Ministry of the Environment
City of Helsinki

The European City Today

The Helsinki Round Table on Urban Improvement Strategies

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Ecological Urban Restructuring

- Theoretical Foundation and Concept for Action

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Introduction

Cities are 'built thought'. They represent the most materialized form of the relation between society and environment. Cities worldwide have become a symbol of the environmental crisis because they transform valuable nature resources into waste and pollutants.

Cities, however, are also places of innovation. Solutions emanate from people whose living conditions are threatened. Many signs indicate that the time is ripe for basic changes in production and consumption processes, in people's attitudes and behaviour, and also in the built-up structures of cities.

The concept of Ecological Urban Restructuring has been theoretically developed and empirically tested in an international comparative research project. The four elements of the concept are the following.

a. 'Eight ecological orientations' were compiled as guidelines for concrete projects, strategies and measures.

b. A 'model of fields of activity and building blocks' was developed as an overview of the measures of ecological urban restructuring which are possible today. It is a thinking and working aid to overcome the contradiction between sectorally oriented conventional planning and policies, and the necessary new integrated thought and action.

c. The 'conception of ecological neighbourhood development' refers to neighbourhoods as comprehensible entities for their inhabitants. Neighborhoods have been discovered to be the most important level of action for ecological urban restructuring. Many possibilities to network measures with the inhabitants and other local agents are possible. Through decentralized local networking, measures become ecologically effective, economically viable, socially acceptable and politically realistic.

d. The 'concept of eco-station'. Eco-stations are an infrastructural prerequisite for ecological urban restructuring. They should be ecologically oriented communication, culture and trade centers which are communally supported. A network of decentralized eco-stations should communicate locally, regionally, nationally and internationally and thus become the infrastructure for concrete tasks of urban ecological restructuring.

1 Three Theses

Thesis 1. The ecological urban restructuring of the industrial society is the main task of the ending 20th and beginning 21st century. The natural vital basis of today's and especially future generations is endangered to an unknown degree by the all too linear and short term optimization of technical, social and economic systems. Rethinking and restructuring are necessary in all spheres of life and all social structures. On the industrial societal level, new holistically oriented living designs must be developed and implemented. This task cannot be solved on the drawing board or in scientific institutions. Social practice is essential.

Thesis 2. Cities will play a key role in this process. Cities are the main living, production and innovation points of industrial culture. In a particular way, cities represent the materialized form of the relationship beween human beings and their environment. The city is 'built thought'. Urban lifestyle is lived thinking, feeling and behaving vis-a-vis human beings and the environment. In cities, the contradictions of societal developments become acute and new solutions are found. Cities are the starting point of the environmental crisis of industrial society. The crisis must be overcome through cities and their strength in innovation.

Thesis 3. The environmental crisis is global and ignores borders. It has become increasingly difficult to push problems from one place to another. Finding solutions has become an international task. Local and global action is needed. Industrial countries have a special responsibility as the main causers of environmental problems, but also as those with the scientific, technological and economic potential to solve

them. Internationally coordinated norms and agreements as well as new action and support systems are needed for the ecological urban restructuring of cities. Strategies should be carefully related to different conditions in different parts of the Earth.

2 Four Levels of Innovation

It is useful to distinguish four levels of innovation in urban technology (see illustration 1). They demonstrate historical levels of technology and the direction for the further development of environmental technology. Only the fourth level of innovation can be acknowledged as being really ecological. Nevertheless, related to a particular problem in a particular place and time, any one of the four levels of innovation could be the best solution, i.e. the only possible one.

Illustration 1. Four Levels of Innovation of Environmental Technology and Technical Concepts for Urban Development.

Level of Innovation	Symbol	Description
1	→	Measures according to the "High Chimney Principle"
2	---→/→	Measures of Technical Treatment After the Fact
3		Measures of Technical Prevention and Problem Avoidance
4		Preventive Techniques and Concepts with Socio-Ecological Principles of Design

First Level of Innovation: Measures according to the High Chimney Principle

With increasing industrialization, toxic emissions made the air in cities so bad that the living conditions of inhabitants were directly threatened. The first 'technical' approach to this problem was to elevate the emitting chimneys to a level that the pollutants were distributed and thinned out in horizontal and vertical directions. Similarly, sewage from industry, households and agriculture was disposed in rivers and in seas. Solid waste was carried to dumps outside the settlements. The limits of this type of 'solution' to environmental problems are quite clear and became proverbial: Dilution is no solution to pollution! Nevertheless, this first generation solution to industrial society's environmental problems is still in use. Sometimes it even makes sense as an intermediate solution, for example in the case of backyards threatened by high emissions or in the case of vertical exhaust pipes for trucks and buses.

Second Level of Innovation: Measures of Technical Treatment After the Fact

The second response to the environmental crisis were technical treatment measures after the fact. The limits to a spatial externalization of environmental problems demanded the development of a new type of technical innovation, the post-operative filter and cleaning techniques, or end-of-pipe technology. Waste and pollutants is not avoided, but their uncontrolled dissemination is at least controlled. Desulphurization of flue gas, sewage treatment, waste incineration, controlled dumps for waste and toxic waste, intermediate and final storage of nuclear waste and toxic waste are examples of this type.

The measures of technical treatment still represent standard answers to increasing environmental problems. However, it has become clear that these techniques cannot really solve the problems but only shift them regionally and from one environmental media to another. And it is also becoming more and more difficult to find places for dump sites or waste treatment plants etc. because no one wants them in the neighbourhood.

Third Level of Innovation: Measures of Technical Prevention and Problem Avoidance

The goal of innovation at this level consists of minimizing the use of raw materials, energy, waste and emissions. This approach demands cycles or partially integrated systems. Examples, in architecture and planning, of this generation of technology are climate-adjusted building, solar and wind energy techniques, multiple-use and recycling of water, recycling of building materials, separating and composting of wastes. These techniques are not yet very widely used.

Fourth Level of Innovation: Preventive Techniques and Concepts with Socio-Ecological Principles

Designing socio-ecological technology is an extension of the third level of innovation which in its purely technical orientation may not give enough consideration to the socio-cultural causes

of environmental problems. A real solution to the environmental crisis is possible only when the social and cultural dimensions, i.e. its causes, are incorporated.

Socio-ecological technology means making the environmental and social dimensions of technology experiential again, and overcoming the very limited comprehension of environmental goods as economic resources i.e. as 'fuel of industrial society'. Human beings are understood as proactive, aware, sensitive and responsible creatures who can comfortably and creatively live with both technology and environment.

3 Elements of a Strategy for Ecological Urban Restructuring

The pilot phase of ecological urban restructuring was carried out in Berlin in 1984-1989. Urban ecology projects were realized on building and neighborhood levels. Some projects attracted wide attention: Block 6 in Kreuzberg, an integrated water concept with a biological treatment with plants, the Moritzplatz Neighborhood project in Kreuzberg and the eco-houses on Corneliusstrasse / Rauchstrasse in Tiergarten.

Based on these and other experiences, demonstration projects were organized by the Science Center of Berlin in an international cooperative research project dealing with ecological urban restructuring. Neighborhood strategies were compared with partners in Poland and former Czechoslovakia by testing concept transferability and developing an empirically based theory and strategy for action. One result was the concept of ecological urban restructuring with the following four essential elements (see illustration 2).

Illustration 2.

The ***eight points of orientation*** serve as a guideline and as a basis for discussion on specific projects.

The ***fields of action*** and ***building blocks*** are a framework for the development of project- specific political strategies and individual measures which are integrated and comprehensive.

The ***concept of ecological neighborhood development*** is important because neighborhoods, being comprehensible for their inhabitants, have been discovered to be the most important level of action for ecological urban restructuring, especially for a networking of appropriate technical, social and urban planning / design measures.

The ***ecostation concept*** is an important requirement for the initiation of ecological urban restructuring.

3.1 Eight Points of Ecological Orientation

The eight points of ecological orientation were formulated because there was a need for guidelines on ecologically compatible urban planning. Explanatory aids to what is understood by ecological urban restructuring are hardly available. Institutions and actors are badly prepared for a topic which will be a central one in the future. Theoretical assumptions and empirical findings of the research project on ecological restructuring are summarized in illustration 3.

Totally new criteria for thought and action to reform the interactions between society and environment are not needed. Rather, principles of environmentally and socially compatible technology and forms of settlement,

Illustration 3.

verified by centuries of experience, should be systematized. This observation is concretized in the terminology of the 'eight points'. Thus a basis was established for the critical discussion of ecological urban restructuring.

(1) Human-ethological orientation. If we do not have a better understanding of the nature in us, no solutions for the nature around us can arise. It is to be noted that we carry traces of thousands of years of evolution in nature and in small and big social units. From this emerge behavioral patterns, which modern urban planning often disregards. Human-ethological planning criteria comprise the human being's need for individual space and group territory, its search for identity and self-representation and its demand for orientation and social structures.

(2) Participation and democratization. Participation of the inhabitants is the first 'ecological law'! The reduction of city inhabitants to mere consumers and considering them only as incompetent recipients of services is a social and ecological dead-end. Personal participation, experience and responsibility in the interaction with the environment will instigate positive learning processes. Decentralisation in planning and implementation of the local habitat leads to spaces for individual and collective awareness and self-realization.

(3) Orientation to cycles and networks. Nature is the most economical and ecological architect. Its products are harmoniously placed into energetic and material cycles and optimally adapted to local conditions. Builders, architects and city planners should again learn from nature's intelligence. Pilot projects of ecological urban restructuring have demonstrated that savings of electricity, heating energy, drinking water, wastes, etc. of up to 50% and more are realistic. Apart from this, building materials which are damaging to health and the environment should be substituted; electromagnetic currents should be taken into consideration.

When choosing building materials and designing products, it is important to consider the whole production, consumption and deposition cycle and its effects on people and the environment. This concerns the origin of the raw materials, their production methods, their transport, the use of energy and waste treatment. Corresponding substance-value factors should be integrated into all planning activities.

(4) Orientation to nature and the senses. It is not enough to understand cyclical orientation and participation in purely organizational or technical terms. People must be enabled again to experience them personally. This means that ecological urban restructuring is above all a creative task. It is important to overcome the reduction of functional or aesthetic aspects of the city as expressions of linear and sectoral understanding.

Since most of the natural and cyclical relations of architecture, urban planning and technical systems can no longer be experienced with the senses, sensitivity and responsibility wither away and indifference as to what is bad and good in life rises. For example water in the city just occurs between the tap and the drain, and one does not bother about what happens before and after.

(5) Orientation to qualified density. Ecological urban restructuring implies integration of urban functions, a creative mix of residential, work and leisure activities on the smallest possible scale (qualified density). This means the realization of multiple alternatives for cooperation, and of the respective possibilities for saving time, distance and resources.

The task for urban planning then is to develop new forms of me-

diation between urban experiential qualities and possibilities of natural elements. This involves creating spaces for plants on and around buildings and the fostering of small-scale building elements that interact with one another and with nature. The objective is to help urban dwellers to experience the richness of natural cycles.

(6) Orientation to Genius Loci. The Chinese doctrine of Feng Shui stipulated a way of constructing buildings and cities, of utilizing land and natural resources so "that the landscape was not changed in such a way that the earth's life-supporting energetical influences and operating laws would be disturbed". This was an important guideline to people's identification, their ability to put down roots and integrate themselves into a given natural context. In a natural-spatial sense, the orientation to the Genius Loci means defining an experiential relation to the geographic, climatic and geomorphological surroundings, to the flora and fauna specific to the area, through architecture and urban planning.

Today, orientation to the Genius Loci means to relate architecture and urban planning to the history of a given place. Reference to the genius loci thus means to comprehend the city and the urban neighborhoods as living memory. Buildings are to be consciously incorporated as links into the historical chain.

(7) Ecology and economy. So far, environmental protection policies, as technical and political reactions to environmental damages, have neither proven sufficient nor financially viable. Instead of treating symptoms, we must develop preventive ecological strategies which strike at the anthropological origins of the environmental problems.

A new sustainable symbiosis between economy and environment in the urban context requires innovative instruments like resource taxes, emission charges, billing according to consumption, environmental accounting, appropriate building standards, planning laws and strategic subsidies. Furthermore, it is necessary to create suitable conditions for new forms of co-operation between the formal and the informal economy, between administration and local people towards co-planning, co-production, co-responsibility in forming the local habitats.

(8) International orientation. Local and global environmental problems, the destruction of the resource basis in the developing countries and the waste of resources in the industrial countries are closely linked. Ecological urban restructuring thus requires an international exchange of knowledge and experience as well as mutual support in implementing new urban ecological strategies.

Important impulses for environmental policy originate from decentralized networks, a new kind of pressure from below. Suggestions to finance such 'help-for-self-help' projects are at hand. Apart from funds of the World Bank, the OECD and WHO, the peace dividend, i.e. funds used for armaments, may be channelled to these of activities.

3.2 Fields of Action and Building Blocks

The question is how can the proposed points of orientation be made more specific and put into practice. 'Fields of action' and 'building blocks' were formulated on the basis of a theoretical foundation and experiences from pilot projects, trying to mediate between the reality of sectoral planning, of existing policy and administrative departments and the necessity of integrated thought and action. Three fields of action, complementing each other, are particularly important for integrated ecological urban restructuring:

(1) urban technology and urban design,
(2) grass-root democracy and environmental communication, and
(3) urban economy and political administration.

Only by a network of these three fields of action does ecological urban restructuring have a chance. If not so, things will remain at an exotic and only partly convincing pilot project stage. Particularly the second and third fields of action indicate the importance of changes in the economic, social and political conditions, which again depend on a new common environmental consciousness and a new environmental ethic.

In the mentioned international project, the three fields of action were made more specific by a number of 'building blocks' (see illustration 4).

The building blocks relate to established and new planning areas, policies, instruments and research proposals which are of particular importance to ecological urban restructuring. A variety of dialogue partners can be addressed (persons, institutions and associations) concerning the implementation of strategies. Tasks can be formulated, obstacles to their realization can be

Illustration 4. 'Fields of action' with 'buildings blocks'.

URBAN TECHNOLOGY AND URBAN DESIGN	URBAN DEMOCRACY AND ENVIRONMENTAL COMMUNICATION	URBAN ECONOMY AND POLITICAL ADMINISTRATION
Architecture and Building Ecology	Environmental Information/ Environmental Reporting	Resource Taxes
Electricity and Heating	Environmental Education and Qualification	Emission Charges
Water	Ecological Council	User-Related-Billing
Traffic	Co-determination and Co-responsibility	Environmental Accounting
Reducing Garbage and Ecological Recycling	Responsible Bodies and Co-operative Associations	Adapting: Planning Instruments, Building Norms, Building and Planning Laws, Subsidies
Green Areas and Urban Vegetation/ Nature Protection	Eco-Stations/ Centres of Environmental Communication	Adapting: Activities of Services, Crafts and Manufacturing
Urban Climate and Quality of Air	Energy, Water and Garbage Agency	New Administrative Tasks
Protection of Soil and Groundwater	Habitation and Neighbourhood	
Protection against Noise Pollution		

identified, agreements about solutions reached, and finally implementation begun.

The term 'building block' illustrates that the function and capacity of each block becomes ecologically, economically and socially effective only in conjunction with the other blocks. Any block has only a limited chance of implementation without this networking. This does not mean that all building blocks should necessarily be taken into account when planning and implementing projects. The building block model is rather a framework which serves to recognize suitable approaches for action in a specific situation and in relation to local possibilities.

In the implementation of ecological urban restructuring, three categories of measures have proven useful (and for which practice-oriented handbooks) are now available:

Standard measures are technically tested and available on the market and cause little or no extra cost. Examples are water-saving technology, certain energy-saving measures, environment and healthy building materials, urban greening.

Extra measures, i.e. products and technologies on the market which have been tested technically but involve extra costs in planning, investment or use. These are ecologically effective measures which are not yet economically viable within the present framework of urban planning.

Experimental measures that are in a research and development stage, hence are not yet state of the art. These measures are used in pilot and research projects with considerable extra cost, but may play an important role in the future.

3.3 Ecological Neighborhood Development

The urban micro-area, i.e. the area perceived by people as as their neighborhood and district, is especially significant for developing and testing the ideas of ecological restructuring. It is where people live and are in their daily activities, and are most directly affected by environmental problems. Here the causal relations between problems and impacts for people can be reckognized, and it is here that the 'organized irresponsibility', or apathy, can best be understood and dealt with.

New ecological urban solutions must be developed within real working and living situations in neighborhoods and districts (see illustration 5). Urban planning and specific urban structures, such as waste removal systems, which are now organisationally isolated from each other and reduced to their technical and functional elements, have to be integrated here.

In the conditions of increasing urbanization and densification of the post-industrial culture, a new and sustainable human-environment relationship has to be developed in neighborhoods. A new behavioral ethic should based on new ways of participation and co-responsibility.

A reorganization of architecture and urban design is needed in order to build urban infrastructures in small-scale community networks that connect urban

Illustration 5. Inter-active Space for Living, Building and Design.

dwellers to urban processes and functions. This can be realized only with respect to local conditions, taking into consideration the varying types of individuals and groups as well as urban and natural structures and processes.

Current discussions of urban ecology measures show that neighborhoods are the most appropriate spatial and functional level in the city for the development and testing of new connections between old centralized and new decentralized urban systems. This deals with technical, political and social as well as economic systems. Pioneering efforts have shown that programs must be organized according to particular community situations.

Waste management requires coordination of measures on the neighborhood level: reducing volume, collecting recyclables, toxics and other wastes, and composting. A large variety of measures is needed also for improving the micro-climate: community gardens, neighborhood parks, re-exposing and planting of soil, roof and facade greening. Neighborhood level cooperation is needed also for decentralizing water systems: rainwater, greywater and groundwater. Traffic quieting means and speed limits should be developed in model neighborhods: uncovering and re-use of surfaces for the benefit of pedestrians, bicyclists and greening. Finally the neighborhood scale is important for demonstrating conserving energy and heat supply systems such as decentralized co-generation power plants, local heating plants, heat exchange technologies and solar technologies.

Environmental communications strategies should also be developed in connection with the quite technically orietated 'building blocks'. Experience shows that technological alternatives remain ineffective as long as they are not accompanied by information, education and training. Residents should be offered new training and occupational opportunites, which lead towards paid positions, but also assist and encourage individual initiative and involvement in the co-organizing of daily neighborhood life.

New employment and possibilities for professionalization in the area of ecology arise through construction projects and new demands in health and other services. To go along with the ecological reconstruction of living environments is the ecological conversion of production and service operations. Ecological trade and acitivities will only achieve a real breakthrough when housing, employment and consumption are organized to support such activites without involving great extra costs in time and money. It is relevant to realize the necessary small-scale networks of ecological measures on the neighborhood level.

Ecological urban reconstruction could be a promising field for

Project Example:

Moritzplatz

Ecological Neighborhod Development

The foundation of this project in Berlin-Kreuzberg is a decentralized infrastructure developed through an interdisciplinary and participatory planning process. Central to this project is the networking amd implementation of a range of coordinated "Building Blocks", including an integrated neighborhood energy, heating and water system designed to complement the central city systems. Planning results have already shown that the realization here of such a neighborhood infrastructure (block heating plant, co-generation power system for industry, parallel water supply lines) could reduce the energy consumed for heating by 50% and the consumption of drinking water by 50% as well, which would make the plans economically feasible. While the demonstration project of ecological renewal concepts continues at Moritzplatz, it has so far only been carried out in isolated elements. At the same time many concepts are being tested in other locations in Berlin.
A decisive factor here for the realization is again that of "Environmental Communication". At Moritzplatz this is focused on increasing the ecological understanding of the residents and other affected people, and involving them in a step-by-step development of energy, water and waste concepts.

The Moritzplatz project emphasizes a socio-ecological design approach, which means making the environmental and social dimensions of technology "experiential" and visible again. Another central concept is the development of an "Ecostation", which would be an ecologically oriented communications, business and service center. Importantly, the area residents are seen as being active participants in neighborhood development, and are no longer understood just as passive consumers.

1 Aerial photo, beginning of 1980's. Source: Landesbildstelle Berlin.

Two factors have been found to be crucial to the realization of integrated concepts:

• The social organization must be further understood and developed. Here it is important to create better ways for involving local, affected people in environmental reviews of projects. Environmental education (schools, adult colleges, etc.) is also to be emphasized in connection with "Environmental Communication".

• The "true costs" (including external environmental and social costs) of resource consumption must be better identified and dealt with. As it is, the society

Moritzplatz Measures and Building Blocks (1988)

Building Block: Environmental Communication

- environmental consultants for local business and private households
- special courses in local schools
- new qualifications for selected employees, house keepers
- exhibitions, info materials, actions
- participation

Building-Block: Eco-Station

- center for ecologically-oriented products and services (food, bicycles, repair etc.)
- infrastructure for cultural events
- local base for consultants
- show-rooms for environmental techniques
- laboratory for environmental analyses

Building-Block: Waste

- concept of waste avoidance for trade and people
- introduction of separate collection (glass, paper, organic waste, textiles and metals)
- composting organic waste
- separate collection of hazardous materials
- the guarantee of infrastructure and counselling

Building-Block: Building Biology

- building mamterials: wood and plain bricks
- heating with radiant heat
- considering acoustics, light, air, colour
- visibly circulating water
- adjustable ventilation, electric light, athmosphere
- favourable electro-statics, electro-dynamics

Building-Block: Energy

- improvement of thermal insulation/double glazing
- consumption based heating bills
- passive use of solar energy
- optimization and reduction of energy consumption
- connection to the district heating and electricity system for two firms

Building-Block: Water

- water-saving measures: 6 lt. flush-flow regulators in toilet tanks; flow control; cold water meter in the apartment; pipe in pipe system (special pipes for process water for later update)
- desealing of surfaces
- roof/facade vegetation
- rainwater usage
- groundwater usage
- process water system

Building-Block: Urban Green Planning

- individual garden space for tenants
- communicative places, block parks, children's and adult's playgrounds
- tenant's participation in planning and cultivation
- wet biotopes, rainwater ponds, fountains, rainwater drainage above ground

Building Block: Noise Protection

- noise prevention
- noise reduction at the source, while expanding and where it is, noise moderation

Building-Block: Traffic

- redesign and reduction of traffic flows and road space
- reduction of parking space quotas for new buildings
- completion of pedestrian and bicycle road network, restructuring of the subway station
- restructuring of the border crossing from the viewpoints of noise, microclimate, view

Building-Block: Environmental Impact Assessment

- the ecological concepts
- comprehensive measures (e.g. process water system)

District Heating and Process Water System:

- ▲ Base load heating plants
- △ Peak load heating plants
- ▬ Linked heating energy
- ● Ground water extraction/draining

Planned new buildings or ecological restructuring:

1. Apartments, social services, kindergarten
2. Senate administration (ecological restructuring)
3. Industry and trade center
4. A new factory for Visolux
5. Eco-Station

2 Measures and Building Blocks, (Arbeitsgemeinschaft Ökologischer Stadtumbau, 1988).

3 Glass hall with natural climate control in trade center. Source: Eble, Kalepky.

as a whole (the West German economy in 1989) could be seen to be carrying costs of about 150 billion DM per year. These costs don't appear yet in the records or calculations of either public or private suppliers, rather they're financed somewhat indirectly through taxes.

Project Example:

Block 6

Integrated Water Concept

Encompassing 106 apartments and part of a city block in Berlin-Kreuzberg, this project was funded by the Federal experimental housing and urban design program, with objectives of realizing an integrated and decentral water system with local participatory planning. This is in essence an example of a localized approach for the treatment and use of grey water and rain water, and a sparing use of drinking water. A socio-ecological design provides local residents with opportunities to experience water in ways that can encourage respect for this often abused life element.

Water concept measures include:

Parallel water systems were installed for providing drinking water and service water (treated grey water for toilet flushing and for plants).

Grey water is treated in a system of ponds with water plants.

All rain water is retained on site, partially used and treated by greened roofs, and otherwise collected in a pond surrounding the grey water ponds.

Water saving fixtures and technologies, as well as water meters were built into all of the apartments.

In addition there is a waste reduction and recycling program, and two compost stations on the site.

1 Bathing in rain water pond, Block 6.

The relationships between the applied ecological concepts and the behavior of the residents has been studied in the context of an accompanying research program.

Results:

A significant reduction has been shown to be possible in the dependence on central supply systems. At the beginning of the project a water consumption (of centrally provided drinking water) of 165 ltr./pers./day was measured. Current consumption is about 80901tr./pers./day. The project can be seen to become economical as the costs of water correspondingly increase. In 1983 the cost of water was at 2DM/cbm, in 1991 at 4DM/cbm and by 1997 will probably be up to 8DM/cbm. While the investment costs would be covered with such water rates, the "true" cost of water must in any case be set still higher.

Positive results have also been seen in connection with the social reactions. It is important to note that the residents of Block 6 are "typical" of other renters in Berlin public housing who have "Housing Need Certificates". A high level of interest in participating in the project's planning and management has been largely credited to the intensive counseling efforts and resident participation programs. A block association "Eco-Social Living" was selforganized by the residents after a series of planning workshops, and has assumed responsibility for part of the water systems maintenance (i.e. cleaning the water system's treatment ponds). A new quality of urban life-style has developed; a technical system that functions on the basis of social organization and understanding.

2 Block 6 after realization, 1988 source: Senatsverwaltung für Bau- und Wohnungswesen, Berlin.

3 Location plans in Kreuzberg source: IBA Berlin.

Zentrale Wasser Ver- und Entsorgung
(Liter pro Einwohner und Tag)

Integriertes Wasserkonzept Block 6
(Bezugswerte Liter pro Einwohner und Tag)

4 Central water supply and waste removal/ Integrated Water Concept Block 6. Source: Oko-Stadt.