

Research, Development, and Innovation for European Urban Challenges – Role aims and output for RD&I EU programme.

Investigación, desarrollo e innovación para retos urbanos europeos- Roles, objetivos y resultados de un programa ID&I

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Abstract

Paper will present the most significant European RD&I programme for urban areas. Europe is one of the most urbanized continents in the world; more than two-thirds of Europeans live in urban areas and this percentage continues to grow. European cities play a crucial role as engines of the economy, as places of connectivity, creativity, and innovation, and as centers of services for their surrounding areas. Due to their density, cities offer a huge potential for energy savings and a move towards a carbon-neutral economy. Cities are, however, also places where problems such as unemployment, segregation, and poverty are concentrated. Then, administrative boundaries of European cities no longer reflect the physical, social, economic, cultural or environmental reality of urban development and new forms of flexible governance are needed. However we could say that there is a common idea in Europe on the role which cities can play for the territorial development to be based on a balanced economic growth and territorial organisation of activities, with a polycentric urban structure; on

build strong metropolitan regions and other urban areas that can provide good accessibility to services of general economic interest; on characterisation of compact settlement structure with limited urban sprawl; or provide a high level of environmental protection and quality in and around cities. To turn the threats into positive challenges European cities follow different development trajectories and their diversity has to be exploited. The European Union does not have a direct policy competence in urban and territorial development, but the last two decades have witnessed an increasing importance of the European level in both urban and territorial development. RD&I programmes have been developed to support and promote urban and territorial development. The article will investigate which contributes have been given by main RD&I programmes and will consider their replicability and/or transferability out of Europe.

Keywords: European RD&I programme for urban areas; cities as places of connectivity, creativity, and innovation; replicability and/or transferability of RD&I programme out of Europe.

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Resumen

Este artículo presentará el programa europeo de Investigación, desarrollo e innovación (ID+I) más significativo para áreas urbanas. Europa es uno de los continentes más urbanizados del mundo; más de dos tercios de los europeos viven en áreas urbanas y este porcentaje continúa creciendo. Las ciudades europeas desempeñan un papel crucial como motores de la economía, como lugares de conectividad, creatividad e innovación, y como centros de servicios para sus áreas circundantes. Debido a su densidad, las ciudades ofrecen un gran potencial para el ahorro de energía y un movimiento hacia una economía neutra en carbono. Las ciudades son, sin embargo, también lugares donde se concentran problemas como el desempleo, la segregación y la pobreza. Entonces, los límites administrativos de las ciudades europeas ya no reflejan la realidad física, social, económica, cultural o ambiental del desarrollo urbano y se necesitan nuevas formas de gobernanza flexible. Sin embargo, podríamos decir que existe una idea común en Europa sobre el papel que las ciudades pueden desempeñar para que el desarrollo territorial se base en un crecimiento económico equilibrado y una organización territorial de actividades, con una estructura urbana policéntrica; construir regiones metropolitanas fuertes y otras áreas urbanas que puedan proporcionar un buen acceso a los servicios de interés económico general; en la caracterización de la estructura de asentamiento compacto con expansión urbana limitada; en proporcionar un alto nivel de protección y calidad ambiental en y alrededor de las ciudades. Para convertir las amenazas en desafíos positivos, las ciudades europeas siguen diferentes trayectorias de desarrollo y su diversidad debe ser explotada. La Unión Europea no tiene una competencia política directa en el desarrollo urbano y territorial, pero las últimas dos décadas han sido testigos de una creciente importancia del nivel europeo en el desarrollo urbano y territorial. Los programas de ID+I se han desarrollado para apoyar y promover el desarrollo urbano y territorial. El artículo investigará qué contribuciones han aportado los principales programas

de I + D + i y considerará su replicabilidad y / o transferibilidad fuera de Europa.

Palabras clave: Programa Europeo ID+I para áreas urbanas, ciudades como lugares de conectividad, creatividad e innovación, replicabilidad transferencia externa del programa ID+I.

Introducción

Europe is one of the most urbanized continents in the world; more than two-thirds of Europeans live in urban areas and this percentage continues to grow.

European cities play a crucial role as engines of the economy, as places of connectivity, creativity, and innovation, and as centers of services for their surrounding areas. Due to their density, cities offer a huge potential for energy savings and a move towards a carbon-neutral economy.

Cities are, however, also places where problems such as unemployment, segregation, and poverty are concentrated.

Then, administrative boundaries of European cities no longer reflect the physical, social, economic, cultural or environmental reality of urban development and new forms of flexible governance are needed.

However we could say that there is a common idea in Europe on the role which cities can play for the territorial development to be based on a balanced economic growth and territorial organization of activities, with a polycentric urban structure; on build strong metropolitan regions and other urban areas that can provide good accessibility to services of general economic interest; on characterization of compact settlement structure with limited urban sprawl; on provide a high level of environmental protection and quality in and around cities.

To turn the threats into positive challenges European cities follow different development trajectories and their diversity has to be exploited.

To support the creation of an European vision to the cities of tomorrow an on-going intergovernmental process of more than two decades, coupled

with the practical experiences gained through the URBAN pilot projects and two rounds of URBAN Community Initiatives, have led to an explicit European consensus on the principles of urban development, the 'Acquis Urbain'.

Successive EU Council Presidencies have recognized the relevance of urban issues and urban development policies at all levels of government. In particular, a series of informal ministerial meetings on urban development – in Lille 2000, Rotterdam 2004, Bristol 2005, Leipzig 2007, Marseille 2008 and Toledo 2010 – have shaped common European objectives and principles for urban development. These meetings have helped to forge a culture of cooperation on urban affairs between the Member States, the European Commission, the European Parliament, the Committee of the Regions and other European Institutions, as well as urban stakeholders like the Council of European Municipalities and Regions (CEMR) and EURO CITIES.

The 2007 Leipzig Charter on Sustainable European Cities has been the chief outcome of this process. It stresses the importance of an integrated approach to urban development and a focus on deprived neighborhoods in order to remedy vicious circles of exclusion and deprivation.

In 2010 this was taken further with the Toledo Declaration, which not only underlines the need for an integrated approach in urban development but also promotes a common understanding of it. The Toledo Declaration effectively links the Leipzig Charter to the objectives of Europe 2020.

Europe 2020 has seven flagship initiatives in which both the EU and national authorities will coordinate their efforts.

The political process has been mirrored on the ground by the support for urban development from the European Regional Development Fund (ERDF), notably via the Urban Pilot Projects (1989–99) and the URBAN and URBAN II Community Initiatives (1994–2006).

The urban dimension has been mainstreamed in the current ERDF programming period, which has

given all Member States and regions the possibility to design, programme and implement tailor-made, integrated development operations in their cities.

With the Lisbon Treaty, territorial cohesion was recognized as a key objective of the European Union. This resulted from a policy process that ran parallel to and was linked with that of urban development. The adoptions of the European Spatial Development Perspective (ESDP) in 1999 (ESDP, European Spatial Development Perspective, 1999) and the Territorial Agenda of the European Union (EU) and Leipzig Charter in 2007 have been significant milestones. The EU was revised in 2011 to better reflect European challenges and policy priorities – notably Europe 2020 – leading to the adoption of the Territorial Agenda of the European Union 2020 (TA2020) (European Union (EU), 2011).

It builds on the principle that an integrated and cross-sectoral approach is needed to transform the main territorial challenges of the European Union into potentials to ensure balanced, harmonious and sustainable territorial development.

TA2020 effectively links territorial cohesion with the Europe 2020 strategy. It provides strategic orientations for territorial development and stresses that most policies can be more efficient and can achieve synergies with other policies if the territorial dimension and territorial impacts are taken into account.

The main urban and territorial development principles, priorities and objectives that have been expressed through the Leipzig Charter, the Toledo Declaration and the Territorial Agenda 2020, underlining the importance of a stronger territorial dimension in future EU cohesion policy.

Europe 2020 Strategy, need to point towards integrated, coherent and holistic approaches across sectors, governance levels, and territories.

Social, economic and environmental challenges have to be addressed both at the neighborhood level and in broader territorial contexts.

Cities can no longer be defined solely by their administrative boundaries, nor can urban policies target only city-level administrative units.

Attention has to be paid to the necessary complementarities between functional approaches and social and cultural approaches involving citizens' engagement and empowerment at the level of neighborhoods.

H2020 is the largest Research, Development, and Innovation program in the EU with almost 80 billion Euro funding available in seven years (2014-2020), as well as private investment mobilized by the program itself. H2020 is the key tool designed by the European Commission to stimulate economic growth and create jobs, to place European research at world level, to strengthen industrial leadership and societal challenges facing the future, making it easier collaboration between public and private sector, to encourage, stimulate and support a deep innovation in all sectors, including urban environments. To build a strong European research system that aims to draw H2020 Program should align, or create convergence in the individual national research programs through adherence to common research agendas designed as part of the Joint Programming Initiatives (JPIs). One of the most ambitious attempts at alignment is to promote convergence between national research programs, RTI and structural funds and investment in urban areas.

European Commission's policy for European 2020 has led to the creation of Horizon 2020—the

largest European Union Research and Innovation Program ever realized, with almost 80 billion euros of funds available in 7 years, in addition to private investments that the program itself is able to boost.

In addition, the Strategic Energy Technology Plan (SET) and EII (European Industrial Initiative), initiatives have been launched to promote urban innovation, the integration of renewable energies with distribution networks, the energy efficiency of urban areas, energy efficiency in buildings.

Thanks to this three actions Europe will build a strong European research system that will the capacity to position itself as a global player in many areas, including so-called societal challenges, requires a coordinated system approach and a funding chain to develop a deep understanding of this which is meant for innovation.

Top-down approach

A key point in building a strong European Research System, a global player in many areas, including so-called societal challenges, is to coordinate system approach and funding chain at international as well as national level. To promote and stimulate a coordinated system approach in the funding chain, ERA (European Research Area) started a joint programming process from



Figura 1. National Keys.

July 2008, establishing a specific configuration of the ERAC, called the High Level Group on Joint Programming–GPC and assigning them the task of identifying the areas and themes of specific joint programming actions to be launched in the years to come, having the sole purpose of pushing individual national efforts into a better use of public funds for research in common areas towards the so-called European challenges.

This led to a structured and strategic process in which each Member State, for all or some of the existing JPIs (ten of which one deal specifically and exclusively with societal challenges in urban areas), the Joint Programming Initiative Urban Europe) has helped to build a common vision on a voluntary basis, creating a Strategic Research Agenda (SRA). One of the essential elements common to all JPIs is to align³, or create, the convergence assumptions of National and European Strategy of National Research Programs with the Strategic Research Agendas (SRAs) of the Joint Programming Initiatives themselves.

For this reason, the GPC (High-Level Group on Joint Programming, GPC Group on Alignment, Brussels, 2014) has recommended to the Member States:

- Enhance inter-ministerial co-ordination that could also involve the involvement of several ministries belonging to the same Member State;
- new ways of involving the institutions to encourage the participation of policy-makers by developing a coordinated approach based on joint financing projects;
- the existence, preferably, of national programs and/or strategies that do not necessarily have to reflect in full the Strategic Research Agendas (SRAs) of JPIs and, if not, the availability of dialogue and study on the basis of the SRAs of JPIs themselves.

3 A shared definition of what is meant by the term alignment is that the alignment takes the form of a strategic approach promoted by Member States—on the basis of a variable geometry—by which national programs, priorities and national activities can be prioritized of joint research elaborated in the context of Joint Programming, with the aim of improving the efficiency of investment in research.

Bottom up approach

A bottom-up approach is the one developed by EERA—European Energy Research Alliance, now from April 2014 EERA AISBL, which has established itself as a non-profit international association to promote energy research at European level and thus guarantee product innovations process required by SET Plan itself.

EERA brings together more than 175 research centers and universities that, working actively together on 17 joint research programs, create joint research programs, collaborating with industry and with European industrial platforms to align research and innovation priorities.

Among the common research programs promoted by EERA, which is significant for city and buildings, is the Joint Program on Smart Cities.

In this and other European spheres there is scientific awareness that a city cannot be understood only by looking at buildings, transport systems, energy distribution, or people from any city is a complex system; the high complexity of this interdependence—parties with the whole—is aggravated by the slow pace of physical change when compared with those imposed by demographic changes, lifestyles, economics, and so on, which makes it difficult to discern the causes of the effects.

Understanding how a city works and how its development can be influenced by politics, investment or technology is a complex task that requires, from a scientific perspective, the development of transdisciplinary and holistic approaches.

Urban Research, Innovation & Development is now geared towards promoting innovative solutions in the various areas that, however, require—all-thought systems and integrated approaches, especially for urban complexity management, and most importantly when it comes to energy infrastructures and enabling technologies.

The second ICT revolution that is coming to our lives through the pervasive implementation of the internet of things (IoT), with its built-in IT systems, is already affecting everyone in industrialized

WHY

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INDIVIDUATE IMPLEMENTING PARTNERS

- Research and Technologies Organizations
- Universities
- UN Habitat

KEY ELEMENTS

- Document of Work



WHY

To improve efficiency of national/international investments

INDIVIDUATE IMPLEMENTING PARTNERS

- municipalities
- government ministries and institutions (j. e.: Ministry of Housing, Departamento Nacional de Planeación (DNP), Agencia Presidencial de Cooperación (APC), la Financiera de Desarrollo, FINDETER, las Cámaras de Comercio, Asocapitales, Ecopetrol, Alcaldía de Bogotá, Medellín y Santa Marta, Fedesarrollo, BID, CAF,
 - civic associations);
- Association of Colombian Capital Cities (Asociación de Ciudades Capitales de Colombia-ACCC)
 - financial institutions

KEY ELEMENTS

- enhance inter-ministerial co-ordination that could also involve the involvement of several ministries belonging to the same Member State;
- new ways of involving the institutions to encourage the participation of policy-makers by developing a coordinated approach based on joint financing projects/opportunities;
 - the existence, preferably, of national programs and /or strategies to start a dialogue

Figura 2. Approaches.

countries. This is particularly true for urban space, where we can use intelligent services in all aspects of life; this includes new ways of interacting with city administrations and governments, but also new urban planning phenomena, innovative urban infrastructure enabling the built environment, more efficient and rational use of energy flows.

The EERA Joint Program on Smart Cities has started, since 2010, joint research paths between the 52 European research institutions and universities involved, cities and smart cities, aware that European countries face a huge challenge to increase energy efficiency and reduce greenhouse gas emissions to meet the ambitious goals of protecting the climate. The characteristics of urban

morphology and the growing tendency towards urbanization give enormous power to cities; In this sense Smart Cities are the cities that will use innovative technologies and an integrated approach to deliver high energy efficiency, environmental sustainability, and quality of life. They will, therefore, have a leading role in the SET-Plan and will be the basic bricks of the low-emission energy system of tomorrow. The EERA Joint Research on Smart Cities research efforts is focused on the innovations that are needed to achieve this paradigm shift in urban energy management and pave the way for the era of Smart Cities.

Starting with a first Document of Work DOW (2013), fifty-two international research institutes

and / or universities—of which 23 participants as actual members and 29 associate partners—developed a joint idea on the integration of renewable energy sources in energy networks and in the increase of energy efficiency in the urban sphere, with the awareness that to work on the concept of Smart Cities, an integrated and innovative approach needs to be developed for the intelligent design and operation of the entire urban system.

Conclusions

According to the study “Investing in Research and Innovation for Grand Challenges” (Joint Institute for Innovation Policy, 2012), we could say that not only for Grand Challenges⁴ the “incentive mechanism” would help to design governance of the interfacing between politics and research and innovation.

Not surprisingly European Research Area – ERA started a joint programming process to promote and stimulate a coordinated system approach in the funding chain on 10 specific actions which need broad and specific foresight studies and a multilevel thinking and working.

Among this 10 actions, one is dedicated to urban areas in Europe.

Urban areas are catalysts for grand challenges, indeed.

That’s why “incentive mechanism” would help each of the three potential spheres: research/technology; industry/innovation; society/politics.

Certainly each of them, three with its own incentives structure.

Concerning the first sphere what we have experimented in Europe is that for researchers it may be easiest: it may be very rewarding to be part of a global community of researchers in relation to a particular challenge.

For national research funding agencies, it may be also rewarding to engage in a challenge-driven research which is borderline among several national funding agencies or international ones: they need to show their contribution to building an excellent research base and they need to show longer-term societal importance/impact of the research they fund. A key success factor to boost this sphere (first: research/technology) has been to embed in global challenge driven research initiatives (i.e.: Joint Programming Initiative Urban Europe).

It gets more complicated when coming to technology and industry (second sphere) because of competition mechanism, but at the same time and effective challenge driven approach may help to create attractive new and expanding global markets which are the major drivers for growth, both at macroeconomic level and at the micro level of companies. (i.e.: Joint Programme on Smart Cities; European Innovation Partnership).

Then concerning the third sphere (society/politics) we could agree on the comments that the “incentive mechanism promote strong commitment in the public debate and at all levels of policymaking” especially if we consider what is going on at a national level concerning the alignment of RD&I funds with structural funds (Coordination and Support Action EXPAND, 2017): to be part of an international activity is an incentive for all participating Funding Agencies to elaborate a common position paper.

Thanks to this experience some recommendations we can suggest:

- not simply focus on challenges approach for research while on demand for solutions that a challenge may generate. The wealth of regional and local initiatives in urban areas (i. e.) points to a “strong interest at the level of innovation and diffusion of innovations in the market and in a society at large. Fostering and upscaling interesting initiatives at this level may prove to be very beneficial for the goals of research excellence and/or industrial growth and leadership.”(

⁴ A grand challenge is a grand challenge when it is politically decided it is a grand challenge. But the example of the Intergovernmental Panel on Climate Change (IPCC) shows that it may take a long time of scientific work and collection of data before political consensus on the nature of the challenge is growing.

Joint Institute for Innovation Policy, Investing in research and Innovation for Grand Challenges, 2012)

- the sphere of industry/innovation is extremely different from the one of research/technology; process and aims are different. The loose of integration among them two drive in the direction to boost on alignment “for a better articulation of challenge driven research and technology needs in the sphere of innovation”⁵
- to implement national focus programme it is necessary to set up Funding Agencies with a clear mission in relation to the challenge of the plan or in the case at national level exist more Funding Agencies with an overlapping mission (i. e.: Italy where on urban areas more than one Funding Agency could have a specific role such as Ministry of University and research, Ministry of Economic Development, Ministry of Environment, Ministry of Cultural Heritage, Agency for Social Cohesion, National Council for Regional Affairs, Regions, Metropolitan Cities, etc.) it is necessary to clearly identify within the national focus programme roles, funds, and responsibilities in implementing the program.

Key points:

- agencies and the private sector initiatives must have a degree of political and organizational independence from changing governments and administrations usually leads to more effective programmes. In

particular in the case of wide acceptance of the urban challenge approach at political levels this somewhat “de-politicised” mode of governance is to be preferred.

- agencies should not so much be seen as research and innovation funding bodies, but rather try to be “change agents” building upon the relatively strong and stable political consensus with regard to the specific challenge (this is the explicit mission for the challenge drove Joint Programming Initiatives).
- agencies need to be audited in a longer-term horizon with a clear focus on their mission
- multiple agencies need to reflect different challenges

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5 ibidem

