

# Sustainability Beyond the Symbolic

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Once big words have come into fashion, there is always the danger of them quickly becoming mere marketing symbols. "Sustainability" is one of these terms. There is hardly a company, which does not proclaim that they operate sustainably. So it is hardly surprising that linguists state that by now sustainability has become a "rubber term" and that environmental organizations are complaining about "green washing".

By contrast, I would like to make the explicit statement that a shopping center is no environmental reserve. And it takes far more than just mounting a solar installation on top of a building to make it sustainable. From my point of view, architects and project developers have to approach this question in a much more basic way, namely: How can I plan, construct and manage buildings, so that they might have a positive long-term effect on the environment and at the same time remain within certain limits with regard to their side effects?

It is primarily the decision makers' ken and planning horizon that constitutes the decisive

factor here: If somebody wants to sell a property with the maximum possible profit margin and as quickly as possible, they usually do not have any interest in planning a property in a sustainable way. And a developer who does not need to present any reference projects will not be caught up by the consequences of such short-term thinking, which is most often also short-sighted.

The opposite is true of ECE: As market leader in the European shopping center business, ECE stands in the focus of public attention. Politicians and municipalities inspect our city galleries, looking at how they are actually operated, before making a decision for their own city. What is more, we also remain at the location in our function as lessor and manager, thus taking a long-term responsibility for the properties we plan. Therefore, ECE has been planning sustainably before we were even familiar with that term: In 1970, ECE opened the Alstertal Shopping Center in Hamburg. In close consultation with the Hamburg Senate and in consideration of its political urban planning goals, we chose an area located directly at the terminal station of the city train, that was meant to become the nucleus of a new city quarter. After a corresponding change of customer wishes, the replacement of a furniture store, which had originally been located in the basement, by multiple other shops could be carried out without needing to make any significant alterations - thanks to the use of a flexible system of load bearing columns. We acquired strong local partners as tenants, some of which have remained at that location to this day. And we could carry out several building alterations and construct annexation buildings almost without having to use any additional unsealed soil.

In the following decades, ECE's project developers, architects, construction engineers and center managers have been working continuously to further enhance the sustainability of our shopping centers. Our aims include, for example, a more environmentally responsible use of the development sites, land recycling, long lifespans and universal use possibilities of buildings, unproblematic rebuilding and, if need be, deconstruction, as well as use of eco-friendly and health-friendly materials (also for building fitout), comprehensive substance management, rational energy use and minimization of building use designation requirements. Here are some concrete examples:

## Site selection

- Inner city locations allow for the reduction of traffic, as an increasing number of customers can reach the center by local public transport or by bike.
- Moreover, locations situated in the city center are more strongly integrated into grown structures and promote their further reinforcement.
- Compact, already developed locations make it possible to reduce the amount of soil that needs to be sealed. Hence, in the case of a shopping center, the land use is considerably more advantageous as compared to an ordinary business building, because many synergies are created for various functions (personnel rooms, washrooms, elevators).
- Moreover, most locations are not developed for the first time, but converted to a new use, so that no sealing of additional soil is necessary. Comprehensive construction and ground water assessments ensure that it will not come to problematic drawdown, so that costly soil reconstruction is avoided.

## Architecture

Shopping centers are heated only on few days throughout the year. Therefore, in contrast to other properties, the decisive factor for energy saving is not an optimal heat insulation, but the maximal possible reduction of heat influx:

- Through sunscreen-glazing, the need for cooling as well as the necessary light intensity inside the stores is reduced.
- Extensive green spaces on the roofs form important biotopes within the cities and besides balance temperature variations, thus helping to save energy.
- Ventilation inside the centers is achieved exclusively through energy-efficient drive systems with low SFP values (specific fan power). Generously dimensioned

recuperators with a recovery rate of 70 percent reduce the need for heating and cooling.

- As the rooms for the low-loss casting resin transformers are principally located at the exterior walls, a separate mechanic cooling is rendered unnecessary.

- As for the heat insulation of vehicle accessible roofs, highest standards apply with regard to the insulating material. Here, ECE uses foamglas, which for the most part is composed of recycled glass that has been ground, heated, mixed with carbon and then foamed up.

- The traffic volume can be reduced by using durable materials of German fabrication (Jura marble, regional sandstone, native wood sorts). Unlike with materials from China, South America or Egypt, the recultivation of the quarries is ensured as well.

An especially important factor is the ability to adjust the shopping center to the constantly changing customer wishes and commercial trends without major restructuring measures:

- Through the use of static-constructive systems (no prestressed constructions, no continuous girders) with sufficient strain capacity, it is possible to redivide store spaces with considerable flexibility and modify them for new purposes.

- To the same end, reserves are planned in building services systems with a view to later use modifications. Here, conductor rails with variable connected loads serve as energy supply system for the leasable areas.

## Construction

- Extensive floor plans and logistic concepts are worked out for each construction site in order to achieve an optimal construction site operation. As far as possible, supply and disposal on the construction site is organized via rail or water ways. We also verify whether it makes sense to use a stationary concrete mixing plant for the sake of traffic reduction.

- Special construction waste collecting points ensure that waste separation takes place as early as in the construction phase.

- Resources are saved through reusable system formworks.

- During the construction period, the use of encapsulated construction machines for noise reduction serves to protect residents as well as workmen on the construction site.

#### Operation:

- With the help of modern, computer-aided control systems (DDC systems), performance and consumption in the sectors of heating, ventilation and cooling is continuously monitored and dynamically adjusted to current requirements.

- Energy can be saved by using energy saving lamps, motion detectors and by taking into account lighting conditions that are changing throughout the day.

- The cooling system of the centers is switched off thirty minutes before closing time in order to reduce energy consumption.

- By comparing business costs of all the centers managed by ECE, cases of above-average consumption are identified and the respective reasons remedied.

- CO<sub>2</sub> emission can be reduced through long-distance heat supply and green power. According to conservative calculations, 37,200 tons of CO<sub>2</sub> per year can be saved in those shopping centers alone, for which the conversion to green power has already been realized. This equals the annual consumption of 1,100 three-person households.

- Waste separation is practiced throughout our malls.

- The use of eco-friendly detergents is stipulated in the cleaning contracts.

These measures are not spectacular – but working on the details shows an effect. The use of cutting-edge energy saving lamps alone reduces the amount of energy needed for lighting by approximately 20 percent. In times of considerably rising energy prices this is also becoming an increasingly important economic factor. This is another reason why ECE systematically informs its tenants about technical possibilities and why we cooperate with the company Philips within the initiative „Cool down“.

Of course ECE also deals with the question of how its shopping centers could be directly supplied with regenerative energy. In this context, we have considered several currently available alternatives for the Rhein Galerie in Ludwigshafen. However, it has become apparent in the course of this revision that technologies like the fuel cell are not suitable for shopping centers at this point, as here neither warm water is required in the respective amounts nor energy requirements are nearly constant in the course of a day. Other technologies like geothermics have questionable side effects, that often make an approval impossible, like e.g. ground water warming. However, we will continue to invest into basic research in cooperation with various universities, in order to develop new approaches and to examine their realizability and their actual benefit for the environment.

In parallel, ECE continues to follow the path of continuous enhancement through innovative detail solutions. Current examples can be found in the Ernst-August-Galerie in Hanover:

An intelligent control system facilitates a natural ventilation via the roofs. Because the overpressure inside the stores is reduced and the cool retained during the night is now sufficient for achieving agreeable temperatures, a mechanical cooling system is no longer necessary. Therefore, the energy consumption for cooling is reduced by 162,000 kWh, which is the equivalent of 35 tons of CO<sub>2</sub>.

In order to equally satisfy modern design standards as well as the requirements for the sustainable use of energy, facade illumination LEDs have been developed on request.

Because a relatively high amount of energy is necessary for starting an escalator, a newly designed control system for intermittent operation has been developed. Escalator operation speed is automatically varied according to the number of users. When customer frequency is high, the escalator runs in full mode. As the customer stream decreases, the running speed is reduced, with the escalator being accelerated at the approach of a customer. Only when customer frequency is very low, the escalator switches to standby mode.

Additionally, a 250 kilowatt photovoltaics system has been integrated into the roof construction of the Ernst-August-Galerie, thus saving approximately 50 tons of CO<sub>2</sub> per year.

For us, sustainability also means using our own resources for motivating others to participate. Therefore, in the malls of ECE centers, environmental initiatives give energy saving tips and present energy-efficient products. For the fight against climate change must not end at the exit of our shopping centers.