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Summary

Analysis of ecologically-alternative, reasonably-priced buildings and their dependence on the peripheral conditions of the land

The aim of the survey is to draw and define conclusions generally applicable to private homes from concrete instances and so to aid the further development of environmentally-friendly building methods.

The research work is characterized by the initial documentation of ten completed building projects, from the planning to the construction stage, in conjunction with a detailed description of the most important planning characteristics, data and costs. Individual houses as well as housing estates in both rural and densely populated urban areas are considered.

The range of home types is important in order clearly to illustrate different ecological building methods.

The results of the survey can be deduced from the analysis of the projects. This analysis is structured in accordance with selected criteria, in each case representing a horizontal comparison. The data are classified into the following fields:

absolute size of the example; type of building planning; legal planning framework; actual use of real estate; house shapes and distribution; ground plan and elevation; shape, angle and direction of roof; passive use of solar energy (room arrangement); active use of solar energy (plant); use of water; heating systems (heat insulation/energy-saving measures); exterior wall materials and vegetation/landscaping.

An important precondition of generally as well as ecologically economical building projects is a building plan drawn up with these aims in mind. In particular the economical use of available space plays a dominant role.

Of importance for cost-saving planning is the primary consideration of such points as compactness, zoning, sunlight orientation, economical use of building materials, advantageous heat insulation and saving of resources through buildings which help reduce losses.

The main emphasis here should be the passive use of solar energy: south-facing living areas, large south windows, storage facilities, temporary heat protection and perhaps conservatories are elementary starting points which are met with again and again in the cases under analysis.

High investment costs for equipment for the active exploitation of solar energy (collectors, photovoltaic and wind energy plants), seldom pay for themselves through savings in operational costs. Optimum heat insulation and the use of household appliances with low electricity consumption are in the first instance more beneficial.

Energy saving is one of the most important aspects of ecological building, alongside further goals such as the protection of natural resources, environmental toleration, preservation of vegetation, use of building materials which are not damaging to health and the realization of building projects in self-help groups.

In principle there is nothing to prevent widespread use of ecological building methods. Neither planning or building regulations nor the conditions on the building market in respect of the availability of materials and technical appliances oppose the application of these methods. Happily, the general consciousness of the importance of environmentally-friendly and healthy building and living is far more widely appreciated today than 10 or 15 years ago. At the same time there is still much to be done to advertise the advantages of the ecological aspects to the general public and to rid ecological building methods of their aura of the exotic and spectacular.