



Best Practice: Large-Scale Green Space Reclamation Plan

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CITY: MADRID

POLICY AREAS: CITY PLANNING; PARKS & GREEN SPACES

BEST PRACTICE

In June 2008, the Department of Urban Planning of the Madrid City Council launched the **Madrid Río Project** to reclaim the Manzanares River, restoring the surrounding natural habitat for residents to enjoy. The river and its banks have been converted into public parks and a promenade, providing river access to residents who previously were separated from the river by the M30 multilane highway. Prior to the projects launch, the city had to first convert the M30 multilane highway underground. This phase, known as the Calle 30 Project, began in September 2004.

ISSUE

By the 1970's Madrid became one of Europe's largest developed cities and a multilane highway was built encircling the city and destroying the river banks. In 2004, the city government decided to reverse this situation and develop a plan to reconnect the river to the urban center by taking the multilane motorway underground and reclaiming the natural landscape for green zones and gardens.

The Madrid Río Project and the Calle 30 Project were developed concurrently in order to reclaim more than 2,961 hectares of land in Madrid, creating an ecologic corridor with a total surface area of 129 hectares.

GOALS AND OBJECTIVES

The purpose of the Madrid Río Project was to reclaim the river and its surrounding banks as public parks and green spaces for residents. The objectives included:

- To create new public green spaces along the banks of the Manzanares River.
- To engage Madrid's citizens in the development of this new public space by encouraging citizen participation and providing information on how the projects could link to other leisure, sports and cultural aspects of the city.
- To improve urban integration between the city center and the districts to the south and west of the city, transforming the Manzanares River from a barrier into a meeting place for citizens, connecting between neighbors and facilities.
- To improve water conditions in the river and insure that pollutants are not emptied into the water.
- To improve mobility, as the city center is much freer from traffic, saving in-city traveling times and reducing accidents.

Both projects were designed with the intention to revitalize degraded and neglected parts of Madrid and to bring back the lost beauty of the city.



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IMPLEMENTATION

This urban transformation plan was configured in two phases:

Phase 1: Calle 30 Project -- The planning and construction of the world's longest urban tunnel, directing the M30 multilane motorway, which currently forms a ring around the city, underground and installing electrostatic filter ventilation systems to filter the pollution produced by vehicles inside the tunnels.

Phase 2: Madrid Río Project -- The redesign and implementation of a new linear park along the banks of Manzanares River that reconnects both sides of the city and allows pedestrian access to the river.

The Madrid Río Project creates an environmental axis from Monte de El Pardo to Getafe and reclaims area for new green space, parks, playgrounds and recreational spaces. It also integrates a new urban park with existing parks and creates an ecologic corridor totaling 2,961 hectares.

Calle 30 Project involves five main elements:

1. Construction of a new 4 kilometer tunnel along the river banks
2. Construction of a new 3.8 kilometer tunnel in the northern intersection
3. Renovation of all intersections with national highways
4. Creation of 6 new exits and access routes along the ring
5. Construction of a 6 kilometer by-pass tunnel connecting the east and west sides of the city

Madrid Río Project involves 142 single plans, classified under five categories:

- Continuity measures: Plans to facilitate accessibility such as the Salon de Pinos (pine tree park) or the Portugal Avenue renovations.
- Open spaces: Plans to reforest and create a new canopy of trees by designating protected areas.
- River: Plans to make the Manzanares River more accessible by gangplanks, bridges, piers and pontoons.
- Urban Services: Plans to make equipment and public activities possible such as sports, educational programming, cultural events and provide sanitary services. Also to refurbish existing facilities.
- Roads: Plans to improve the road network, post new signage, provide more pedestrian accessibility via sidewalks, construct bicycle paths and offer parking.

Madrid Río Project involves the following construction plans:

- Creation of 54 kilometers (33.5 miles) of pedestrian walks and 30 kilometers (18.6 miles) of new cycling routes.
- Creation of 35 bridges, dams and catwalks with the renovation of 6 bridges and rehabilitation of 13 old dams and catwalks.
- Construction of 12 new overpasses for pedestrians and cyclists.
- Restoration of historical stone bridges, such as Puente de Segovia, Puente del Rey and Puente de Toledo.
- A 6 kilometer long and 25 meter wide green walk in the western bank form the Pine Park.
- Restoration of the urban green area with more than 33,550 trees to join the gardens of Campo del Moro (near the Royal Palace) and the Casa de Campo Park, and 460,054 units of new shrubs.
- Construction of 17 new children playing zones, 3 spaces for elders, and 253,601 square meters designed for sports use, including 43 courts and a new dock for paddle sailing.
- The creation of new cultural venues.
- Enlarging several river banks to act as a dam.
- Improvement of water quality in the Manzanares River with 13 new kilometers (8 miles) of pipes, 27 storm tanks and

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improvements of sewer plants surrounding the river. This will eventually allow the creation of a beach near Matadero, 11,280 meter (37 feet) of renovated water network and 5 tanks of reclaimed and recycled water with a daily capacity for 5,200 m³.

The Madrid Río Project involves a significant number of changes to the city's streets, especially for those which terminate at the river, giving them continuity and promoting new areas for walking. New street furniture has been installed, giving 250,000 square meters of new cultural, health and social programming space along with nine parking lots for residents with 4,303 parking places.

In 2010, a second phase of the Madrid Río Project began with a three-month citizens' outreach program where stakeholders were invited to comment and participate in the expansion of the project. The City of Madrid focused on new public-private partnerships with Madrid businesses, particularly within the construction and infrastructure industries, to include them in infrastructure development and in remodeling the buildings nearby.



Before



After

COST

Despite being included in the municipal budget, more resources were required and the need to create an alternative funding model arose. At this point, Madrid Calle 30 transitioned to a public company which would later transform into a private partner. During planning and construction, municipal technical staff worked on the Calle 30 Project.

The total budget of the Calle 30 Project was €3.9 billion Euros (\$4.9 billion USD)

The total budget of the Madrid Río Project was €370 million Euros (\$485 million USD), provided 42.85% by the Madrid City Council, 54% by Spanish Government and 3.15% by European funds.

RESULTS AND EVALUATION

The outcomes of the Calle 30 Project are:

- The M30 highway was a fault line dividing Madrid and its neighbors. After the project was completed, neighborhoods became connected and new meeting points were established. Overall, the quality of life has increased.
- City bus lines have been redesigned and are now more efficient, made possible by the destruction of the ring highway around the city.

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- The M30 road renewal plan and the integration of management changed the road into a modern and secure infrastructure, thereby reducing accidents.
- The overall accident rate fell by almost 50%, which can be estimated at a cost savings of €770 million Euros (\$934 million USD) in terms of insurance costs, taxes, etc.
- Overall noise pollution decreased.
- A decrease in traffic jams due to increased traffic fluidity will lead to a decrease in greenhouse gas emissions. Approximately 12 million liters a year in gas will be saved. In 20 years, it is projected that €190 million (\$241 million USD) will be saved in the cost of fuel, taking into account the average number of vehicles that pass through the tunnels at or below the speed limit. Decreases are not only measured in terms of reductions due to less traffic, but also the emissions captured by the filtered extraction system installed in the underground sections.
- In 2007, the greenhouse gases (carbon dioxide CO₂) emissions decreased by 35,000 tons. Emissions will gradually continue to reduce to a projected savings of 64,800 tons in 2037. The decrease in gas emissions implied a cost savings of €5.5 million Euros (\$7.06 million USD) in 2007 and will reach a projected savings of €10.1 million Euros (\$12.9 million USD) by 2037.
- Establishment of at least 109 hectares of parkland for public use surrounding the Manzanares River to make the river more accessible and improve the surrounding parkland, with 3,059 tons of CO₂ emissions set per year.
- Improved capacity of the M30. The M30 renovation includes more connections with the surrounding secondary roads in Madrid, reducing intercity travel time significantly. An annual savings of an estimated €4.4 million (\$5.65 million USD), in terms of the labor hours saved, along with savings of 708 million travel hours over the next 30 years, with an economic value of €3.915 million Euros (\$5.20 million USD) is projected.

Approximately 270,000 people have been directly affected by the Calle 30 and Madrid Río Project. The city of Madrid may not have a very large river, but it aims to make the Manzanares River as important as the River Seine in Paris or the Thames River in London.

TIMELINE

September 2004	Calle 30 Project began
April 2007	Completion of the Calle 30 Project
Fall 2007	Madrid Río Project planned
February – April 2008	Madrid Río Project on exhibition for input from residents
Spring 2008	Madrid City Council approved and initiated the Madrid Río Project, divided in several phases, to be completed in spring 2011
Summer 2010	Madrid Río Project will be 75% complete
Spring 2011	Completion of the Madrid Río Project

LEGISLATION

The Calle 30 Project was approved by Madrid City Council following local elections in 2003. In March 2004, the Calle 30 Project was established as a private company. Statutes relating to the Calle 30 Project were last modified on February 2005.

The Madrid Río Project was approved by Madrid City Council during the plenary session on June 25, 2008.



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LESSONS LEARNED

The City of Madrid faced numerous traffic congestion issues during the construction of Calle 30. Drivers faced temporary detours that changed almost daily, and caused problems for drivers, especially at night. A traffic simulation analysis conducted with a VISUM software transportation planning package was a key tool in making project design decisions.

Two unique tunneling machines, 15.2 meters in diameter, were key to the success of timely excavation. The machines were the largest in the world at the time of construction.

As with all large projects, the Madrid Río Project was not without controversy. The Tagus River Commission, responsible for public water, imposed a series of environmental conditions for the execution of the project. Also, the municipal opposition asked the EU to demand the city council to conduct an environmental impact assessment and seek a visit by an EU parliamentary committee to observe and assess the project. The result of this visit was positive, as the EU committee acknowledged that the projects were being carried out in accordance with EU regulations, adding credibility to the project by addressing all concerns from the government and residents.

Finally, the city of Madrid learned that a flexible financing scheme is critical in coping with complexity and the budget requirements for this type of project.

TRANSFERABILITY

Due to the dimensions and complexity of the project, the Calle 30 Project has become a model for other cities and organizations. However, the success of the project depends on a number of factors such as the current economic situation of the city.

Outside parties have shown great interest in the management and financing model of the Calle 30 Project, specifically in the integration of European Union legislation and the project approval and contracting process.

Countries which are currently planning to make improvements to their current transportation infrastructure, such as Poland, Russia, the Czech Republic, Romania, Hungary, France and Italy, have visited the Calle 30 Project and have shown major interest in the project. The Calle 30 Project has also received visitors from South America and Asia. Due to this exchange, many companies involved in the Calle 30 Project have recently been selected for infrastructure contracts in the U.K. and the U.S., and some are very active in Eastern Europe.

The world is becoming increasingly environmentally conscious. Any city considering a project such as the Calle 30 or the Madrid Río Project should focus on substantive environmental benefits. Countries and cities seeking solutions for reclaiming degraded areas can look to the Calle 30 and Madrid Río Projects for guidance on how to publicly explain environmental benefits from such projects.

The Madrid City Council has played a central and decisive role in the projects. The projects have drawn attention to Madrid's other urban planning and management practices and experiences. In the last two years, the City Council has received hundreds of visitors from mayors and political figures worldwide.

The M30 project was on display in the Urban Best Practices Area of the 2010 World Expo Madrid Pavilion in Shanghai. Visitors could learn about Madrid's urban renovation and view a visual display of the project. The theme of the Expo was "A Better City for a Better life" and therefore Madrid's M30 project was selected as a transferable best practice for display. Thanks to the Expo many visitors, particularly from China, learned about how to implement a similar project.



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