

THE SUSTAINABLE REGENERATION OF AN INDUSTRIAL AREA AS URBAN LABORATORY OF CIRCULAR ECONOMY AND INDUSTRIAL SYMBIOSIS

SUN (SYMBIOSIS USERS NETWORK) CONFERENCE

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The industrial symbiosis is a really useful tool model which is widely spreading and validated in Europe. By an integration of different activities, production and resources supply can be reviewed with the aim to extend the cycle of utilization and consumption of natural resources encouraging an efficient eco-design, the reuse and recycling of many residual outputs. Many industrial areas, closely inserted in our urban contexts, can be renovated and refurbished using this innovative symbiotic approach. An added value could be also achieved by the creation of a sort of “urban laboratory” involving all stakeholders, as research centers, local authorities and entrepreneurs, producing a virtuous circle of sustainability.

In this issue, an important research pathway has been planned in order to re-thinking an industrial area on the outskirts of the city of Bologna, starting from industrial building energy consumption and supply, waste management and services sharing including a general area’s mobility reassessment.

This study shows a possible working method for the first step of the research.

Keywords: industrial district, sustainable regeneration, industrial symbiosis, living lab, waste.

INTRODUCTION

In the context of the strategies and technical tools for the management of natural and industrial resources, the closure of resource cycles according with a circular economy approach has become a fundamental objective both at a scientific and industrial level: any waste should not be considered as waste to be disposed, but a resource to be valorized in different integrated activities. Industrial symbiosis approach could be a useful tool to achieve that goal, promoting the innovative collaboration between companies and also increasing the competitiveness of local business and enterprises [1]. The contextual levels of an industrial symbiosis strategy can be applied at a territorial scale between companies, operators and organizations (networks for industrial symbiosis) and at industrial districts level, inside industrial areas. The present study is referred to an industrial area, named Roveri, adjacent to Bologna and born in the 80's by an assembly of small and medium-sized industrial and artisan enterprises.

Over the years, the local authorities, Municipality of Bologna and Emilia Romagna Region, have allowed the construction of residential buildings, to constitute an integrated and mixed (industrial, artisanal and residential) village.



The economic crisis has led to a decline in production activities, but, in recent years, a dynamic and spontaneous renovation seems to be possible.

This study adopts an archetypal of business-resilient ecosystem with the goal of maximizing the use of material, energy and services assets focusing the attention on energy efficiency, by-product recovery and regeneration, and sharing welfare, services, mobility in order to rethink the area as a sustainable industrial district. It is also possible thanks to the regional law on circular economy [2] and the recent specific regulation on by-products [3] thus facilitating and supporting the strengthening of existing productive activities, encouraging the community in moving from a traditional/linear to an innovative/circular approach. Even if, this predisposition is led by specific local stakeholders, one of the possible approach is to involve all the local community thus creating a urban living laboratory of sustainability in which ENEA and University of Bologna cover the role of facilitators for the multi-layered skill set.

METHODS & RESULTS

In the following, method and first steps to solve the lack of an updated picture of activities inside this area are shortly reported. This approach could be applied as study method in any similar context.

The primary data are collected thanks to PARIX database, a Company Register platform, maintained by the Italian Chambers of Commerce that gives update information daily about master data, balance sheet and type of manufacturing activities.

Step 1	Activity	Actors	Tools	Result
Phase 1	INDIRECT COLLECTION OF PRIMARY DATA (TYPE OF ACTIVITIES)	 	PARIX database	UPDATED MAPPING OF INDUSTRIAL AND COMMERCIAL ACTIVITIES IN ROVERI AREA
Phase 2	GEOREFERENCING OF COMPANIES OPERATING IN ROVERI AREA	  	Geographic informatic system (GIS), Territorial information system (SIT) of Municipality of Bologna	GEO-LOCALIZED MAPPING OF INDUSTRIAL AND COMMERCIAL ACTIVITIES IN ROVERI AREA
Phase 3	ON-THE-SPOT CONTROL	 	/	DATA VALIDATION
Phase 4	HISTORICAL RECONSTRUCTION OF INDUSTRIAL HERITAGE OF ROVERI AREA		/	STORY OF TRANSFORMATION AND EVOLUTION OF ROVERI AREA FROM 80'S TO TODAY
Phase 5	DIRECT COLLECTION OF SECONDARY DATA (TYPE OF WASTE, BY-PRODUCTS, SERVICES AND SPACES)	  	Workshops and One-to-one meetings with company executives	MAPPING OF AVAILABLE RESOURCES

This has allowed to define the current picture of the area that shows a completely different conformation than the original one: a lot of industrial buildings have changed their purpose of use, many commercial activities and residential facilities are born and new brands have decided to invest here.

CONCLUSION

The knowledge of the transformation of the area over the years and the current conformation mapping will help to plan all following steps of the research in order to implement actions in line with the identity of the area and the needs of the community.

Particularly, the goal of this first step of activities is to outline the current framework of the industrial and commercial activities and its available resources (in terms of substances, energy, spaces, services) that on the one hand, will feed, at first, a new database and then, the industrial symbiosis platforms (as Enea’s Symbiosis) [4] allowing to define the symbiotic scenarios and in another hand, will increase the relationship between industrialists e residents, thus creating a proactive sustainable industrial community. Energy audit, waste management design, sharing mobility planning will represent the following steps of the plan. Finally, a match-making of resources will be tested, with the support of public and private bodies, in order to facilitate the implementation of a sustainable industrial system [5].

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