NATURVATION
cities – nature – innovation

SNAPSHOT - MUNICH: THE RESTORATION OF THE ISAR RIVER

KEY POINTS

- **The Isar Plan harmonises interests of flood protection with nature conservation and planning and public use in an urban riverscape**
- **Its design and implementation relies on multi-level collaboration, an interdisciplinary working group and continuous citizen engagement**
- **The multifunctional riverscape combines blue, green and grey infrastructure, while integrating ecological values into traditional water engineering**
- **The Isar Plan is used as a best practice example for river restorations worldwide**

ABOUT THE PROJECT

NATure-based URban innoVATION is a 4-year project involving 14 institutions across Europe in the fields of urban development, geography, innovation studies and economics. We are creating a step-change in how we understand and use nature-based solutions for sustainable urbanisation.

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Sustainability challenges and opportunities

Munich is the most densely populated and one of the fastest growing city in Germany. The city's sustainability goals are challenged by loss of green space, increased flooding and heat waves.

Munich grew on the banks of the River Isar, and is the third largest city in Germany and the 12th largest city in the European Union, with around 1.5 million residents. The Munich Metropolitan Region is home to six million people and is a top-ranked destination for immigrants and expatriates. The Isar River crosses the city and has always played an important role in the region's development and profile. It has powered mills, transported timber and provides electricity, recreation and ecological qualities to residents and visitors alike. More frequent floods beginning in the 1980s, however, have called for an integrated and innovative approach to restoring its original Alpine gravel dynamics as much as possible within the tight manmade corset of Munich.

Solution story and key actors

The 'Isar Plan' restoration project began in 1995 to improve flood protection, ecological function and recreational areas. The Isar Plan grew from a close collaboration between several actors, including the City of Munich, the Bavaria Ministry and civic society.

A joint interdisciplinary planning group was formed with water engineers, landscape architects, city planners and biologists from the regional and city administrations as well as community groups and the 'Isar Alliance'. The environmental NGOs of the Isar Alliance had long been concerned about river water quality, however, only following the 1990s floods was attention and action focused on these community concerns. The restoration of the eight kilometre river corridor through the city started in 2000. The development goals were defined based on an assessment by the project's interdisciplinary working group. The main goal was improving flood protection via a restored riverscape, while enhancing water quality, biodiversity and recreational opportunities.[1] ***"While flood protection was given strong emphasis, it was seen as important that none of the goals could override any other".***[2] The restoration allowed the river more space to move and reshape itself while regaining its natural features. The monotonous river bed was replaced by a diverse, rewilded landscape that not only provides ecologically-valuable habitat, but also became a year-round attraction for residents who could actively contribute to its design and quality.[3] The Isar Plan has harmonised the interests of flood protection, nature conservation and urban lifestyles in a multiple-use river area.[4]

Governance strategies

The Isar Plan is an early community-involved collaborative river governance program, linking flood prevention with nature conservation, ecological value creation, urban planning and resident well-being.

The Isar Plan and the interdisciplinary project group, which was responsible for the development and implementation, was headed by the Bavarian Water Management Office in Munich, and involved different municipal departments, including construction, urban planning and health and environment. It was assisted by an expert panel, the Isar Alliance, and the Munich Forum. ***"It has been recognized early on that if one wants to be successful, one needs to invite other stakeholders and bring them on board."***[5] The Isar Plan also had to integrate policy demands across sectors, notably for flood protection, nature conservation and urban planning. In this sense, the Isar Plan could address legal challenges, with the state being responsible for water management, and the city for river maintenance and the integration of flood considerations, such as flood risk maps, into comprehensive planning frameworks.

Business models

The Isar Plan was jointly financed by the State of Bavaria and the City of Munich. Because many Alpine rivers flow through Bavaria, regional water and civil engineering projects have been important and generally well-funded for the past 200 years.

Since the 1980s, ecological concerns have been part of the zeitgeist of Bavaria, leading to ***"a change of thinking in support of restoration, giving rivers back their space, and integrating ecological approaches to water engineering".***[6] The restoration of the Isar started in 2000 and took 11 years. Its €35 million cost was financed by a Bavarian scheme for big water sources, shared by the State of Bavaria (55%) and the City of Munich (45%). ***"There is a general financing scheme in Bavaria for small water courses, according to which water retention areas are generally financed with 75% by the state, which means that the city would have to pay 25%, which will get reflected in taxes that the citizens have to pay. It can only relate to payments of the citizens that have direct benefits … In order for the state to pay, there are thus requirements for multi-purpose, e.g. for improving water quality, ecology, recreation."***[7] Floods in 1999, 2005 and 2013 motivated increased financing for water engineering and management. After 2005, the Bavarian Environment Agency developed a Flood Protection Program (2005-2020) with a budget of €2 million ***"including 100-year flood protection measures together with risk reduction and climate change adaptation approaches."***[6]

Citizen engagement

The Isar Plan was ahead of its time in citizen engagement. The public has been consulted throughout the process from planning to operation through diverse participatory methods fostering citizen rights.

Citizens were involved in the Isar Plan from the very beginning. The pathways of engagement ranged from contributing to the interdisciplinary Isar Plan working group (citizen groups, NGOs, Isar Alliance, Munich Forum), through information provision (internet platforms, brochures, media, lectures, info points) to a long public consultation process throughout the project.[8] The process also included site visits, round-table discussions and workshops. Citizens were also interviewed on their preferences about (a) flood control, (b) the river's alpine character, (c) gravel banks vs. flood meadows along the river, (d) trees and natural vegetation on the river bank, (e) recreational activities and (f) the river's ecological functions.[2] The responses guided the planning process. In some cases, preferences were mixed. Young respondents wanted more gravel banks to access the water while the older generation preferred grassland. The compromise was to widen the river by 30%, while keeping about 60% of the meadows.[2] Citizens' opinions in another case helped to identify the optimal solution for the 1.5 km urban river section, where a closer-to-nature solution was chosen over grey infrastructure.[9]

Innovation pathways

The Isar Plan systemically induced changes in social values, attitudes, policy and the use of mixed urban infrastructures.

The Isar Plan changed widely-held perspectives. The river was no longer seen as a flood risk but rather an area for recreation. It also changed policy implementation by creating links across sectors. ***"…it has been an innovation in its time ... it took a non-traditional approach for handling rivers in urban areas, by not just engineering them, but trying to integrate ecological and social goals into the entire approach and by addressing them in a different way…"***[5] Today, the Isar Plan serves as a best practice for river restorations worldwide. Key success factors include (i) citizens' and NGO's increasing concerns for ecological issues that translated into (ii) an increased political interest in improved water quality and flood management, (iii) supported by European, national and regional policy changes. Further factors include (iv) increased and better targeted human resources and knowledge resulting in increasing awareness in municipal and regional administrations and (v) the privatization of energy companies that allowed an integrated restoration approach with multiple benefits for diverse stakeholders.[2]

[1] Arzet, 2016; [2] Binder, 2014; [3] Munich, 2011; Binder, 2006; ECRR, 2013; [4] ECAP, 2015; [5] Pauliet, 2018; [6] Former project officer, Bavarian Environment Agency, 2014; [7] Co-director, Bavarian Environment Agency, 2014; [8] Wulf & Schaufuß, 2013; [9] Zingraff-Hamed, 2018; Photo credit: Klaus Arzet, 2005; Bernadett Kiss, 2018.