This chapter presents the main conclusions of the ECOCITY project. The focus is on the assessment of the ECOCITY site concepts, as well as sectoral conclusions drawn by the different disciplines involved. In addition, obstacles and success factors for sustainable urban development will be discussed. They are based on the experiences of the ECOCITY partners during the planning of the site concepts.

5.1 ECOCITIES as a better place to live – visions and challenges

The idea of creating an ECOCITY is fascinating, yet also very complex. On the one hand, the ECOCITY vision (see Chapter 2), which served as a basis for planning the model settlements, contains appealing and very important concepts, such as maximising people’s quality of life and living in harmony with the environment. On the other hand, the vision and the plans, by their very nature, contain some elements which to some may appear utopian. This makes it hard to predict whether and to what extent the plans will be implemented, although an implementation-oriented perspective was an explicit ECOCITY requirement. Nevertheless, such visionary ideas and concepts for greater sustainability (in urban development and elsewhere) are needed to provide inspiration and direction for the development of human society. As such, they play an important role in ensuring the healthy, diverse and balanced natural environment that is needed for the long-term survival and thriving of humankind.

The interesting variety of the ECOCITY model settlements in terms of their character, size and setting (see Table 5.1), as well as their situation in different climatic contexts (Scandinavian, Central European and Mediterranean), showed that putting the ECOCITY vision into practice does not depend on a particular location.

<table>
<thead>
<tr>
<th>Character of the site</th>
<th>Bad Ischl</th>
<th>Barcelona</th>
<th>Győr</th>
<th>Tampere</th>
<th>Trnava</th>
<th>Tübingen</th>
<th>Umbertide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Greenfield</td>
<td>Urban regeneration</td>
<td>Brownfield</td>
<td>Greenfield</td>
<td>Renewal of old town, brownfield</td>
<td>Greenfield and brownfield, urban densification</td>
<td>Greenfield and brownfield</td>
</tr>
</tbody>
</table>

| Current inhabitants   | 10        | 2,200      | 0    | 30      | 2,500          | 4,000                             | 900                           |
| Future inhabitants    | 2,100     | 1,790      | 11,650 | 13,400 | 3,000          | 3,300                             | 1,350                         |
| Size of the community | 14,000    | 1,500,000  | 130,000 | 200,000 | 70,000         | 85,000                            | 15,000                        |
| Initiative for the project | Planners from outside | Inhabitants | Municipality | Municipality | No information available | Local planner with municipality | Planners from outside with municipality |
| Timing of planning     | Initiated for ECOCITY project | Already begun before start of ECOCITY project | Already begun before start of ECOCITY project | Already begun before start of ECOCITY project | Initiated for ECOCITY project | Initiated for ECOCITY project | Initiated for ECOCITY project |
With the exception of Bad Ischl, all of the sites were zoned for development and would eventually have been planned for, even in those cases where actual planning only began with the ECOCITY project. Thus, the contribution of the ECOCITY project was not so much initiating a planning process as significantly influencing this process by challenging accepted standards and providing fresh perspectives and inspiration for different solutions. In some cities, the ECOCITY ideas were directly integrated into the official municipal planning processes, while in others alternative plans were drawn up, which sparked new discussions and led to changes in the long run. Furthermore, several municipalities used the ECOCITY criteria as a basis for urban planning competitions and/or development guidelines and it is already foreseeable that some concepts will serve as reference or model cases at the local and regional level (e.g. Barcelona).

Overall, the ECOCITY project challenged the approaches to urban planning and development in all the municipalities involved, even in those cases where the ECOCITY site concept might not be implemented to its full extent. This challenge to established ideas was usually carried from the initiators to other key players, although everyone involved in the process at some point had to reflect on their usual approaches. Table 5.2 provides an overview of the main areas in which the ECOCITY approach stimulated rethinking or restructuring of existing processes, opinions and planning conditions. Although all seven municipalities involved signed a declaration of intent to implement the ECOCITY concept once the planning had been concluded, their actual commitment varied, ranging from taking control of the ECOCITY site planning process to not getting involved in the project at all. There are also national differences regarding regulations concerning (sustainable) urban development. They vary, for example, with respect to the energy efficiency of new housing, the demand for the provision of private car parking facilities and the types of subsidies available to the public and private sectors for certain measures that aim to increase sustainability (such as public transport investment or innovative home heating systems). Where such requirements and options are more advanced, the aim was to ensure that the ECOCITY label was not used for a project which simply fulfilled the national norms, but only for those which achieve more than is already required by law. In the context of less advanced standards and requirements, the project was seen as an opportunity to show how ECOCITY standards can be reached within a planning culture that traditionally focuses on other values.

Table 5.2
<table>
<thead>
<tr>
<th>Municipality</th>
<th>ECOCITY challenged...</th>
</tr>
</thead>
</table>
| Bad Ischl    | • local policy makers and authorities to position themselves with regard to urban sprawl  
|              | • the site owners      |
| Barcelona    | • the local planning system (→ spin-off effects for other local projects)  
|              | • the original plans and the tendency to ‘greenwash’ conventional projects |
| Győr         | • the local developers  
|              | • the site owners      |
| Tampere      | • the planners and the jury in the urban planning competition  
|              | • local policy makers and the administration |
| Trnava       | • the municipal planning capacity  
|              | • the local and regional budgets for urban planning  
|              | • the site owner of the brownfield site |
| Tübingen     | • the political decision makers (→ decisions on densification and greenfield consumption)  
|              | • citizens and other stakeholders in participation workshops (→ consensus finding) |
| Umbertide    | • planners, experts and policy makers  
|              | • the local culture of urban planning |

Results of the ECOCITY project: what did we learn?
5.2 The ex ante assessment of the ECOCITY site concepts

5.2.1 Pre-implementation evaluation

The assessment of concepts for sustainable urban development in the framework of the ECOCITY project was an experiment. More usually, an evaluation is based on information about the implementation process and the behaviour of residents and users of a site e.g. the actual use of public transport and private cars, the functionality of the urban concept or job creation in the ECOCITY. However, in this project such aspects could not be evaluated, as the development activities concluded with the completion of the site concepts. Instead, the evaluation was a first step towards developing a practical tool for a quality assurance system, such as an ‘eco-audit’, that can be applied during the planning stages. The assessment focused on the planning process and the ECOCITY concepts and thus provides orientation on how far the ECOCITY objectives (see Chapter 2) have been achieved. The results are useful to point out strengths and weaknesses of a concept, to select the preferred scheme from different options and to derive tasks for consecutive planning stages.

By necessity, concept evaluations during the planning phase must be based partly on assumptions (e.g. in the case of the modal split). These are in turn usually based on comparable cases (e.g. a sustainable settlement in another region) or existing trends (e.g. the average use of private cars in the community or region in question). However, other issues, such as community involvement, can already be evaluated on both the concept and the realisation level at the end of the planning phase.

5.2.2 Evaluation tools

The core criteria and indicators for the ECOCITY evaluation scheme were selected for the ex ante evaluation to provide direction regarding sustainable urban development (see Table 5.3) according to the main ECOCITY objectives (see Chapter 2). Further information on how these indicators were assessed can be found in the ECOCITY Book II.

The ECOCITY experience showed that some indicators (such as building density or community involvement) were easier to evaluate than others (such as modal split or profitability – again see ECOCITY Book II for more information on these issues). However, ongoing evaluation right from the start of a project is important, as it helps to develop overall planning objectives and priorities.
depending on the regional context. In addition, it allows regional improvements to be identified later on. Furthermore, periodic evaluation and monitoring during the planning process is a precondition for the establishment of a quality assurance system like the European Eco-Management and Audit Scheme (EMAS). However, to allow such an ongoing evaluation of the entire planning process and implementation, the ECOCITY evaluation scheme would have to be adapted to apply to all relevant stages of a project. As the current scheme was designed for evaluation at the end of the planning phase, this would require an adjustment of the current indicators as well as the development of new ones.

Further development of the indicators will need to review their significance, calibrate the benchmarks that were chosen and find ways of rationalising the collection and analysis of data. The following measures could help to attain this goal:

- Define clearly from the beginning the specific data needed for each indicator to reduce the need for gathering data after planning is completed
- Reduce the number of indicators (but without leaving out important aspects of sustainable urban development)
- Make the indicators more robust by reviewing the benchmarks

5.2.3 Results of the evaluation

A crucial problem for the evaluation of the ECOCITY project was information gathering with regard to the concepts and the planning processes. Due to the fact that there was no independent institution to carry out the evaluation (‘outside evaluation’), this had to be done by the ECOCITY partners themselves (‘internal evaluation’). Involved in this process were, among others, public planners and administrators, participation experts, urban planners, architects, citizens, research institutes and universities. Furthermore, since the evaluation scheme could only be developed during the course of the project, the exact data requirement for the evaluation was not known before the end of the planning stage. This presented additional difficulties for the collection of some data. As a consequence, the data provided was somewhat heterogeneous and partially incomplete.

Detailing the outcome of the ECOCITY evaluation process for every indicator and explaining the implications of these results would go beyond the remit of this book\(^{15}\). Hence, for reasons of simplicity, only the main strengths and weaknesses of the individual concepts are summarised at this point (Table 5.4\(^{16}\), without striving for an in-depth discussion or a comparative evaluation. These strengths and weaknesses need to be seen against the background of the individual site concepts and planning processes. Therefore, the number of points highlighted does not necessarily indicate the general quality of a project as, first of all, the respective points differ in their relative importance and, secondly, the possibility cannot be precluded that certain strengths or weaknesses were not detected due to lack of information.

\(^{15}\) More information on the evaluation process can be found in ECOCITY Book II - How to make it happen and in the ECOCITY project deliverable 12 on the project website.

\(^{16}\) Table 5.4 is based on the input from the sectoral evaluation groups. It covers the fields of urban planning, transport, energy, material flows and socio-economy.
<table>
<thead>
<tr>
<th><strong>Strengths</strong></th>
<th><strong>Weaknesses</strong></th>
</tr>
</thead>
</table>
| **Bad Ischl** | **• too ’visionary’ (→ can create implementation problems)  
• based on planning team’s proposal for a new light rail line (→ good idea, but implementation is uncertain)  
• poor community involvement undermined the holistic planning approach  
• the ECOCITY area differs enormously from the surrounding built area** |

| **Barcelona** | **• location is not very suitable for cycling (→ topography; infrastructure)  
• local pre-ECOCITY participation process requires standard levels of car-parking provision** |

| **Győr** | **• too much provision for car parking, even in car-free areas  
• poor concept for building materials, soil excavation and water management  
• missing hierarchies with regard to streets and public spaces** |

| **Tampere** | **• Too implementation-focused (→ quality problems)  
• poor location of the settlement (too far away from the existing city) resulting in e.g. urban sprawl and traffic problems  
• low density → urban sprawl  
• poor quality of community involvement  
• too much infrastructure for individual car traffic and insufficient public transport accessibility** |

Table 5.4
Strengths and weaknesses of the individual site concepts and planning processes (Pt. 1)
5.3 Sectoral conclusions

The following sections present the main conclusions of the ECOCITY project from the perspective of the leading disciplines involved in the planning process as well as the evaluation of the site concepts. Many confirm the original working hypotheses, some were results of the research. These conclusions constitute the basis of the ‘Guidelines’\(^{17}\). The focus is on urban planning, transport, energy, material flows and socio-economy.

### 5.3.1 Urban planning

The first step towards an ECOCITY neighbourhood is the selection of a suitable location. The site in question should have a high potential for having an appropriate social, cultural and economic infrastructure and workplaces nearby. The guiding theme for urban planners in this context is accessibility. This means that shops for daily needs, schools, nursery schools, services, jobs, leisure activities, etc. must either be located within the site itself or in the direct surroundings and that, ideally,

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trnava</td>
<td></td>
</tr>
<tr>
<td>• favourable location in the historic city centre / brownfield development close to the city centre with the intention to build new green zones</td>
<td>• sugar factory area: character of the new settlement structure rather unstructured and dispersed with partial low densities</td>
</tr>
<tr>
<td>• two main pedestrian axes which are related to the existing structures</td>
<td>• low ratio of solar-oriented buildings</td>
</tr>
<tr>
<td>• good existing share of public transport to build on</td>
<td>• too much car-parking provision</td>
</tr>
<tr>
<td>• adaptation and re-use of existing (factory) buildings and (water treatment) plants</td>
<td></td>
</tr>
<tr>
<td>• revitalisation of streams taking into account historic water management systems</td>
<td></td>
</tr>
<tr>
<td>Tübingen</td>
<td></td>
</tr>
<tr>
<td>• holistic planning approach including extensive participation</td>
<td>• partly reliant on a light rail line planned for the region (→ good idea, but implementation is uncertain)</td>
</tr>
<tr>
<td>• mixture of brownfield, greenfield and partial urban renewal close to the city centre</td>
<td></td>
</tr>
<tr>
<td>• combination of high density with high-quality landscaping, public spaces and water design</td>
<td></td>
</tr>
<tr>
<td>• reduction of energy consumption through an energy-efficient urban structure and the use of renewable energy systems</td>
<td></td>
</tr>
<tr>
<td>• settlement location and an ambitious mobility concept support car-free life-styles</td>
<td></td>
</tr>
<tr>
<td>• detailed concept for building materials, soil excavation and water management (innovative: grey water purification in densely populated area)</td>
<td></td>
</tr>
<tr>
<td>Umbertide</td>
<td></td>
</tr>
<tr>
<td>• mixture of brownfield, greenfield and partial urban renewal close to the city centre and the railway station</td>
<td>• method of implementation of car-free concept in stages is not clear</td>
</tr>
<tr>
<td>• ambitious renewable energy system (heating energy)</td>
<td>• only medium density due to wide green areas and wind corridors</td>
</tr>
<tr>
<td>• application of advanced planning tools for urban comfort resulted in green corridors and bioclimatic building typologies</td>
<td></td>
</tr>
<tr>
<td>• clear hierarchy of public spaces</td>
<td></td>
</tr>
<tr>
<td>• goal of car-free area ambitious in local context</td>
<td></td>
</tr>
<tr>
<td>• natural cooling system</td>
<td></td>
</tr>
<tr>
<td>• comprehensive community involvement</td>
<td></td>
</tr>
<tr>
<td>• takes into account the natural water cycle and historic water management systems</td>
<td></td>
</tr>
</tbody>
</table>

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\(^{17}\)See also Chapter 3 of Book II.
the site should fit within a polycentric urban structure. If the inhabitants need to commute or travel, they should be able to rely on environmentally-friendly transport modes. A special focus should be on rail transport, which normally corresponds to an urban development that is oriented along axes.

Another guiding theme for ECOCITY planners is the responsible use of land in order to prevent urban sprawl. The ECOCITY project came to the conclusion that the selection of the site must take account of internal city developments, as well as the existing or planned public transport infrastructure. Generally, well-located, brownfield projects and inner city development must be given priority. However, greenfield projects may be justified if the demand for new housing cannot be satisfied within the city area and if it is combined with high-quality cycle routes, a high-quality public transport system and clearly defined ecological and social objectives.

Dense and compact housing structures are an important tool in creating an ECOCITY, as they reduce land consumption, lead to shorter walking distances, facilitate good public transport provision, are a precondition for economically feasible district heating systems, promote social interaction and reduce the cost of infrastructure provision. As achievable densities are dependent on use, location, social and cultural factors and climate conditions, the ECOCITY case studies exhibit a range of densities, most of which can be labelled ‘high density’ in the local context. Hence the recommendation is to strive for an adjusted building density which takes the local settings into account. The objective is to find an ecologically, economically and socially acceptable density level – a so-called ‘qualified density’ – which combines building layouts with an energy-efficient urban structure, an adequate amount of landscaped areas and sustainable technologies (e.g. the use of solar energy).

Another core issue of sustainable urban development is to create settlement structures which are suitable for a mix of different uses. This means bringing living and working together again and planning for a great variety of functions, including the cultural and economic infrastructure, in order to avoid the disadvantages of a segregated city. In the case of the ECOCITY project, functionally diverse structures played a major role in almost all the case studies. The ECOCITY case studies feature different sizes of mixed-use areas with a range of ratios for residential and other uses. Furthermore, they include fine-meshed structures with mixed use on the floor, building or block level.

With regard to green areas within the ECOCITIES, it was possible to achieve good results even in densely built settlements. In addition to areas with natural vegetation, the creation of areas of water, the planting of trees along streets, as well as the greening of roofs, terraces and façades were used as tools to bring nature back into the town. The majority of the site concepts also ensured proximity and accessibility of larger green areas for social activities (e.g. sports or recreation), which helps to reduce transport demand. However, these goals are more difficult to achieve in city centres and historical cores. Due to the hot climate, the ECOCITY concepts in southern Europe favoured urban forms which were more compact and had greater contrasts between built-up and outdoor green areas. In the northern countries, on the other hand, there is a higher degree of greenery infiltration into the housing areas. New approaches in this field were the reconstruction of landscape in brownfield areas and the integration of urban agriculture into the ECOCITY concepts.

The public spaces of the ECOCITY concepts were of a very high quality compared to conventional projects which do not consider these elements as crucial. The ECOCITY planners recommend striving for public spaces with a high amenity value (e.g. supported by water features) and great variety (e.g. in size, use and spatial sequences). Community involvement during the planning phase and ex post evaluations are important issues to ensure public acceptance and attractive solutions. Depending on

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Results of the ECOCITY project: what did we learn?
the geographical location of the sites, the ECOCITY projects took into account elements such as wind protection and exposure to the sun in winter as well as sun protection and natural ventilation in summer, to provide maximum urban comfort.

5.3.2 Transport
Transport provision for an ECOCITY neighbourhood is very much related to the transportation system and the transport culture which already exists in the town and region. At a neighbourhood level especially, the majority of journeys people make will go out of, into or through the area rather than being trips within it. This should be less true in an ECOCITY, due to a better mix of uses and provision for daily needs. Nevertheless, most travellers will depend on transport services and infrastructure which cannot be influenced directly during the planning process of the ECOCITY. Therefore, it is very important that the transport concept for an ECOCITY builds on the strength of the existing services and facilities, while simultaneously attempting to improve the shortfalls. By doing this, it can also provide stimulation for the city or the region as a whole.

As far as the site planning of the seven ECOCITY cases is concerned, the concepts for the transportation of people and goods were partly centred on rail-based public transport and partly on improved bus facilities. They included proposals for car-free and car-reduced living, but also conventional provision for individual motorised transport, coupled with attractive facilities for non-motorised modes. In some cases, neighbourhood logistics concepts for local collections and deliveries were also considered.

Improved provision of information on transport options and combined offers, for example for car-sharing clubs and public transport season tickets, were proposed in some schemes.

At the same time it became very clear that each new concept, such as car-free housing or better facilities for cyclists, must be adapted to local conditions and cannot simply be implemented without considering them. In all cases, the ECOCITY transport concepts represent an improvement on the conventional scenarios typical for the area. However, since these differ widely, the absolute levels of sustainability achieved are also very different. From an ECOCITY perspective, the focus on provision for the private car was still too strong in some cases.

Both the planning and the evaluation processes furthermore showed that in an international context the terminology used both for different transport concepts and also for the actual infrastructure and services differs quite widely. The term ‘car-free’, for example, is associated by some planners with an area which allows no access to cars, while others describe it as a development that actively supports lifestyles which are less reliant on car use and ownership. In addition, it was found that there are very few tested methodologies for the ex ante evaluation of the sustainability aspects of transport schemes. Those that do exist are based on assumptions that are very much related to the context in which these tools have been developed. Hence, it was difficult to adapt them to the specific planning process of an ECOCITY in general and the different ECOCITY sites in particular.

Along with a lack of commonly accepted methodologies came the problem of a lack of benchmarks. There are many national and international guidelines on CO2 and noise emissions, but it is almost impossible to find benchmarks for ‘sustainable levels’ of parking provision, bicycle infrastructure or bus services. One reason for this lack is partly that the sustainability of a transport system depends on how it is used, which is influenced by more factors than the provision of infrastructure.

5.3.3 Energy
The concepts for the seven ECOCITY sites provide improvements to the local energy infrastructure. If implemented they will help to reduce energy demand and consumption in the ECOCITY areas. However, most of the concepts rely on new energy supply systems and an upgrading of the existing
In the context of sustainable development, optimisation should be understood as an ongoing process and not as a static concept. Furthermore, optimal solutions are contextual, which means they take the local situation into account.

A weak point with regard to some projects was the lack of integration of energy-related aspects into the different planning and design phases. As a result, the energy supply chains are sometimes quite weak. The outcome of the ECOCITY project emphasises the fact that a sustainable energy infrastructure requires an optimisation of the urban structure, for example with regard to population density or building orientation.

Small-scale co-production systems (co-generated heat and power) based on renewable energy sources (wood residuals, wood chips and sawdust) were not included in any of the site concepts, except for Bad Ischl. In addition, high costs are a problem with regard to electricity produced by photovoltaic means or wind power, which requires additional back-up systems for periods without sunshine or wind. In these cases, back-up electricity is usually provided by the national electricity grid and this originates predominantly from non-renewable energy sources (nuclear power, oil, gas and coal). The use of renewable energy sources seems to be dependent on governmental or other subsidies, which highlights the importance of renewable energy initiatives. Conversely, however, this dependency calls into question whether sustainable energy supply systems would be built without subsidies or legal requirements.

5.3.4 Material flows

The issue of material flows has to be integrated right from the start into the development of an ECOCITY. The reason for this is the fact that key decisions taken at an early stage of the planning process (e.g. the location or dimension of the project) have a decisive influence on the need for materials and the generation of waste products, both of which should be optimised to attain a high level of sustainability. Once the basic project parameters are set, a more detailed estimate of major material flows follows (e.g. building materials, construction waste including excavated soil, as well as drinking water and wastewater).

The results of the ECOCITY project highlight the importance of the local context with regard to water management (e.g. the availability of water and climate conditions). Only if adequate information about the regional water demand, the natural water cycle (including ground water), as well as grey and black water systems is available, can effective and sustainable solutions be developed. In order to reduce the demand for drinking water, the seven site concepts focus on measures such as rainwater collection, water-saving installations, grey water systems and green area management. The prevention of water pollution was also high on the agenda of the planning processes.

Excavated soil is one of the most important material flows in urban development. Therefore the seven ECOCITY concepts include quantitative information about excavated and refilled areas. In addition, intended measures for the re-use of soil are listed (refilling, concrete aggregates, noise barriers, playgrounds and landscaping). Some planners revised the provision of basement areas, which reduced the amount of excavated soil and building materials in general. In the case of the ECOCITY project, all site concepts include measures to reduce demand for new building materials. Thus, the concepts envisage the following measures: re-use or recycling of existing buildings on the site, development of compact settlement structures, reduction of basement areas, reduction of driving surfaces (e.g. roads and parking areas), use of lightweight construction and re-use of excavated soil (gravel and stone). Furthermore, the concepts emphasise the use of eco-friendly building materials (renewable materials, recycled materials and local/regional materials).
5.3.5 Socio-economy

From the social perspective, sustainable development requires the satisfaction of people’s basic needs (such as food, shelter, access to education and the labour market, cultural activities and entertainment), as well as care for people in need, promotion of mental well-being and community feeling, and good governance (e.g. democracy, community involvement and aiming for consensus). With regard to the economic sector, sustainable development requires a diversified and crisis-resistant local economy with a high level of productivity and innovation. The latter presumes a high quality of education, research and development, as well as economically viable small and medium-sized enterprises. As in other fields, awareness of issues related to sustainable development is also a crucial factor in the socio-economic sphere.

With regard to community involvement, major differences were found between the seven planning processes. As far as the content of the concepts is concerned, all the case studies claim that their social infrastructure and social mix is above the local average and they accept the need to establish settlement structures which are suitable for mixed use. Likewise, the creation of local jobs has been on the agenda for all the projects. Concerning the profitability of the ECOCITIES, there was unanimity among the partners that it was difficult to provide concrete figures.

The results of the project underline the fact that, as with any other city or part of a city, the ECOCITY has to be a compromise between different values and interests. It should not be left to professional and academic experts to find a good compromise, as the result is most likely to be a technocratic solution, which is implemented in a top-down manner. In the end, it is the inhabitants who have to live there and it is they who have to feel comfortable. This demands a certain degree of humility on the part of urban planners and other sectoral experts. Their task is to provide information and develop alternatives, which will then allow current or future inhabitants to discuss and make decisions about the project. In most cases this approach will lead to a modification of the suggested plan. The final decisions must be taken on the political level, thus, policy makers should also participate in the process and discussions right from the start.

From a socio-economic point of view, the different technical and socio-economic criteria are not an end in themselves. There are usually good reasons for their implementation, but only if they are understood and accepted by policy makers and the public will they lead to the desired results. On the other hand, if the importance of sustainable development cannot be communicated properly and there is no public support for a certain approach or solution, then there is no chance of a successful realisation and the outcome will not be an ECOCITY.

Another crucial point which is often neglected is economic considerations connected to urban sustainable development. Like community involvement, financial aspects and the creation of new jobs are a reality check for the project. This highlights the difference between utopian visions and urban planning which aims for the realisation of a project. However, due to the complex interrelationship between urban and economic developments, as well as rapid economic changes, it is not possible to find a durable mix of uses. Instead a high capacity for change is essential. Furthermore, what seems to be an excellent mix or a future-proof economic sector today may turn out to be a dead-end street tomorrow. Therefore, economic and social structures in an ECOCITY must be flexible and comprise the potential for change.
5.4 Obstacles and success factors for urban sustainable development

During the planning phase of the seven site concepts, the ECOCITY partners faced a number of obstacles which delayed or hindered the development of the envisioned ECOCITY. At the same time, they also encountered several factors which affected the ECOCITY planning process positively. The principal obstacles and success factors are further elaborated in the following sections. It is important to note that in all cases obstacles and success factors were experienced simultaneously. The resulting combination and the possible dominance of one over the other depended on the individual circumstances of the particular plan.

It should also be noted that legal requirements were explicitly not classified in this context. In general, they can be both obstacles and success factors for urban sustainable development. The existence of conventional building regulations (e.g. demands for the provision of parking spaces) may aggravate the implementation of ECOCITY ideas (e.g. car-free areas and lifestyles). National laws, such as building and land-use legislation, are a powerful tool of environmental and social policy. If they are wisely applied, they can help to enhance the level of sustainability. However, since these requirements differed so widely between the different sites, a general summary of their effect could not be made.

5.4.1 Obstacles for urban sustainable development

The ECOCITY concept is a new paradigm in the field of urban planning. As it challenges traditional planning principles and questions conventional behaviour it is often met with scepticism or even resistance. Thus it is interesting to take a closer look at the obstacles to urban sustainable development which were experienced during the site-planning phase of the ECOCITY project. It should be noted that these may be relevant in the creation of new urban quarters as well as in adapting existing quarters (except where otherwise stated):

• The idea of and need for sustainable development and the values connected to it are not sufficiently discussed as far as the wider public is concerned. Therefore ECOCITY projects are confronted with a lack of understanding from policy makers, planners and citizens alike.

• There is often suspicion from policy makers and planners towards the ECOCITY concept, as urban sustainable development is closely connected to alternative ways of decision-making (e.g. community involvement), the implementation of new technologies (e.g. pilot projects for grey water treatment or energy generation ) and new organisational solutions (e.g. multiple use). This means a loss of influence for traditional actors and often leads to the fear of additional costs.

• An important precondition for the realisation of an ECOCITY is the availability of land or at least the cooperation of the landowners with the project. Another requirement is that the areas under consideration are situated in such a way that they comply with the principle of efficient and economic land use and that they can easily be connected to good quality public transport networks. These demands cannot always be fully met.

• Urban sustainable development is based on a holistic way of thinking and acting. This integrative approach is often inhibited by fragmented administrative structures, political rivalries and a disregard for citizen expertise\textsuperscript{21}. Thus an ECOCITY project can fail due to a lack of commitment to cooperation or the inability to understand the issues or the role of other parties involved. Holistic planning is demanding and labour-intensive and thus not popular among all actors.

\textsuperscript{21} For further information concerning the concept of ‘citizen expertise’ see Saaristo (2000).
• The ECOCITY idea can only be put into practice if policy makers, planners and investors accept the paradigm of sustainable development and are willing to promote and, if necessary, even defend it. At worst, the ECOCITY becomes an issue of party political disputes, which can result in a loss of governmental and non-governmental support.

• Even though an ECOCITY is generally planned as a large entity which is intended to be implemented on a much smaller scale, as a well-organised cluster of small projects, with a large group of investors extending right down to individual home-owners, there can be local resistance to what is perceived to be one major project.

• The initial investment costs for urban sustainable development are higher compared to conventional projects, and break-even points will only be reached in the medium or long term (through low running costs due to efficient operation with reduced need for maintenance). This may scare off potential investors, although the life-cost balance is clearly in favour of ECOCITY concepts. Other benefits of an ECOCITY, such as lower emissions or a better quality of living, are non-calculable items and hence often disregarded by economic and financing experts.

• The ECOCITY is no self-sufficient island of bliss, which means that it needs to be embedded in existing structures (e.g. roads, water supply and sewage systems and food production chains). Consequently, some results of urban sustainable development may be blurred or even neutralised, while other factors are outside the sphere of influence of urban planners.

• The ECOCITY concept can also fail due to a lack of commitment on the part of the citizens. The fear of additional costs or a loss of wealth and comfort may bring the project to an end. In some cases it is not clear who the future inhabitants of an area will be. On the other hand, it is possible that the demands of the inhabitants concerning the ECOCITY are too high or too conflicting to be realised, which may discredit the project and leave it without support.

• Many benefits of urban sustainable development will only be recognisable in the medium or long term, while on a short-term basis similar ecological costs are generated as in the case of conventional approaches (e.g. land use, building materials and additional energy use). This is difficult to communicate on the political level, with its strong focus on short-term success.

• There is a danger that policy makers misuse the label of urban sustainable development, to reduce criticism of disputed projects in ecologically sensitive areas, but without having any real commitment to the idea.

5.4.2 Success factors for urban sustainable development

Apart from obstacles to urban sustainable development, there are also a number of factors which can help to promote ECOCITY ideas. But just as encountering obstacles does not automatically result in failure, the presence of one or several of the following factors cannot offer a guarantee of success, as this depends on the specific local situation. Nevertheless, certain factors appear to play an essential role, as they can frequently be found in connection with successful and innovative projects in this field:

• Successful urban sustainable development is often characterised by the commitment of one or more key actors, who may be individuals (e.g. a politician, an activist, a civil servant or an entrepreneur) and/or other parties (e.g. a municipality, a community organisation, a political party or a company). Without their vision, commitment and ambitious thinking the projects in question would not develop in the same way.

• Community building and involvement is a typical feature of successful projects. In this context it is important that citizens and planners identify with the municipality and that an innovative climate is created. The free flow of information and a high level of trust among governmental and non-governmental actors as well as between these two groups are essential.
In the case of urban sustainable development, social capital can be both an important precondition and a valuable result of a holistic and successful planning approach.

• Planning processes are particularly successful in cases where win-win-win coalitions are built. This means that all the participants involved (planners, policy makers, the local administration, landowners, investors, citizens, etc.) can benefit from their involvement – and perceive this to be the case.

• Overall political support for sustainable development as well as for new and unconventional methods and approaches turned out to be another success factor. The ability to form alliances and to agree on compromises is not only a basis for parliamentary democracies but also for the realisation of an ECOCITY.

• The development of different scenarios is a good tool to highlight alternatives as aids in consensus-finding and decision-making.

• It is easier to realise ECOCITY projects in communities which are aware of environmental problems and which have existing environmental laws and regulations. Such communities already have a high demand for a safe and healthy environment. Equally, the participatory aspect of ECOCITY planning is easier to put into practice if successful community involvement processes in the field of urban development have already been experienced in the past (building on existing social capital).

• Successful projects are often located in surroundings or an environment which is considered worthy of protection by the actors involved. In order to maintain a high quality of life and to avoid a higher burden for the biosphere than is absolutely necessary, more efforts than usual are made to achieve ECOCITY goals.

• It is easier to develop ECOCITY projects if the municipality owns the site. However, this presupposes support for urban sustainable development from the municipal administration as well as local policy makers.

• The successful realisation of an ECOCITY project can increase the attractiveness as well as the reputation of a municipality. In the field of tourism or the economy these are important marketing factors.

Results of the ECOCITY project: what did we learn?
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Chapter 5


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ECOCITY

Belts of car-oriented sprawl are still growing around our towns and cities. They occupy large areas of land, cause growth in traffic volumes and result in the increased consumption of limited fossil fuels, which causes pollution that harms the environment as well as human health.

In contrast to this development and in accordance with many EU policies, an ECOCITY - as defined in this book - is composed of compact, pedestrian-oriented, mixed-use quarters, which are integrated into a polycentric, public-transport-oriented urban system. Featuring attractively designed public spaces with integrated green areas and objects of cultural heritage, an ECOCITY is an attractive place to live and work. Such sustainable, resource-efficient and liveable settlements offer many benefits for the health, safety and well-being of their inhabitants. This in turn increases people’s identification with ‘their’ ECOCITY.

The EU-funded project ‘ECOCITY - Urban Development towards Appropriate Structures for Sustainable Transport’ was conceived to contribute to the implementation of such patterns by designing model settlements for specific sites in seven European municipalities. The principles of this process and the concepts for the seven sites are described in this book. The results are urban quarters, which provide

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ISBN 3-200-00421-5