

BUILDINGS AND THE ENVIRONMENT EUROPEAN POLICY, LEGISLATION AND ACTIONS

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Following the Single European Act of 1986, which made environmental protection a specific objective of the Community, and the Maastricht Treaty of 1992, the political priority of the Community, which began with a strengthening of regulations, has moved towards a progressive shifting of responsibility to industry in the field of buildings and their local environment.

Directives, communications from the Commission to the Council and Parliament on the urban environment, a concentration of European research and development towards buildings, and environmental action programmes all support European environmental policy objectives.

These cover the fields of energy, waste and recycling, dangerous substances, the internal environment (air, water, radiation and noise) and soil pollution. Harmonisation of environmental issues linked to buildings is advancing pragmatically, mainly on the basis of (harmonised) European standards which benefit from the results of various Community programmes (Research and Development, development of Ecolabels for construction products, CE marking for construction products).

The immediate and longer-term consequences involve consumers, regulators, and especially industry, as they affect economic growth and industrial competitiveness (taking into account regulatory requirements), as well as economic and social cohesion at all different levels: regional, national and European.

0) CONTEXT

The Treaty of the European Union prescribes that the Community has a mission to promote "harmonious development and balanced economic activities with sustainable, non-inflationary growth respecting the environment". Amongst the actions foreseen in Article 3, is "an environmental policy which relies on, amongst other things, the preservation, protection and enhancement of the quality of the environment, the protection of people's health, the prudent and rational use of natural resources". The type of actions required and the means to achieve them are specified in Chapter XVI, which states that the requirement for the protection of the environment should be integrated within the definition and implementation of other community policies.

In general policy documents such as the white paper on "Growth, Competitiveness and Employment" (1993), the green paper "For a European Union Energy Policy" (1995), the Green paper on "the Urban Environment", the green paper on "noise"..., four major European environmental policy objectives are envisaged : air quality, water quality, thermal comfort and acoustic comfort. The European Union's instruments for action have diversified. Those which cover the protection and enhancement of the environment, and which especially concern the buildings sector, can be classed into four broad categories : legislative instruments, particularly the Directives and European Decisions; economic instruments such as the recourse to civil liability and economic and fiscal measures; instruments of horizontal support including programmes of research and technological development and programmes of policy actions in relation to the environment and sustainable development; and finally, mechanisms of financial support.

1) LEGISLATIVE INSTRUMENTS : European Directives

In buildings and their local environment, the Directives, whether classical in nature or for harmonisation, tend to reflect the situation already accepted at national level, rather than being particularly progressive or forward-looking. Apart from the directive on the freedom of access to information on the environment (90/313/EEC), three types of Directives can be considered :

a) Directives on dangerous substances

They are the most numerous. In particular, one should mention :

- the directives on "Arsenic Compounds", which does not allow arsenic compounds to be used as a substance or constituent of products used in the preservation of wood or in antifouling paint, "Asbestos", which proscribes in particular the use of products containing these fibres in paints and varnishes, mortars, protective coatings, fillers, sealants, jointing, mastics, glues, decorative powders and finishes, low density insulating or soundproofing materials,

underlays for plastic floors and wall coverings, roofing felt, materials in products intended to be applied by spraying.

- directives on "Lead carbonates and lead sulphates", which are not generally allowed in paints, "Mercury compounds" which may not be used as a substance or constituent of products intended for use in the preservation of wood or in antifouling paints, in the impregnation of heavy fabric or yarn or heavy duty textiles,

- directives dealing with "Pentachlorophenol", "ugilec 141, 121 and DBBT (monoethyl-dibromodiphenyl methane)", "Creosote". "Benzene", "PCB and PCT"

- directives on "Cadmium" which may not be used to stabilise products such as floor and wall coverings, tubes and pipes and their fittings, swing doors, coatings for steel sheet used in construction, insulation for electrical wiring...

These Directives notably cover restrictions on certain substances and the composition of construction products.

b) The drinking water directives (80/778, currently being revised) and directives concerning urban waste water treatment (91/271/EC)

The former, without being harmonisation directives, concern the characteristics of water at the point of use (tap water). They therefore relate to materials in contact with water, and should influence, after their revision, the community's regulatory framework for the placing on the market of construction products in contact with water.

The latter directives force Member States to identify sensitive areas in order to provide all agglomerations with collecting systems for urban waste water, before the year 2000 or 2005 (according to the number of inhabitants), and, where the establishment of a collecting system is not justified, individual systems which achieve the same level of environmental protection shall be used.

c) The construction products directive 89/106/EC and its decisions

Within the framework of the implementation of the internal market, it plays a key role for three essential requirements on construction works : "health, safety and environment", "protection against noise" and "energy saving". Restricted to works in use, the CPD makes CE marking mandatory for construction products, which means conformity to harmonised technical specifications (harmonised European standards, European Technical Agreements) adopted by mandate from the Commission. So far, Members States and the Commission services have fixed the conditions for developing harmonised technical specifications for precast concrete products, thermal insulating products, membranes, doors, windows and related products, chimneys, curtain walling, gypsum products, sanitary appliances, structural timber products, waste water engineering products, except subfamilies related to waste water piping systems, floorings, cement, building limes and other hydraulic binders. Other mandates are being prepared for glass products, roof coverings, sandwich panels, pipes and

ancillaries, tanks, and interior and exterior wall and ceiling finishes, including suspended ceilings. They take into account acoustic and thermal insulation performance, as well as the emission of dangerous substances (air quality, water quality). In parallel, the decisions concerning the control of conformity with technical specifications (including those aspects linked to the environment) have been taken by the Commission : 15 decisions for 19 families of products have already been, or are in the process of being, published in the Official Journal.

II) ECONOMIC INSTRUMENTS

The internalisation of external ecological costs (economic and fiscal measures, recourse to civil liability...) should reinforce the responsible behaviour of users and producers. One of the trends in general environmental policy thus consists of favouring economic instruments such as taxation or "green" fines, rather than regulations on control. Within the EU, buildings consume 4% of total energy and are responsible for 20% of CO₂ emissions. Energy consumption is rising by 1.4% per annum. One could envisage a carbon tax aimed at limiting emissions of CO₂, and favouring energy conservation and the use of non-fossil fuel resources. This issue is being discussed within the European institutions.

III) INSTRUMENTS OF HORIZONTAL SUPPORT

Incentivisation measures are particularly targeted at : improvement of environmental databases and statistics, the promotion of scientific research and technological development, professional education, and the dissemination of information.

Framework Programmes on research and technology development (RTD) and also programmes of policy action in relation to the environment and sustainable development cover the following :

- reductions in the use of non-renewable energy. For example, energy conservation measures in buildings, and the use of renewable energy sources, such as wind, sea, tidal power, solar energy.

- enhancement of the quality of the environment in urban areas. This requires improvements in urban provisions, the development of urban drainage systems and treatment works in urban areas.

- enhancement of public health and safety.

Within the framework of this general policy, the actions can be classed into four groups : firstly, the community research and technology development (RTD) related activities; secondly, the development of tests, certification, quality assurance, and standardisation; thirdly, demonstration programmes; and finally, accompanying measures such as technology transfer, training, conferences, workshops and exhibitions.

a) the community research and technology development (RTD) related activities

. Several programmes and projects are involved :

- BRITE_EURAM, a targeted research action cluster covering environmentally friendly construction, and including RTD and SME research on design, project management, inspection, maintenance, cleaning, recycling, materials, components...

- ESPRIT, including RTD on domestic systems, construction planning, design, computer integrated techniques

- JOULE, including RTD on energy-efficient buildings and products, such as CFC-free heat pumps, advanced windows and ventilation, passive cooling, lighting, retro-fitting, renewable energies including the solar house and photovoltaics in buildings, and energy in urban planning.

- SMT, prenormative research on the testing of wood, concrete, construction material properties (toxicity, acoustic performance, thermal resistance), and appliances (boilers, solar heating)

- JRC-Environment Institute, including RTD on indoor air quality (IAQ) and its impact on man. Also, prenormative research on the control of volatile compounds from building materials, and guidance on achieving good IAQ and energy-efficient buildings.

- ENVIRONMENT and CLIMATE, including RTD on the effects of air pollution, the modern environment, and technologies on historical buildings and monuments. Networks : EC Care Groups on brick masonry monuments and internal effects on the cultural heritage.

- FAIR, shared cost RTD projects on the performance, durability and preservation of wood and wood-based construction materials.

- EUREKA, an umbrella programme EURO CARE on historic buildings.

- JRC-IAM (institute for advanced materials), prenormative research, testing and RTD on solar energy and cooling in buildings, and RTD in a JOULE project on photovoltaics in roofs.

b) Support for testing, certification, quality assurance and standardisation

To note in particular :

- SAVE, studies on the energy efficiency of new and older houses and energy labelling.

- JRC-IAM (Institute for advanced materials), partner in SAVE action on the energy labelling of housing, and energy audits.

- The voluntary ECOLABEL (ecological label) scheme, whose objective is to promote industrial products having a reduced impact on the environment, can also be placed within this group. Attaching a label to these products provides users with information. The legal base is the Council Regulation 880/92. To obtain an ecolabel, a product must belong to category for which the required criteria have been defined, and must pass the tests

which verify these criteria, covering the whole life-cycle of a product. Two families of construction products are included in the first phase of work : ceramic tiles, for which work on the definition of criteria, formulated by Italy, is awaited, and thermal insulation products, for which the final draft of the criteria, co-ordinated by Denmark, is ready for vote and adoption.

c) Demonstration

Various demonstration programmes related to the environment are in progress, including :

- THERMIE, demonstration projects on energy-efficiency and renewable energy in buildings, and a working group on integrated quality projects in the construction sector.

- THEBES, a DGIII-D-3 demonstration project on the human effects of intelligent buildings.

- ESPRIT, ATLAS, a large scale project to develop a tool for the Commission for assigning priorities to RTD in the energy sector for buildings and four other domains.

- JRC-IAM, a demonstration of EcoCenter environmentally-friendly buildings.

- ALTENER. At their meeting in October 1990, the Council (Environment and Energy ministers) agreed that the Community and Member States were willing to take actions aimed at stabilising total CO₂ emissions at 1990 levels by the year 2000. In its communication to the Council concerning Community strategy aimed at limiting carbon dioxide emissions and improving energy efficiency, the Commission mentioned pilot actions involving fitting new or existing buildings with photovoltaic modules, and pilot actions to integrate bioclimatic systems into architecture.

d) Accompanying measures

Technology transfer, training, conferences, workshops and exhibitions are included in this section. We can consider :

- LIFE, Environment and climate, conservation of historic buildings.

- BRITE_EURAM, a database of air pollution in buildings. Conferences and workshops on construction and construction materials and products.

- FAIR. All current on-going work projects envisage the organisation of conferences and workshops to communicate research findings to an extended audience, including all stakeholders

- JOULE, Conferences, workshops, exhibitions, architectural competitions, preparation of procedural handbooks, atlases, surveys and databases.

- INNOVATION, dissemination and exploitation projects on energy efficient buildings, and construction contract bidding methodology, validation of civil engineering software, biodegradable release agents for concrete moulds.

- SAVE, training courses in energy, energy audits and surveys

- JRC Environment institute, summary reports and guidance on achieving healthy housing for national and EC authorities.

- CONSTRUCTION AND DEMOLITION WASTE. The 5th action plan on the environment fixed as one of its priorities the integrated control of waste management. Moreover, a Council Resolution of May 1990 recommended drawing up action plans, which the Commission set up in 1991, under the name of the Priority waste flow programme, which includes construction and demolition. A group of projects was set up, in May 1992 with the participation of Member States and the sectoral industrial federations, to deal with this waste,. In August 1995, work finished with the presentation of a long-term strategy and 55 recommendations addressed to all players in the construction and demolition process. *The Commission is considering the action to be taken in this field.*

IV) FINANCIAL SUPPORT MECHANISMS

In addition to the budget headings with a specifically environmental purpose (LIFE), several funds and Community finance instruments, ad hoc or of a horizontal nature, have been set up. Thus, the structural funds, RECITE, Article 10 of Regulation 4254/88 of the European Regional Development Fund (ERDF), and a part of the Cohesion Fund grants substantial amounts to the financing of actions aimed at improving the environment. For example, on environmental aspects, the priorities of the Cohesion Fund reflect the European Directives on drinking water supply, waste water treatment, sewage and urban waste. It is also worth noting the launch of the Community initiative concerning urban areas (URBAN), aiming to contribute to the financing of about fifty projects in cities containing more than 100,000 inhabitants and located in the lesser-developed regions of the Community (Regions of Objective 1 of the ERDF).

4) CONCLUSION

The arsenal of European tools is based on the enumeration of particularly serious problems which have a Community dimension, either owing to their impact on the operation of the internal market, the distribution of resources, or cohesion, or owing to their importance on the quality of the environment in the various regions of the Community. The particularity is that these questions are not treated on their own, but are seen as symptoms of bad management and of a poor use of resources. In fact, the true problems, those

which lead to environmental pollution, involve manufacturing practices, methods of consumption and behaviour, and national regulatory policies. Whilst, at first, a regulatory approach was largely favoured by the Community, current trends and practices steer the sectors and interests involved towards a division of responsibility. It is up to industry and manufacturers to commit themselves to providing society with products that take ecological aspects into account. One must make them understand that the requirements of the environment can afford them substantial competitive advantages and that a development towards environmentally-friendly products, processes and services based on rules, standards and procedures of a high level, applied at the various stages of the "regulatory framework -production-control" chain, can only increase competitiveness, and create jobs by creating new markets. The success of this new approach requires a strengthening of the dialogue with industry, improvements in the management and control of manufacturing processes, tougher standards on products to minimise their impact on the environment throughout their life cycle, effective waste management, the promotion of voluntary agreements between regulators, and transparency in the information given to consumers, so that they are able to make their choices with a full knowledge of the facts. The Community Institutions engaged in this field should not lose sight of the fact that it is in the etymology of the term environment, "living space, habitat", that the responsibility of each player, industry, consumers, and Member States, framed and supported by the Community actions, finds its foundation.