4.2 ECOCITY Barcelona - Trinitat Nova

4.2.1 General information

This case study looks at a renewal project on the north-eastern outskirts of Barcelona, in a neighbourhood beside the Collserola mountain range and upstream of the Besós River. A total of 891 social housing units in decline are being demolished and replaced by 1,045 new ones in several phases. The process, initiated in 1995 through a participative community plan, has been driven by the initiative of the local people themselves, who encouraged the administrative bodies involved (city and regional government) to include innovative sustainability criteria in the project. After a two-year participative design process, the Masterplan for the renewal area of the eco-neighbourhood was approved in March 2002. During 2003, sectoral sustainability studies financed by the municipal district were undertaken for the fine adjustment of the subsequent phases in compliance with the ecological guidelines previously established. Under the title Eco-Neighbourhood Trinitat Nova these studies have been synthesised to form an integrated sustainability plan through the ECOCITY project. Today’s challenges are to maintain adequate feedback throughout the remaining process, based on citizen participation and to extend the process to the rest of the district.

These are the main features of this case study in progress:

- participation, self-empowerment and neighbourhood initiative
- re-use of urban land (brownfield site) and improvement of the existing structures
- regeneration of consolidated urban tissue in a compact Mediterranean city framework
- centralising a formerly peripheral area through investment in public transport
- centre-periphery balance of urban resources

4.2.2 Project description

Trinitat Nova was one of the peripheral urban areas of social housing created in Barcelona during the 1950s to accommodate the new workers arriving in Catalonia from other regions of Spain. It was built without urban planning, with no provision of basic facilities and with poor construction techniques and materials. Most of the dwellings are extremely small. Additionally, serious construction pathologies appeared soon after building was completed. An extremely irregular topography and the urban isolation from the city were other critical problems affecting the urban and social structure of the neighbourhood.

In 1988, almost forty years after construction, the City of Barcelona made a detailed urban study of the state of the neighbourhood. A main conclusion of this study was that a great majority of the social housing units were irreparably affected by aluminosis and should be demolished and replaced with new ones. The conclusions of the study were incorporated into the Barcelona General Masterplan in 1999, defining three intervention units (U1, U2 and U3) (see Figure 4.2.1).

In 1999 the local and regional governments held an architectural competition for a design to renew the area. However, the residents, who were involved from 1995 in a process of community planning in order to improve the general situation of the area, protested against the winning proposal. Eventually, the results of the competition were cancelled. After that, the people themselves organised a European...
Awareness Scenario Workshop, inviting residents, experts and authorities to take part. In this workshop the fundamental principles for the ecological urban renewal of the neighbourhood were defined and sustainability and participation were established as the basis for future development. In 2000, these fundamental principles were translated into a document of analysis and guidelines, conceived as a working and discussion draft for the planning process. After a new competition it was decided to initiate a process of participation for drawing up a new Renewal Masterplan. In March 2002 this Masterplan was approved, but the local people called for an improvement to qualify the concept as a plan for an Eco-Neighbourhood. The necessary sectoral sustainability studies, mentioned in the previous section, were co-ordinated by Gea 21 and, after completion, were considered for the detailed steps of the next phase. The resulting masterplan for sustainability, with the title 'Eco-Neighbourhood Trinitat Nova', then became part of the ECOCITY project (see Figure 4.2.2)

**Urban structure**

With respect to the urban context of the project, the main issues are the physical connection of the neighbourhood to adjacent neighbourhoods and to the general metropolitan setting and inclusion within the neighbourhood of general facilities servicing the entire city. The main landscape features to be taken into account are the proximity to the mountains, abundance of urban green space and views towards the mountains and the sea.

The complex topography of the site to some extent limits accessibility. Another major problem is the current level of motorised mobility in public spaces. To increase the *mix of uses*, motorised mobility needs to be reduced, opportunities for contact and communication need to be increased and easy access to basic facilities must be guaranteed. Providing shopping facilities for daily supplies along main streets and diversification of uses throughout the new development are proposed as means to achieve a good mix of uses. New four-to-six-storey housing units, with shopping and other facilities on the ground floor, are planned to create an optimal density akin to that which exists in the rest of the city.

In relation to public spaces, the structure of the new development seeks to create good bioclimatic conditions and quality of public spaces. The main criteria for this goal are: the design of streets, squares, courtyards and inter-block spaces as places for encounter and communication; creation of suitable bioclimatic conditions permitting the use of public spaces in all seasons; increasing city safety and security by favouring city life in public spaces; and integration of the natural processes and cycles within the urban tissue. With respect to the natural environment within the city, the corresponding sectoral studies propose the application of two specific indices to evaluate and enhance the permeability of soil and the amount of green space in the area. Another sectoral study proposes some specific modifications of the Masterplan’s urban layout and built volumes to increase the quality of public spaces.

**Transport**

The general objectives are sustainable mobility and accessibility for the whole area. In addition to the already existing bus routes and underground station, a recently finished light rail route connects Trinitat Nova with the neighbourhoods situated north of the district. Extension of the existing underground line is also in progress. Higher densities and an improved mix of uses will contribute to creating a neighbourhood of short distances. A new cycle route in the area will connect with the existing and planned Barcelona cycle network. Designation of the whole neighbourhood as a traffic calming area will also increase the quality of public space and thus make walking and cycling more attractive. The whole area is contained within a 1,000 x 500m rectangle, so the longest walking distances are around ten minutes. Considering the difficult topography of the district, one fundamental factor is reducing barriers to accessibility in public spaces.
Figure 4.2.2: Masterplan Barcelona

Concepts for ECOCITY model settlements
With regard to motorised mobility and parking, the main goals are to reduce harmful emissions and greenhouse gases produced and to reduce consumption and deterioration of public space by private vehicles and thus increase the quality of this space. Taking advantage of the existing steep topography, four semi-underground car parks on the periphery of Unit 3 are proposed in order to avoid car penetration into the heart of the neighbourhood and to eliminate surface-parking as much as possible (see Figure 4.2.3).

Energy and material flows
The main aims in this field are the reduction of energy demand and environmental impact produced by non-renewable energy consumption; improving efficiency in supply and reduction of maintenance costs in buildings and public spaces; and replacing non-renewable energy with renewable energy whenever possible (e.g. using solar energy for warm water and heating).

This housing project will be one of the first constructed according to the new regulations on solar energy use for Barcelona. The design of the buildings has already incorporated a wide range of passive features such as insulation.

This is especially important as a way to protect buildings against over-heating in the Mediterranean summer and to reduce heating needs in winter. The energy sectoral study considered different options for heat generation (thermal solar energy, co-generation and heat pumps) and distribution/supply (totally centralised system, partially centralised system with separated storage in buildings and totally independent systems), finally proposing a centralised co-generation system with collective management.

A great majority of the energy proposals from the sectoral study will be incorporated into the final design.

In relation to water, the priorities are to increase efficiency in distribution and use; create urban conditions for infiltration and recollection of rainwater; promote water recycling and re-use; and contribute to the understanding of natural cycles through the introduction of water into the urban setting. Additionally, the old water distribution facilities have been converted into the ‘House of Water’, a new environmental interpretation centre focusing on the water cycle.
Regarding waste, the main objectives are a general reduction of urban waste and creation of optimal conditions for recycling and re-use, eliminating negative impacts on users’ comfort, health and welfare.

As a regeneration project with an estimated volume of 180,000 cubic metres of demolition waste during three phases, one of the main problems to be coped with here is construction and demolition waste management. The main proposal from the sectoral studies is to implement a management plan for demolition and construction waste.

**Socio-economy**

The integration of social, economic and environmental strategies has been one of the main priorities. With 7,696 residents in 1996, Trinitat Nova had been losing population since 1978. 31% of the population was aged over 65 in 1996. Of the neighbourhood population, about 30% did not have education to primary level, which led to social exclusion. Additionally, younger residents with middle and higher education were leaving the neighbourhood, which further worsened the educational structure. Problems relating to health care and disease prevention were also significant among the young and adult population.

The main target group here is the residents themselves. An important aim of the project is to recover lost population, by attracting young people and families to a neighbourhood with an increased quality of life, better transport facilities and many new social and economic opportunities. The general transformation of the neighbourhood, with radical improvements in connectivity, facilities and urban quality, and the innovative ecological outlook of the whole operation will without a doubt be economic attractors contributing to the improvement of social conditions.

Nevertheless, a main concern of the Trinitat Nova project is to avoid gentrification, assuring the introduction of a younger population without excluding the existing, older one. The surplus of new housing units in the renewal area may be a good tool for this gradual transformation. Furthermore, the main objective of the community plan, through its educational and social dimensions, is to establish sound conditions for the creation of local jobs and opportunities. There is a well-defined strategy in this respect with many initiatives in progress.

### 4.2.3 Project outcomes – key elements

The agreed objectives are now being extended to the surrounding problem areas, with the replication of the process in the closest neighbourhoods. In certain aspects, Trinitat Nova has become a pilot project for the Barcelona sustainability policy (e.g. in relation to new municipal solar and waste recycling regulations). Several proposals studied for the Trinitat Nova project have been adopted by the municipality or the regional housing department as a reference for their future policies.

Examples are the soil permeability evaluation devices, domestic water recycling and orienting streets and buildings appropriately for the climatic conditions and energy saving aspects. The recently approved Neighbourhood Act, aimed at the renewal of urban settlements focusing on participation and sustainability, converges with most of the sustainability objectives developed through the Trinitat Nova ECOCITY project.

The most outstanding output is the participative and collaborative approach to seeking solutions to the complex problem of renovating social housing in old neighbourhoods, undertaken within a framework of integrated planning and ongoing feedback in participation workshops. The case is being studied by several international projects as a model for a new way of integrating social, economic and environmental issues in urban contexts.
Immediate prospects include:

- Reinforcing the idea of Eco-neighbourhood Trinitat Nova as a pilot project
- Reinforcing the articulation of the educational and social dimensions of the project, focusing especially on participation processes
- Extending the operation to the whole neighbourhood
- Integrating the results of the sectoral studies into the next project phases

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<th>Key element 1</th>
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<td>Integration of social, economic and environmental strategies</td>
<td>A sustainable mobility concept taking advantage of new centrality</td>
<td>Incorporation of sustainability concepts developed by the project into metropolitan policy</td>
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<td>An integrated planning process of urban renewal on a brownfield site, driven by the initiative of the residents. Ecological quality of the neighbourhood and innovation are considered economic attractors. Mix of use and introduction of new housing units are considered factors for increasing social diversity. The process in itself is considered an educational opportunity for the population involved. At the same time it is an extremely important experience of new governance and public-private-third-sector partnership.</td>
<td>Being a brownfield site, the area is served by the existing public transport network, which has been extended to include new light rail and metro stations. The mobility concept, which includes car-free areas, cycle lanes and centralised car parks, is possible thanks to a number of factors: the excellent public transport service and the proximity of the neighbourhood to the rest of the city, the middle-high density of the area and the general accessibility of services within the neighbourhood.</td>
<td>Aspects such as soil permeability evaluation indicators, domestic water recycling devices and criteria for the orientation of streets and buildings have been adopted as a reference for the new sustainability policies of municipal and regional government. The recently approved Neighbourhood Act converges with most of the sustainability objectives developed through the Trinitat Nova ECOCITY project.</td>
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