become inputs for another) **Reuse of gaseous effluents** **Remanufacturing** (to be applied to other sectos than vehicles or industrial machinery)	**Smart Economy**: fostering new technologies, processes, services and business models - **Smart Environment**
Consumption	Implementing a suitable **regulatory framework** Increasing the **quality and quantity of information** to which consumers have access **Incentives and disincentives** to ensure that product prices better reflect environmental costs **Innovative forms of consumption**: collaborative economy, consuming services, IT and digital platforms	**Smart People, Smart Governance, Smart Economy**
Waste	Increasing **recycling** and reducing the landfilling of municipal waste Creation of **EU-wide standards** on secondary raw materials and in recycled materials quality: organic waste material as fertilizers, plastics, water, chemicals Ehancing **industrial and economic actors commitment** to ensuring a certain level of recycled content in products	**Smart People, Smart Governance, Smart Economy, Smart Environment**

The urban phenomenon

Our future is largely an urban one. Urban and metropolitan areas are:

- The places were **population mostly locate** (UE urban population accounts for nearly 70% out of total population)

- The places with the **highest level of human capital and economic activities**
- The places with the **highest level of knowledge** and where **innovation** (economic , social, technological, institutional) mainly takes place

- The places with the **highest level of negative externalities**

- The places where **solutions** to current criticalities are more likely supposed to be found

…nevertheless it is worth mentioning that:

- EU has a unique **polycentric structure** built around large, medium-sized and small towns and cities
- some 200 million people (nearly **25%**) live **in towns of fewer than 100 000 inhabitants**
- They appear to be **less well equipped in terms of critical mass**, **resources** and **organizing capacity**
- they often play an **important regional role** in the area of **services** and **facilities,** which is crucial when considering **regional and territorial unbalances,** and, specifically, towards the smart development
- They have different characteristics and specific endogenous factors, which implies:
    - elaborating specific perspectives for development
    - identify strengths and weaknesses in a comparative way

A small and medium-sized urban system - the Marche Region

- **Spatial peculiarities**
  - Polycentric structure, small and medium-sized towns
  - Some 63% out of 236 municipalities has less than 5,000 inhabitants
  - Average population per municipality is 6,450
  - Ancona is the only municipality with more than 100,000 inhabitants (200,000 considering its functional urban area)

- **Economic structure**
  - Manufacturing still represents the base-sector (28% out of total workforce vs 17% of the Italian average, 19% of the regional GDP)
  - 19 Industrial Districts, sprawled across the whole region (Istat, 2015)
  - Low-tech manufacturing activities (Made in Italy – footwear, furniture, textile industries)
  - …while the knowledge economy is lagging behind

- **Diffusion**
  - 4 universities
  - A sprawled natural, historical, architectural and artistic capital

According with the **«Smart Cities and Smart Communities survey»,** carried out by **UNIVPM and ANCI Marche**, and involving the Marche Region municipalities, one of the main criticalities towards the smart development is represented by the **Smart Economy axis**. In general we observed :

- A relative **low propensity to invest in R&D**, both in terms of public and, above all, private expenditure
- A relative low propensity of private firms to perform R&D activities jointly with public or private R&D providers

Notwithstanding the Smart Economy is considered by local authorities one of the most important axis toward Smart Cities and Smart Communities, the **Public Procurement in this field has been legging behind** to a certain degree. In particular, we observed:

- A low amount of Smart economy-oriented projects
- Their low level of territorial diffusion
- Their low total budget

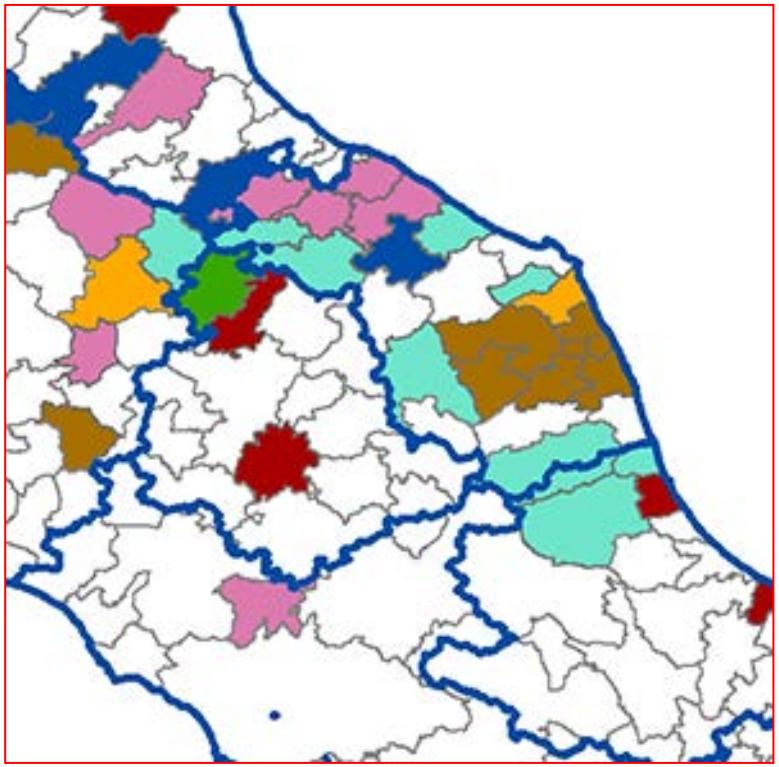
On this background, the **transition to a circular economy** represents an incredible chance in order **to strengthen the Smart Economy dimension** by improving **environmental sustainability**

As public policies must be **place-based** (Barca Report, 2009), we have to take into account **local and regional peculiarities**, in order to identify their strengths and chances for positioning and extending comparative advantages in certain key areas

Industrial Districts in the Marche Region are embedded in urban areas

- Could urban areas become providers of secondary raw materials for their Industrial districts?

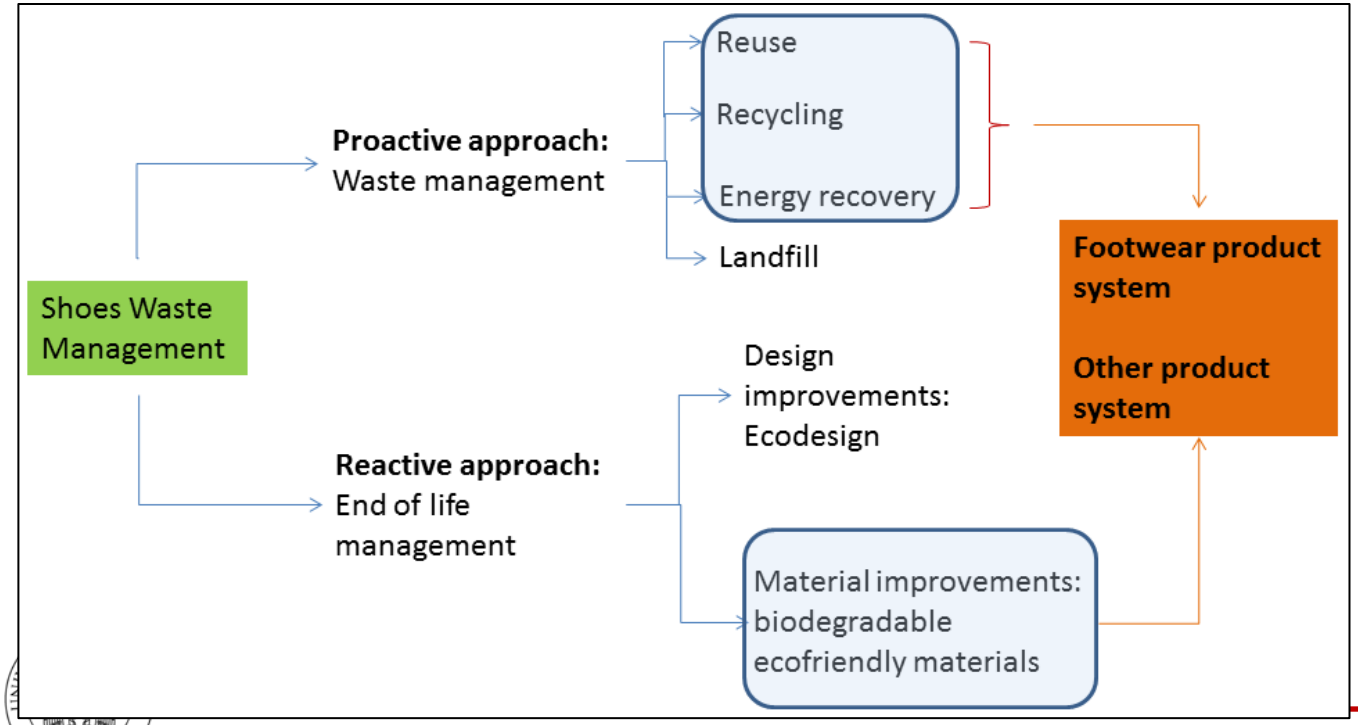
- Could Industrial Districts help implementing an integrated waste management framework?



Industrial Districts – Circular Districts: footwear

- Italy is the top exporter in Europe, and the largest concentration of footwear production is localised in the Marche Region
- Footwear and leather Industrial Districts are embedded in 7 functional urban areas (total population =400,000) within Fermo and Macerata provinces (**3,000 firms** and **24,000 employees**)
- **Environmental concerns**: production of raw materials components, the footwear manufacturing itself, end-of-life

Implementing an integrated waste management framework at regional level



«Bilateral» flow: e.g. tires will become soles

Best practise: teaming up between **Timberland** and **Omni United**

Industrial Districts – Circular Districts: furniture

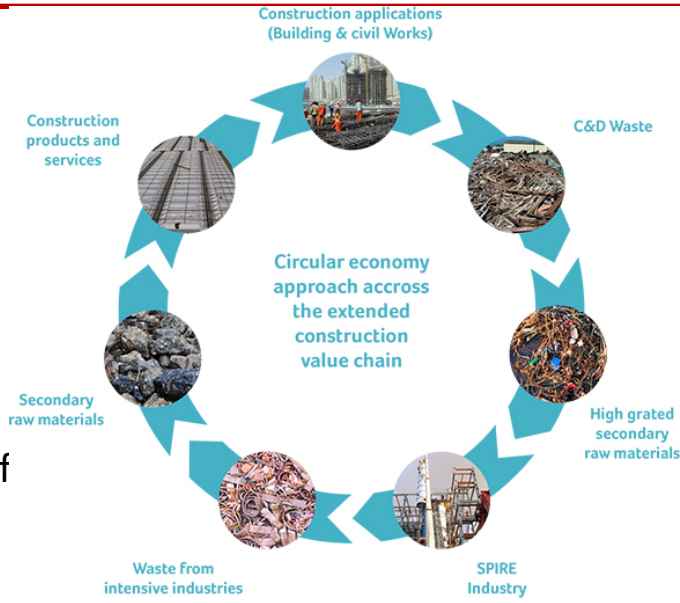
- **3rd national** furniture manufacturing **pole** (mainly kitchens)
- Furniture District is embedded in 4 functional urban areas within Pesaro province (**total population = 300,000 – 700 firms and 16,000 employees**)
- **Environmental concerns**: raw materials waste, landfill problems

Best practises – **Eco-mobilier** (France)

- *Extended Producer Responsibility* schemes
- Consortium (manufacturers and distributors)
- Implementing Eco-design
- Increasing recycling rate
- Increasing waste exploitation rate
- Increasing reuse by involving social economy.

LIFE RESTART, Pesaro – reconditioning and reselling of household appliances at the end of life (cooperative of unemployed people over 50)

Construction and demolition: large sources of waste and raw materials consumption - Best practices developed in running H2020 projects



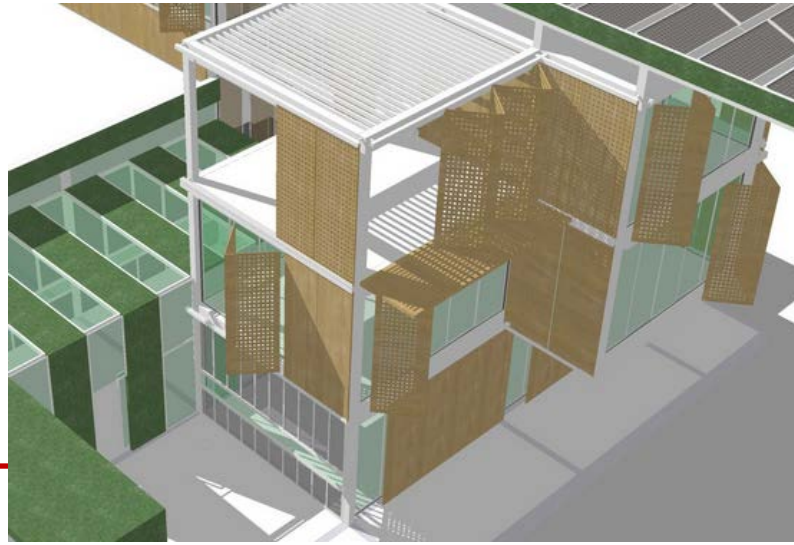
FISSAC project (Fostering Industrial Symbiosis for a Sustainable Resource Intensive Industry across the extended Construction Value Chain, PPP SPIRE)

New paradigm built on an innovative industrial symbiosis model towards a zero waste approach in the resource intensive industries of the construction value chain

- tackling harmonized technological and non technological requirements
- leading to material closed-loop processes and moving to a circular economy
- involving different industries (steel, aluminum, natural stone, chemical and demolition and construction sectors) and stakeholders in the extended construction value chain
- Implementing industrial symbiosis in a local/regional dimension
- providing product validation: with demonstration of the eco-design of eco-innovative construction products (new Eco-Cement and Green Concrete, innovative ceramic tiles and Rubber Wood Plastic Composites)

BAMB project (Buildings As Material Banks – WASTE/SC5):

- the establishment of a Building Information Modeling classification system and database for the electronic Material Passport
- Reversible building design



Expected results

Smart Economy

- Implementing a circular economy model based on **local peculiarities** by taking advantage of specific local manufacturing knowledge embedded in SMEs
- boosting regional knowledge economy and, as a consequence, addressing a specific regional weakness:
    - Innovation will play a key part in this systemic change (new technologies, processes and materials)
    - Eco-design will stimulate creative capabilities
    - New services and new business models will stimulate entrepreneurship and will contribute to a more diversified economy

- keeping/increasing current level of unskilled workforce
- Improving the ecofriendly image of regional manufacturing brands

Smart People

- Informed people will improve the sustainability of the consumption patterns and better contribute to reuse, recycling…

Smart Governance

- Closed local/regional loop between **designers and manufacturers - waste managers - public authorities – policy makers – citizens/consumers**
- Fostering strategic partnerships between manufacturing, research centres (Universities and private research centres)
- Public Procurement towards a circular economy
- Possibility for SMEs to access to funding related to Green Action Plan

Smart Environment

- Contribution to the improvment of the local/regional footprint
    - saving energy and resources
    - less raw materials dependence
    - significant reduction of waste landfilling
    - lowering current carbon dioxide emissions levels

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- The place where businesses can meet competitors in complementary markets and leading players in public research in Europe and the Mediterranean area to establish national and international partnerships in the implementation of a knowledge-based Green and Circular Economy.
- The right place to find out exactly how to access national and European funds.

ECOMONDO KEY ENERGY

ECOMONDO-KEY ENERGY 2015: FACTS & FIGURES

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VISITORS

100,000 m²
DISPLAY AREA

1,200
COMPANIES

500
FOREIGN BUYERS

500
ACCREDITED JOURNALISTS

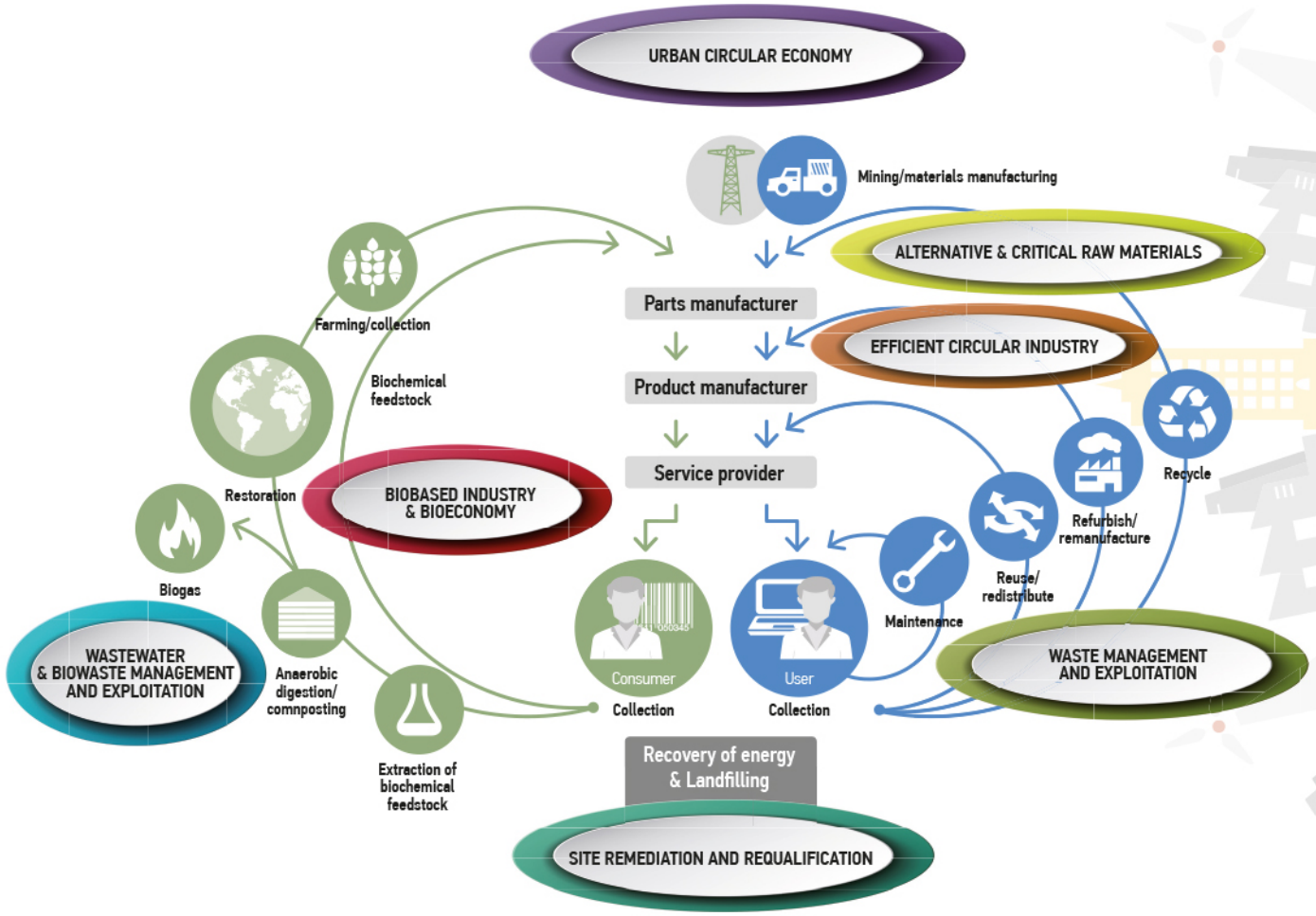
200
CONFERENCES

1,500
SPEAKERS

10,000
CONFERENCES PARTECIPANTS

368 million
CONTACTS

NEW VISION: GREEN & CIRCULAR ECONOMY



THE FUTURE

Goals

Becoming a hub for the circular economy of Eastern Europe and the Mediterranean basin and exporting Ecomondo's brand in emerging countries: Brazil, South Africa, Russia and China.

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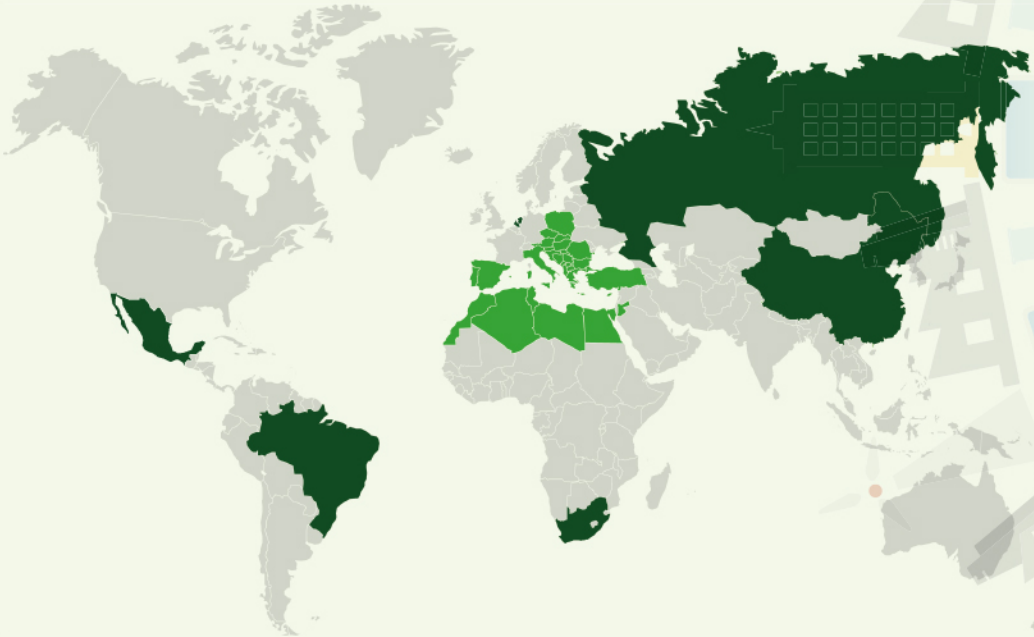
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