4 Concepts for ECOCITY model settlements

The vision and the objectives for an ECOCITY formulated in chapter 2 are very ambitious. They set standards and describe a target state, towards which urban development should head. The concepts for the model settlements developed within the ECOCITY project meet these standards to different degrees but each have their specific strengths and show possible steps towards an ECOCITY. The model settlements were planned for Bad Ischl (Austria), Barcelona (Spain), Győr (Hungary), Tampere (Finland), Trnava (Slovakia), Tübingen (Germany) and Umbertide (Italy) and are introduced in the following sections.

4.1 ECOCITY Bad Ischl

4.1.1 General information

Bad Ischl is situated in central Austria and is also the centre of the region of Salzkammergut, which covers parts of the administrative provinces of Oberösterreich, Salzburg and Steiermark. The community of Bad Ischl consists of many settlement areas of different sizes. All parts of the town have existed since the first census in 1869. The number of inhabitants in 2001 was just over 14,000, after a gradual population increase since 1971.

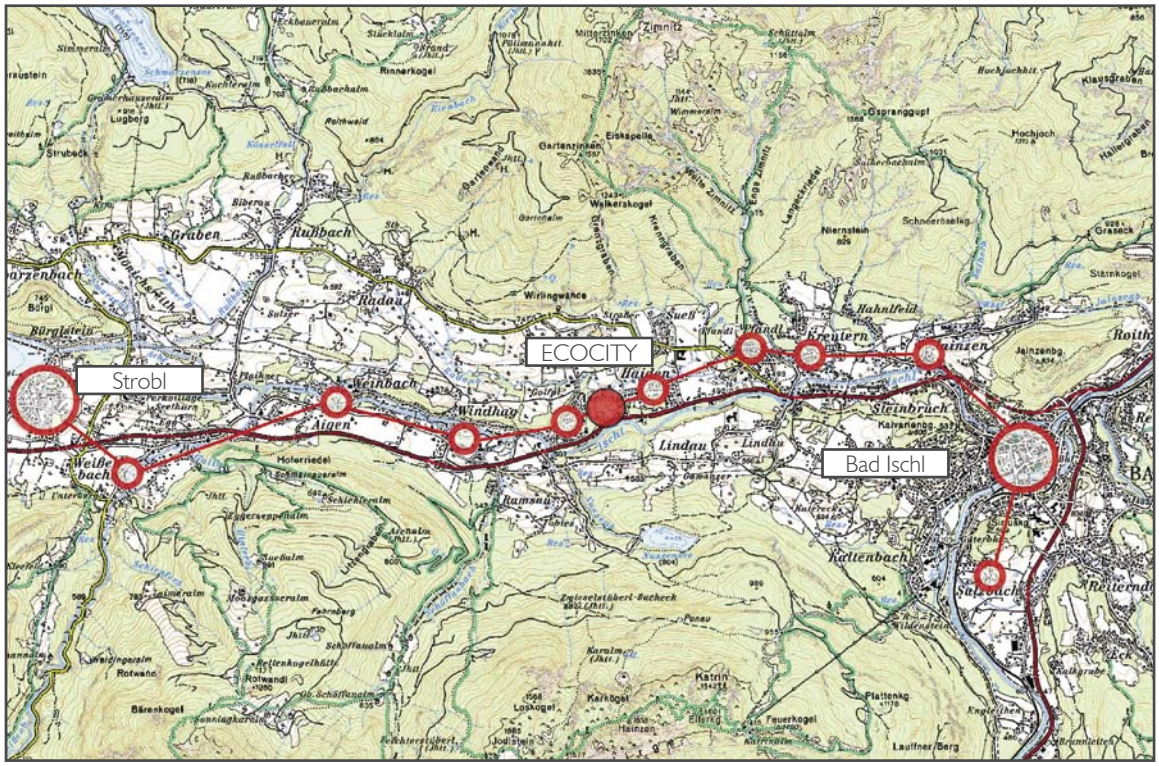


Figure 4.1.1: Linear urban development along a public transport axis

The Austrian part of the ECOCITY project intends to make a contribution to overcoming the general trend of (urban) sprawl through a vision for concentrated settlement development (especially in the area around small towns) and to thereby provide better conditions for public transport. This will be initiated by concentrating building around the planned light-rail stop in the ECOCITY area and, step by step, around all the other stops on the planned public transport route (thus also extending existing neighbourhoods). The project will focus on a balanced proportion of housing and workplaces to promote an equal distribution of passengers in both directions.

4.1.2 Project description

The site was selected to intensify the axial development between the centre of the town of Bad Ischl and the neighbouring communities of Strobl and St. Wolfgang – this is promoted by the situation in a valley. The demand and potential for public transport should be improved through the project. The project area comprises 24.6 hectares and is planned to attract about 2,100 new inhabitants (see also Table 4.1.1).

The planning area consists of the following elements (for descriptive figures see Table 4.1.1):

- Part 1: the ECOCITY subcentre (Robinson area) is the main component of the project; this quarter will provide infrastructure for the daily needs of the new inhabitants as well as for the existing under-supplied neighbourhoods.

In walking distance from the ECOCITY subcentre there are two additional small developments:

- Part 2: the ECOCITY light industrial estate (Aschau/Ramsau) is a small area which will be developed monofunctionally (but in co-ordination with the ECOCITY subcentre) through the addition of new small and medium-sized industrial enterprises to the few existing ones (the new businesses should preferably have an ecologically compatible focus).
- Part 3: in-fill development 'Neuner area' (Krenlehner Siedlung) is a small area which is to be developed to increase the density of a 'sprawl' settlement by adding a small, mainly residential area in higher density, low-rise types of building.

Table 4.1.1 Quantitative characteristics of the Bad Ischl ECOCITY development

Quantitative characteristics	Data			
Planning area	**Part 1**	**Part 2**	**Part 3**	**Total**
Number of inhabitants	1,970*)	0	130	2,100*)
Number of dwellings	790*)	0	50	840*)
Number of jobs	560*)	690	0	1,250*)
Total land area (project area)	166,755m²	62,570m²	16,950m²	246,275m²
Built-up area	82,915m²	53,595m²	11,165m²	147,675m²
Green area (only public)	53,435m²	2,635m²	2,470m²	58,540m²

*) excl. hotels and guest houses (280 units)

Urban structure

The ECOCITY quarter is planned around a mixed-use core, designed within a 300m radius around the central light rail stop. A qualified density (gross floor area ratio[12]) for the subcentre: 0.73) is achieved through multi-storey, residential and business buildings with the highest density around the rail stop. The maximum height of the buildings is harmonised with that found in the historic centre of Bad Ischl (three to four storeys) and decreases towards the edge to two-storey terraced houses.

[12] m² gross floor area per m² building area

A main central axis was created to provide quick access from the largely residential buildings along a network of paths crossing the axis to the facilities in the central area. The north-south orientation of the main axis allows the buildings to be positioned for optimal active and passive use of solar energy (solar architecture). It also facilitates a view of the mountain tops (the dominant landscape feature), as well as direct access to meadows and forests in the north and south.

Residential areas are located at a greater distance from the main inter-regional road bordering the site to the south (to minimise disturbance by noise and pollution). Instead, dwellings are situated near the integrated and surrounding green areas. Rows of three-to-four-storey buildings along the main street provide continuous shelter for pedestrians, provide space for different functions (mixed-use at building level), create an urban ambience and ensure a qualified density.

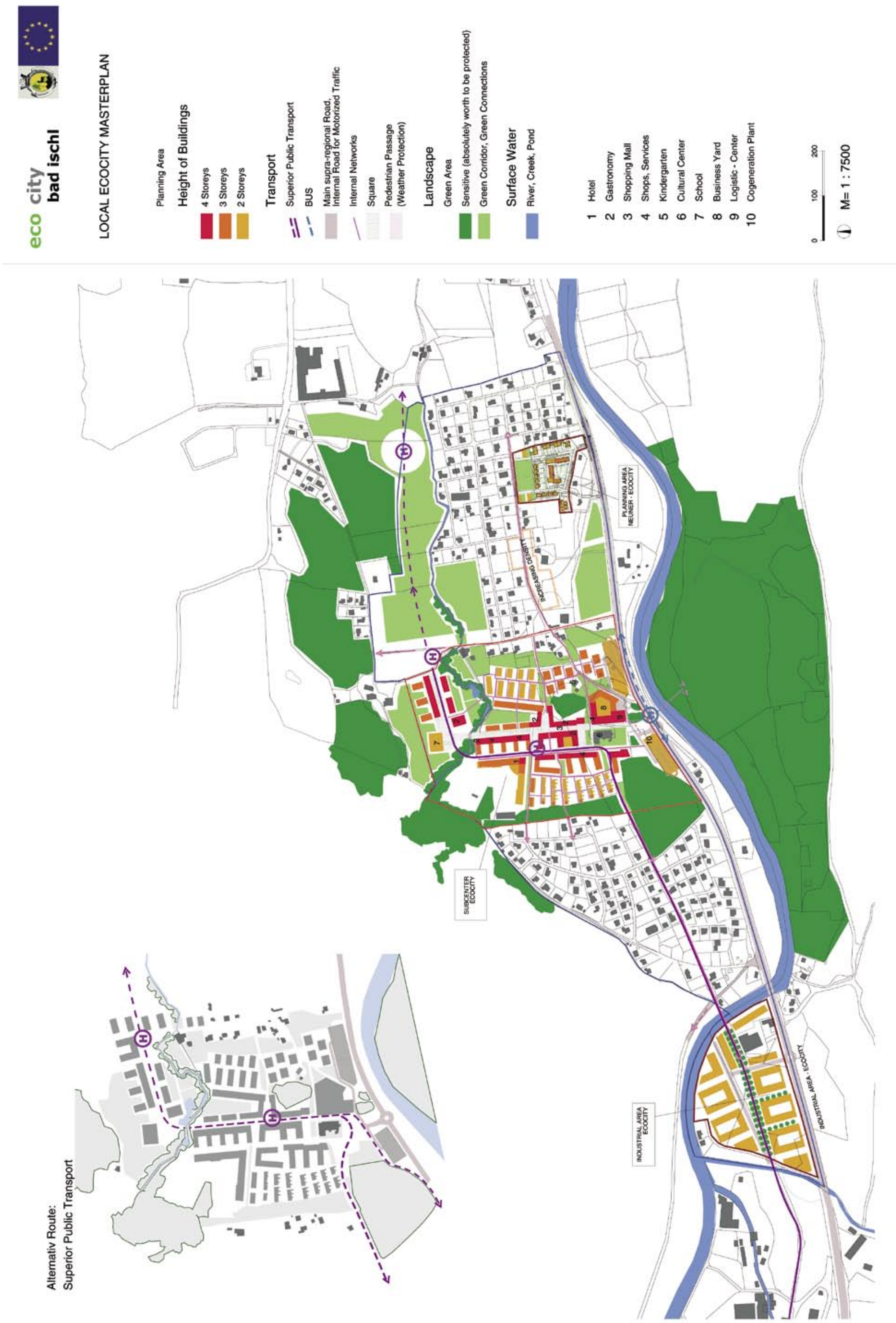


Figure 4.1.2:
Masterplan Bad Ischl

To integrate the settlement into the landscape, green areas, qualified as sensitive in the landscape analysis, are conserved as much as possible. They are perceived partly as green corridors connecting to the neighbouring settlements and partly, as in the case of the vegetation along the stream that crosses the planning area, as being integrated into the new structures.
The provision of shopping, employment and social facilities necessary for a balanced mixed use was planned according to the population potential and taking into account the existing facilities in the surrounding neighbourhoods and the rest of the community. The aim of this was, in particular, to avoid negative impacts on the town centre infrastructure. The spatial distribution of facilities is determined by the best scenarios for goods supply and accessibility by the users, adjusted to account for frequency of use:

- Facilities where there is high demand for delivery or collection of large quantities of goods or heavy items are located nearest to the main inter-regional road to provide short access distances for delivery traffic and keep lorries out of residential areas. At the same time they remain relatively close to the core of the ECOCITY to ensure short distances for internal distribution.
- The light industrial area occupies larger units which do not fit into the small building structure of the ECOCITY subcentre.
- Shops with demand for goods transport and good accessibility by the users are situated in central sites along the primary axis to achieve an even distribution of shortest distances for all inhabitants and to allow some bundling of deliveries.
- Cafés and restaurants, educational and cultural facilities, as well as commercial, social and medical services, are also located along the primary axis. Sheltered housing for senior citizens is situated in a quiet area near the centre but with green spaces nearby.
- Offices are located along the primary axis too, partly on the second floor (pedestrian area) and partly on the ground floor (northern part).

An idea developed for this project is for 'service points', where small-scale public service facilities are concentrated at prominent, easily identified, public locations (e.g. public transport stops). They include public toilets, public telephones, drinking fountains, information points (town maps, signposts for pedestrians, information panels or screens and public transport timetables etc.) and are also useful as meeting points.
Important leisure facilities are green spaces, which are provided in great variety:

- A public park: connection of public green spaces ('urban forest', greenery along the banks of the stream, bordering green corridors in the west and east) with grass for sunbathing by the stream, picnic places, adventure playgrounds for adolescents and separate, sheltered seating areas for senior citizens
- Greenery in streets and squares (tree-lined avenues, concept of characteristic tree species for different types of paths)
- Semi-public green spaces in the courtyards of residential buildings (with integrated children's playgrounds, different characteristic plants for different courtyards)
- Private gardens (adjacent to terraced houses and other low-rise, high-density buildings)
- Private green spaces incorporated into the building structure (loggias, balconies and roof gardens)

The residents should design and cultivate much of the residential green space for which they are responsible, to develop their awareness of a nature-oriented living environment. Overall, the green elements are complemented by water features, such as a small pond through which the stream flows, and fountains in the squares.

Figure 4.1.3:
Green Areas

A well-designed variety of patterns and building typologies creates a diversified and aesthetic environment. Public space is designed as a network of squares, streets of different character and green spaces for different uses. To promote variety in the shape of various building forms, colours and materials and thus to avoid long, monotonous streetscapes (especially in multi-storey areas), the plots along the streets in the centre of the ECOCITY will be divided into several sites, with buildings designed by different architects.

The River Ischl, running parallel to the main inter-regional road, provides the principal fresh air corridor that disperses and dilutes the pollution from traffic in the valley. The necessary protection of the ECOCITY development against noise from this road is achieved through existing hedges in combination with noise abatement walls and multi-storey parking as well as existing forested areas with fringe vegetation to be added.

Transport

Compared to 1992, the modal share of individual motorised transport in Bad Ischl in 2001 increased significantly (from 50% to 58.3%), while walking decreased (from 30% to 22.9%) - as did cycling (from 9.9% to 8.8%). Only in public transport was there a slight increase (from 9.5 to 9.9%), which may have been achieved by the implementation of a city bus route. The proportion of the working population which both lives and works in Bad Ischl is 72.2%; therefore the volume of commuters in Bad Ischl is relatively low.

To improve the percentage use of sustainable transport, an integrated system of public transport is planned. This system includes regional rail, superior local public transport, regional and local buses and

demand-responsive transport services. The superior local public transport (light rail or new technologies like cable liners or other people movers) will connect the ECOCITY with the town centre of Bad Ischl and the Wolfgangsee lake (in the village of Strobl). Until the realisation of this link (during the initial implementation phases) the ECOCITY will be connected to the centre of Bad Ischl and the rest of the region by a bus route. The demand-responsive transport services (fixed-route taxi) already connecting all areas will be improved.

Figure 4.1.4
Weather protection in the main street

The internal pathway system is free from barriers and private cars (access only for delivery and other services plus emergency). Moreover the pedestrian and cycle paths are integrated into the existing network in the surrounding settlements. For weather protection the main parts of the pedestrian network are planned as roofed passages (in the central area with shopping and service facilities), arcades (along the rest of the main axis) and roofed pavements.

Facilities are provided for bike parking in residential and commercial buildings (rooms on the ground floor) as well as boxes or bicycle stands in the squares.

A car-sharing system will also be offered to give people who want to live in the ECOCITY without their own car demand-oriented access to individual motorised transport. These vehicles (and those belonging to visitors) will be parked in garages on the edge of the area near the inter-regional road.

A local logistics yard, situated in the industrial estate, will function as a distribution point for goods transported to and from the ECOCITY and as a central hub for the internal transport system. It will include multipurpose shopping/transport trolleys as means of goods transportation for pedestrians within the ECOCITY and a PINbox facility where delivered goods are stored in a locked box to be picked up by the recipients at their own convenience. Larger goods will be delivered directly.

Energy supply and material flows

The ECOCITY site lies in a forested, mountainous region. Biomass is available from several saw mills located in the surrounding area as well as from other sources and is therefore an attractive option for heating and possibly electricity supply in the ECOCITY. Being located in an east-west-oriented valley, the site is well suited for the use of solar energy – only in December is the sunlight blocked out most of the time by the mountains. Several heat supply and heat delivery systems are possible for the ECOCITY. One option is a central biomass heating station with a district heating network with or without a natural gas peak load boiler. Another possibility is a central gas combined heat and power (CHP) station scaled for summer heat load, with additional biomass heating boilers for demand in winter time as well as decentralised systems for passive houses.

For material flows, two sets of measures are planned. First, sustainable use of water will be supported through decentralised rainwater management (including green roofs and rainwater storage tanks for non-drinking water purposes) and semi-permeable pathway surfaces and infiltration systems for the overflows (percolation fields, permeable drains and infiltration ponds). Secondly, to facilitate re-use of building materials a 'material accounting system' (building inventory) will be established with a database which lists the quantity and quality of the assembled building materials. The excavated soil will be re-used on site, e.g. for landscaping.

Socio-economy

For the economic infrastructure of the ECOCITY, sufficient floor area is provided to accommodate local supply facilities for the inhabitants, as well as a variety of offices and small companies (compatible with a residential area). Together these provide a number of jobs in balance with the human resources of the ECOCITY. The model settlement should also be an additional attraction for a new type of 'ecological' tourism in Bad Ischl and the region.

Social targets used as a guideline when planning the Bad Ischl ECOCITY include a balanced social mix (in terms of education, age, income, ethnicity and sex), correspondent to the local population picture and the new trends in society. These targets also incorporate gender and lifestyle-sensitive planning (promoting a sustainable lifestyle) as well as diversity in housing and spatial structures to create a lively local neighbourhood, with self-organisation of residents to take on joint tasks and social networks which promote communication. A number of different measures are used to achieve this. Housing and other facilities are provided for a variety of generations and social and ethnic groups (including an innovative and accessible social infrastructure). In addition, mixed forms of property ownership and tenancy are available (rental, hire-purchase agreement and owner-occupation, as well as 'Baugruppen' – groups of future building owners with specific lifestyle and housing concepts who develop and build their homes together).

Participation has been an important aspect of the ECOCITY. The participation process started with an information event on the project objectives, which was also intended to help find people interested in being involved in the planning process by participating in a planning workshop. However, this process could not continue due to political problems. The implementation and marketing strategy, developed in co-operation with local developers and real estate experts, includes activities to make the necessary plots available and to find future inhabitants. In a financing concept based on the preliminary estimate of infrastructure costs, a small contribution from the increased value of the plots was suggested, which would result in avoiding additional costs to the local authority budget for infrastructure. But implementation has also so far been restricted due to political problems and difficulties associated with the availability of the plots in private ownership.

4.1.3 Project outcomes – key elements

Key elements to achieve the status of an ECOCITY are:

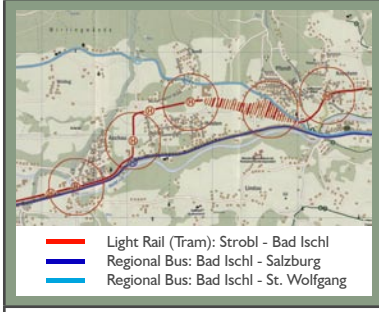
Key element 1	Key element 2	Key element 3
		
Public-transport-oriented location of a dense, mixed-use subcentre, integrated into an axial development	Pedestrian-oriented design of public space, providing a barrier-free network of pathways and squares, keeping car traffic on the edge of the settlement	Integration of conserved natural green areas and newly designed green courtyards within the settlement

Table 4.1.3
Comparison between sprawl conditions and ECOCITY

Sprawl		ECOCITY
152	Residential units	790
34,000 m²	Gross floor area of dwellings	79,260 m²
0 m²	Gross floor area of other facilities	42,300 m²
62 m²	Built-up area per inhabitant	32 m²
102 m²	Street area per inhabitant	25 m²
0-5 m²	Public green space per inhabitant	29 m²
304 m²	Private green space per inhabitant	38 m²

To demonstrate the possible positive results of ECOCITY planning, a comparison of some physical data is drawn between two scenarios for the site of the ECOCITY subcentre: the usual/existing sprawl pattern and the ECOCITY pattern.