

EDITORIAL

A new journal for interdisciplinary cooperation

by the Scientific Panel

This journal aims to explore and define new perspectives on the modernisation of human habitats, of how we adapt to ecological requirements.

The identity crisis of European countries caused by political uncertainty, aggravated by the current economic crisis, requires joint efforts to increase the influence of research upon decision-makers. The attitude of European countries towards environmental problems – from soil use to emissions into the atmosphere, from territorial and urban safety to energy efficiency – is far from homogeneous: some countries have adopted promising though still inadequate measures; others are lagging behind and have difficulties taking decisions. On the whole, Europe appears weary, lacking the creative enthusiasm which was the hallmark for so many centuries of their history. Rather than seeking to change the appearance of their landscape and their cities, they should focus on protecting the cultural heritage they have built up over centuries: they have to modernize their urban capital stock. This great commitment requires enthusiasm and creativity.

Europe presents an extraordinary, fascinating variety in all its forms. The thousands of towns, cities, streets, coasts and fields express the living testimony of an ancient history. It is the physical representation of a common stratified civilisation, recognized as a unifying influence and a cultural point of reference. Protecting and safeguarding this heritage is not enough: it is necessary that it be respected in line with the laws of nature, guaranteeing the reproducibility of resources. Urban areas with an ancient heritage are to be closely protected, while at the same time conforming to present-day standards of structural and energy efficiency. In order to make this happen, the contribution of researchers to environmental issues has to acquire greater importance, overcoming the limits of mono-disciplinarity and involving in an integrated fashion various scientific fields relevant to the physical human environment and its interrelations with the natural environment.

Those other countries which are undergoing a phase of

strong economic and cultural growth are paying less attention to the effects of an often invasive expansion, of unchecked development which – together with the growth in production and income – produces severe economic imbalances and environmental damage. In this scenario, a boundary line between town and countryside, between built and unbuilt areas, is no longer identifiable. A building bonanza is still going on undisturbed, while in built-up areas technologically backward systems with high heat dissipation continue to burn costly fossil fuels.

In Mediterranean European countries, such as Italy or Greece, the high seismicity of extensive areas requires general updating of construction standards. This need is often stressed: unfortunately earthquakes are frequent and are unfailingly followed by accusations and criticism, but this does not translate adequately into long-term policies. Littoral zones have been mostly built up, seriously damaging the coastal equilibrium. The short-sighted policy of favouring road transport over rail transport also leads to massive consumption of fossil fuels.

The problems created by the lack of suitable safety standards compound those created by the fragility of the land. Landslides and floods are common, but the damage they cause to urban areas is greatly increased by the lack of foresight in, and control over, building. Impermeability of the soil surface accelerates run-off, and the practice of building on unstable soil surfaces increases exposure to landslide risk. The quantity and diversity of regulations governing urban development is ultimately an obstacle to sound management of the land and the natural environment.

From a European perspective, it is important to overcome the idea of the historical environment as the heritage of each single nation. A broader view needs to be taken, adopting common lines of action to promote development based on energy efficiency, transport rationalisation and emissions control, thus enhancing the quality of life and attractiveness of European cities whilst ensuring the environmental

compatibility of activities and use of spaces. The broader the application of innovative measures for environmental modernisation, the more effective they are: the need for environmental regeneration is such that improvements limited to restricted, even regional, areas are futile if obsolete approaches to soil use, production and energy consumption persist over wide areas.

For the purposes of promoting environmental quality, there is a real need to coordinate, target and fund research, both in the public and private sphere, in order to overcome sectoralism and combine efforts to achieve common priority objectives. Such objectives entail

- establishing a permanent dialogue between the worlds of research, production and public administration, replacing division with synergy;
- enhancing the protection of our cultural heritage with the action of private citizens, through simplification of public regulations, aimed at ensuring regional and environmental regeneration, and overcoming bureaucratic fragmentation;
- establishing a permanent dialogue between the worlds of research, business and public administration, creating a synergy as an alternative to compartmentalised approaches;
- ensuring that studies and research results translate into practical applications, integrating thought and action, reflection and practice.

In this collective effort, the role of scholars and researchers is crucial, but on condition that, in the research world, know-how is pooled and the various skills are integrated, thereby overcoming divisions and mistrust, as well as the obsolete dichotomy between the human and natural sciences. Consistent with what has been stated, the journal CSE is conceived as a space for researchers and scholars that supports exchanges based on ongoing or finished research and debate on environmental development and the improvement of natural and man-made environments, both in terms of visible aspects and of their function, technology, energy efficiency and safety.

The journal is open to analyses and proposals based on disciplinary integration, in which topics are viewed from different scientific perspectives converging towards an integrated vision. Our invitation is hence directed at all scholars, researchers and experts wishing to participate in the growth and spread of knowledge in the environmental field; but on condition that their approaches remain open to dialogue and integration, whether based on geology and volcanology, urban-regional planning, architecture – with landscape projects, history and urban design – or engineering with its different structural, technological and industrial branches, or energy efficiency at different scales. Contributions should be drawn from different disciplines; priority should be given to connections, to links and to consensus building.

CSE is divided into the following sections: Geology, Planning

and Land Safety, Sustainable Urban Mobility, Environmental Design, Building Technologies, Energy Efficiency in Buildings and Districts, Materials Engineering. These sections, however, are not sealed compartments, but osmotically related areas, whose goals may be synthesised to enhance the environment from various standpoints.

Geology

The soil/subsoil system represents the indispensable space for establishing and developing human activities. For this purpose, knowledge of the system, closely linked to other components of the environment (air, water and life), becomes essential for planning activities and the use of space. This is ever more necessary given the current global climatic changes. Thus, geological features are considered crucial resources for human well-being, hence in need of safeguarding. However, in environmental design it is just as important to consider the factors causing severe geological processes in the environment (earthquakes, volcanic eruptions, landslides, floods, storm surges, and so forth). Such events can cause fatalities and considerable damage to the region concerned. Though it is not always possible to predict or mitigate the hazardousness of such effects, acknowledging the probability of occurrence becomes feasible through insights and modelling techniques. The intent of the new CSE journal is to promote and disseminate these goals in combination with other disciplines in order to make the sustainability of design and planning more effective.

Planning and Land Safety

In terms of sustainability, due reflection is needed to establish which development modes should be promoted. While there is overall demand for limiting the consumption of natural and agricultural soils, there is also the urgent need for the regeneration of existing building stock. The question becomes one of economic balance, involving the increasing cost of infrastructures, the need to exploit the value of urban land, the internalisation of environmental impacts, and so forth. Setting targets for land use appears a possible solution, but more research is needed on how this strategy should be applied at different scales and in different contexts.

Sustainable Urban Mobility

An important objective of this section is to narrow down the concept of sustainability, focusing on its meaning in relation to mobility, given that the term “sustainability” is in many cases misused and often generates confusion and misunderstanding. The issue of sustainable mobility can be tackled from many perspectives: social, economic, environmental, in terms of energy use, and so on. A common, shared definition thus needs to be agreed upon. Focusing on mobility in urban areas and through the use of case studies, research and

best practice are used in this section to promote the debate, in the national and international scientific world, on issues concerning: the quality of routes available (especially those dedicated to non-motorised road users); levels of accessibility of those urban attractors which generate significant traffic flows; road safety, with particular attention to more vulnerable road users; the integration of traffic, mobility and urban planning techniques; the assessment of the contribution brought by application of ITS to this topic.

Environmental Design

In the context of urban planning, the goal of sustainability is pursued mostly at the neighbourhood level, establishing the formal, functional and environmental conditions for “good living”, especially for existing neighbourhoods. There are many ways in which urban planning can be usefully integrated with other strategies to achieve “good living”. Various examples may be cited, such as so-called soft mobility, with the related proposal of restructuring dominant models based on car mobility and the location and distribution of parking areas; controlling the microclimate in public buildings; urban waste management, the recovery and recycling of rainwater; use of trees to abate air and noise pollution.

Building Technologies

With regard to aspects related to building technologies, today in the context of the complex dialectic between technical solutions and sustainable forms of architecture the theme of sustainability is essential. The widely debated subject of sustainable building has led to the drawing-up of design codes, which include building systems, materials, new technologies, parts and components. A sound approach to building technologies today entails careful analysis in terms of a wise, rational use of resources and materials, and careful evaluation of their life cycle.

Energy Efficiency in Buildings and Districts

In this field, sustainable future development should include the creation of new energy-efficient buildings and districts, as well as suitable energy refurbishment of existing buildings and urban areas. Indeed, even if some differences can be noted across EU countries, the building turnover rate remains quite low all over Europe, with an average of 1–4 % per year. Thus, a sustainable future for the EU is possible only by adopting energy refurbishment as a key strategy. Against this scenario, institutions, politicians, policy makers, urban planners and building designers have to promote high-performing HVAC and active energy systems, besides integration with renewable sources. All these topics must be developed at both building and district level. In this direction, the new CSE journal supports the most recent of the European Union’s goals, such as those ratified by EU Directive 2010/31/

EC, which strongly promotes near-zero and net zero energy buildings for the near future.

Materials engineering

The application of a new approach to building sustainability includes the use of materials which reduce environmental impact. Such an approach includes compatibility with existing constructions, energy consumption, performance optimisation and all the issues which can make the difference, in relation to the materials normally used in structures. Again, close collaboration with other research fields is imperative and CSE represents an effective opportunity for researchers and the other actors involved in defining urban space to discuss, interact and remain abreast of the latest developments.

This first number contains articles on urban planning, land safety, sustainability, recycled materials, energy production and slow mobility. With this number we intend to initiate what we trust will be a productive and lively debate.