Circular Economy and Smart Cities: taking advantage from local peculiarities

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Circular economy:

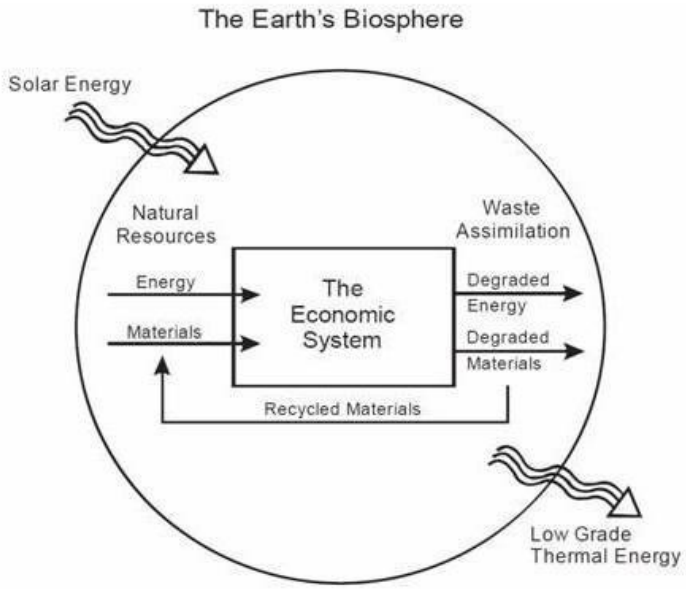
It’s an economy where:

- 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

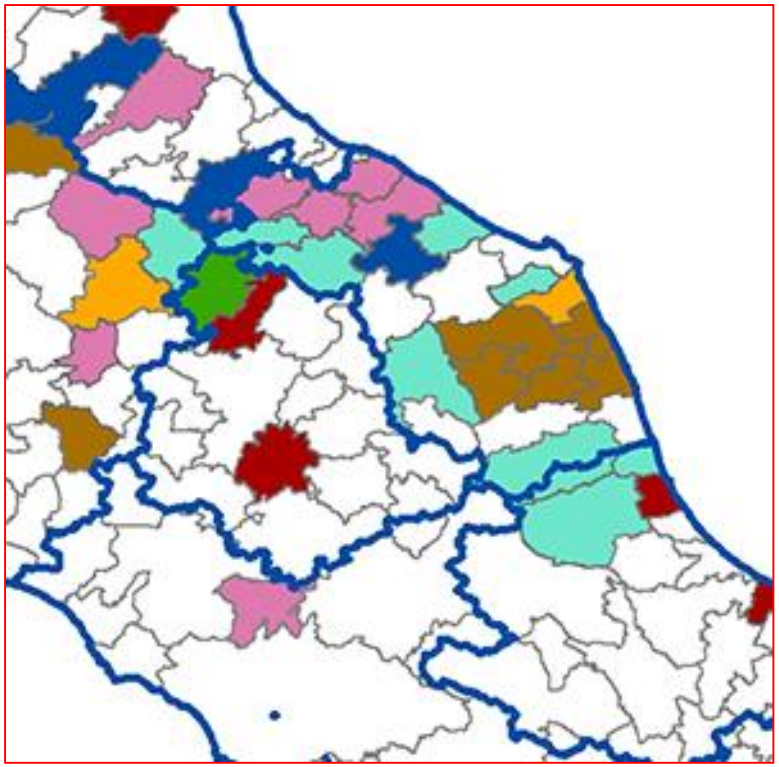
On this background, the **transition to a circular economy** represents an incredible chance in order **to strengthen the Smart Economy dimension** by improving **environmental sustainability**

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?

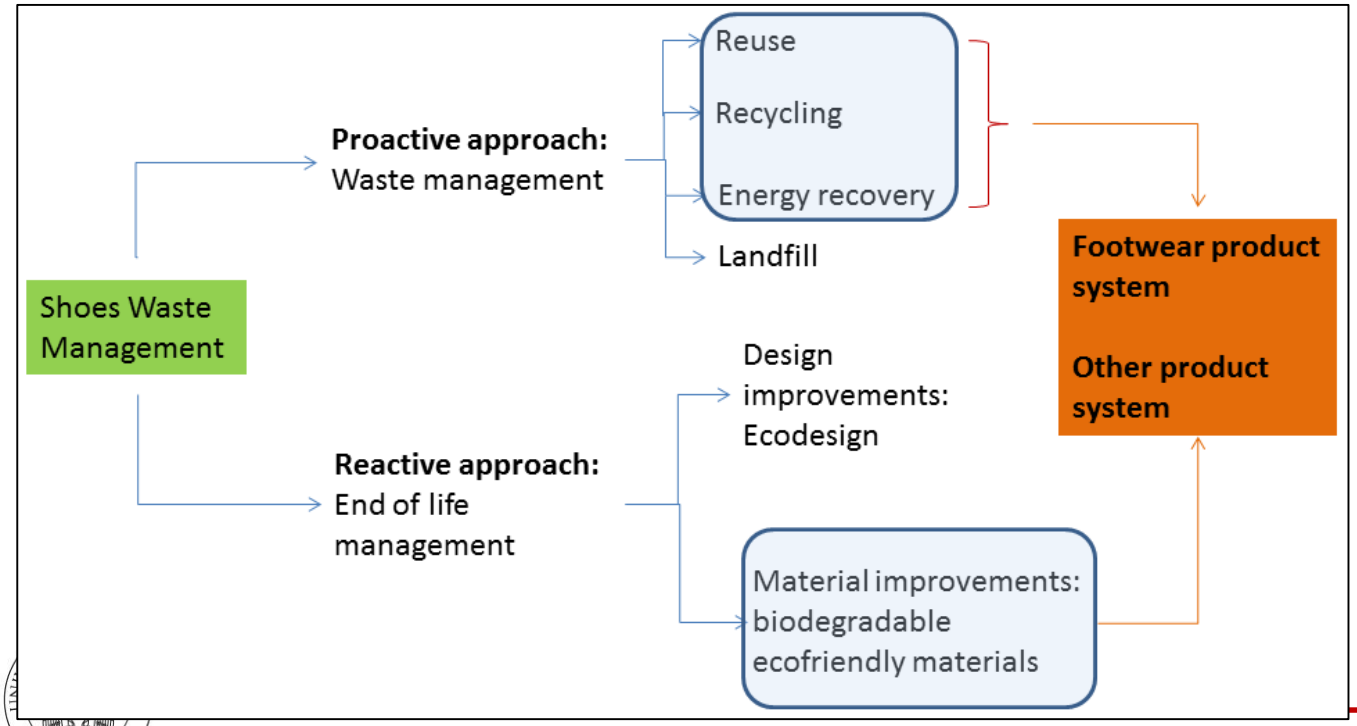
- Could Industrial Districts help implementing an integrated waste management framework?



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

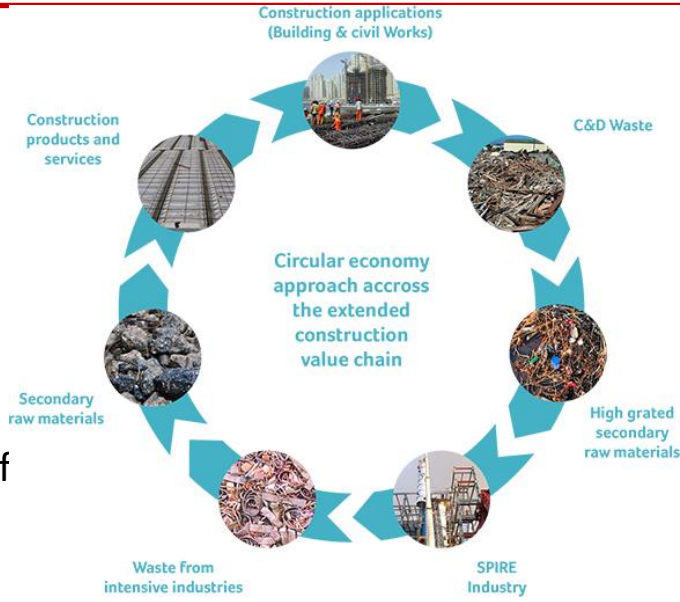
- **3rd national** furniture manufacturing **pole** (mainly kitchens)
- Furniture District is embedded in 4 functional urban areas within Pesaro province (**total population = 300,000 – 700 firms and 16,000 employees**)
- **Environmental concerns**: raw materials waste, landfill problems

Best practises – **Eco-n**

- *Extended Produce*
- Consortium (manu
- Implementing Eco-
- Increasing recyclin
- Increasing waste e
- Increasing reuse b

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



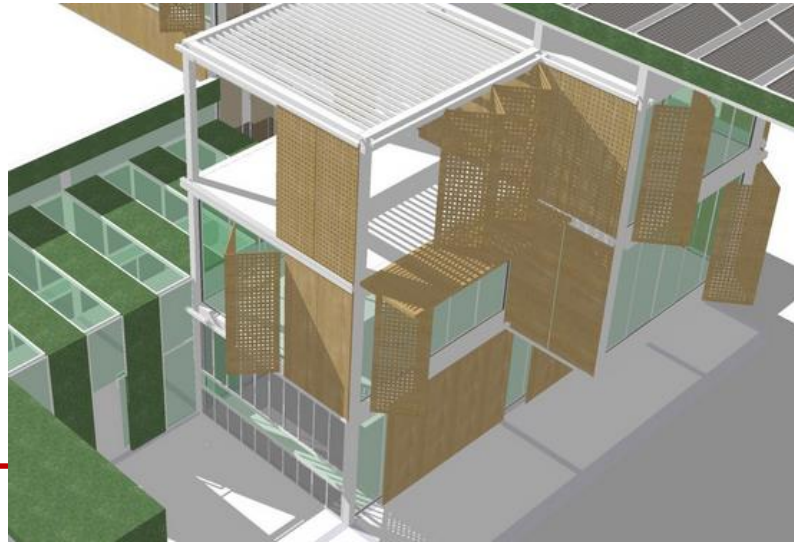
FISSAC project (Fostering Industrial Symbiosis for a Sustainable Resource Intensive Industry across the extended Construction Value Chain, PPP SPIRE)

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 right place to find out exactly how to access national and European funds.

ECOMONDO KEY ENERGY

ECOMONDO-KEY ENERGY 2015: FACTS & FIGURES

103,514
VISITORS

100,000 m²
DISPLAY AREA

1,200
COMPANIES

500
FOREIGN BUYERS

500
ACCREDITED JOURNALISTS

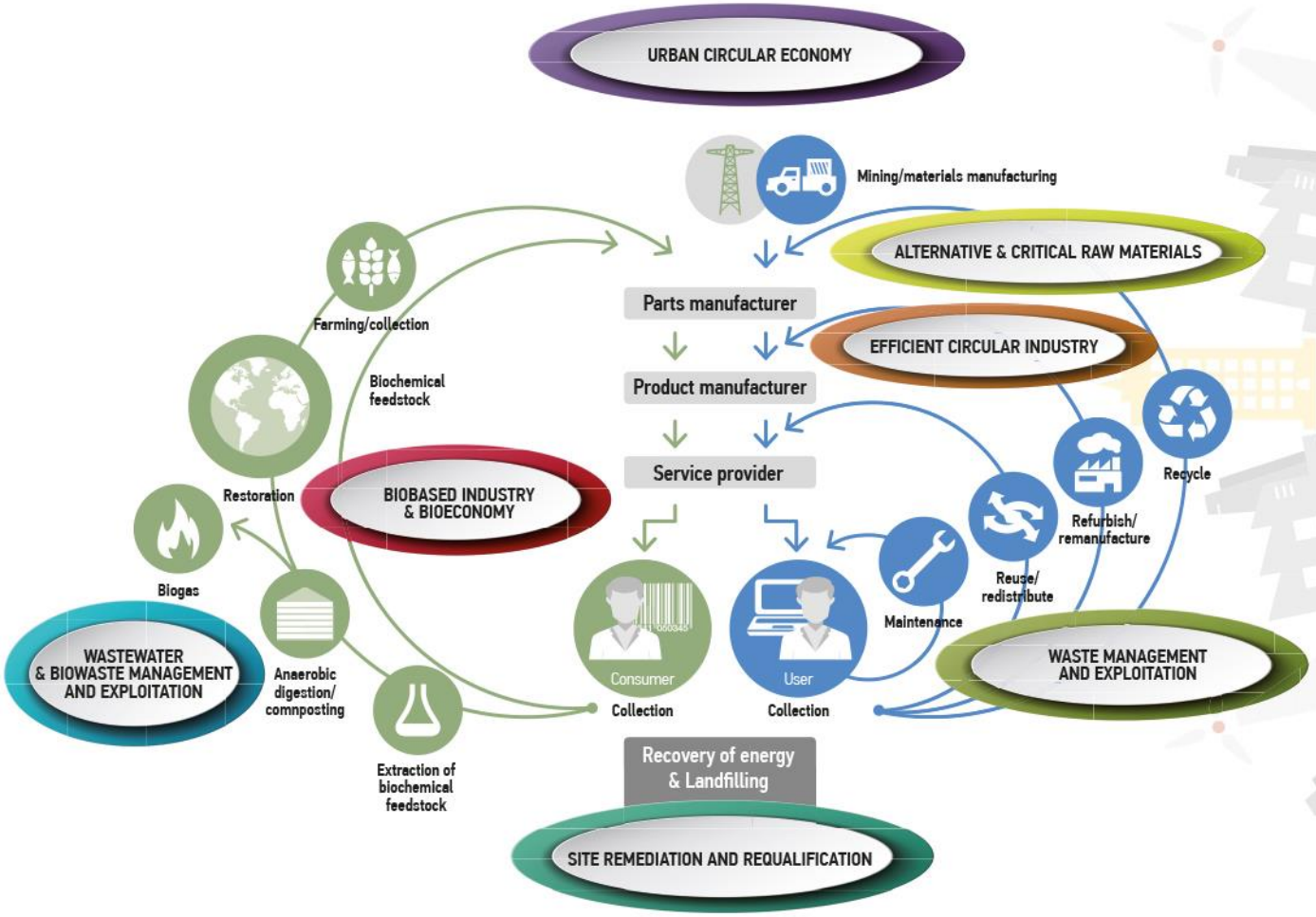
200
CONFERENCES

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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