

An Examination of Disability

In The Context Of Sustainable Human & Social Development

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1. Introduction

The new World Health Organization's *International Classification of Functioning, Disability and Health*^[1] heralds not only a dramatic change in the language and philosophy of 'disability', which is both positive and liberating, but the possibility of creating a more tangible, interactive relationship with mainstream society, because of its reference to the following 'Contextual Factors'

(a) Environmental :

Those factors which are external, or extrinsic, to the context of a person's life and living, e.g. the physical world and its features, other people in different roles, social attitudes and values, institutional policies and action programmes, legislation, service and support systems in society ;

(b) Personal :

Those factors which are internal, or intrinsic, to the context of a person's life and living, e.g. age, gender, level of education, socio-economic status, and life experiences.

On the other hand, social turbulence in Europe since the end of the Cold War, demographic / global warming / ozone depletion pressures, and the value-driven legislation of the European Union (E.U.) are combining to alter, perceptibly, the popular consensus concerning future human development.

This Paper examines 'disability' and 'contextual factors' from the broad perspective of **Sustainable Human and Social Development**. It remains, then, for the reader to decide whether or not the concepts of 'Universal Design' / 'Design-for-All' are sufficiently elastic to remain on the European Disability Agenda for the short term - up to the year 2010.

2. A Changing Global Context in the 21st Century

In the 1998 **United Nations Human Development Report**^[2], it was estimated that 20 % of the world's population in the highest-income countries consumed 58 % of total energy, while the poorest fifth consumed less than 4 % - and that the burning of fossil fuels had almost quadrupled since 1950. And even as the process of *globalization* has continued to gather pace, with nation states being criss-crossed and undermined by Transnational Corporations (TNC's), the mass media, Non-Governmental Organizations (NGO's), the Internet, and enormous flows of investment and private capital, we see before our eyes an increasingly fragmented 'built environment', with a social fabric which is threadbare and torn in many areas. It is also clear, at the time of writing, that the developed regions of the globe will not successfully meet the first major environmental performance target of the new millennium - the legally binding **Kyoto Protocol**^[3] to the United Nations Framework Convention on Climate Change (UNFCCC), which was agreed at the 3rd meeting of the Conference of the Parties (COP 3) in December, 1997.

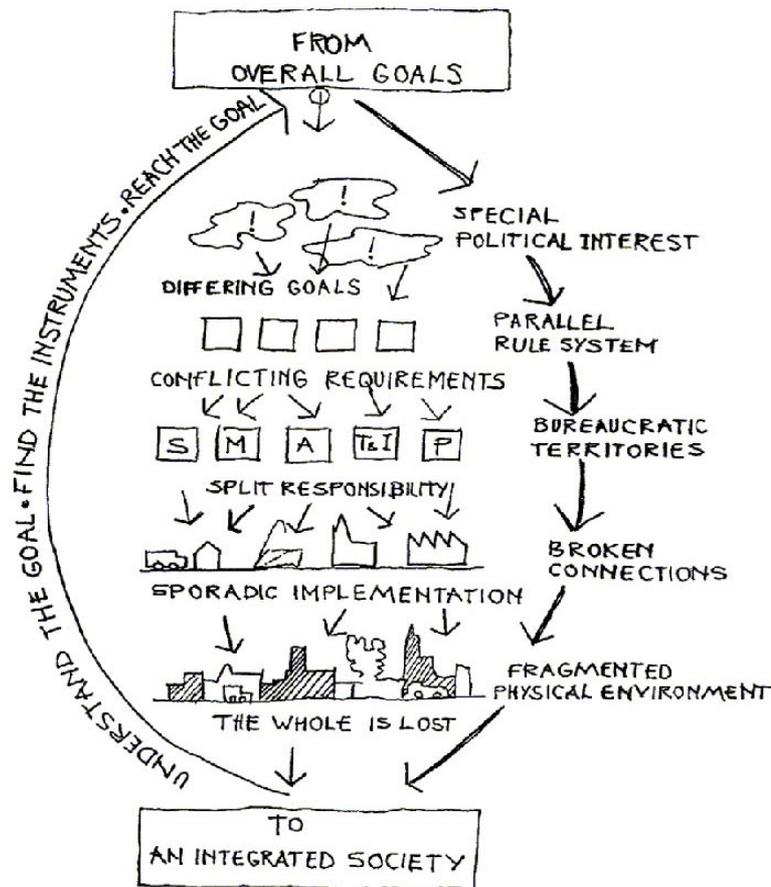


Figure 1 A Fragmented 'Built Environment' (concept drawing by E. Sire, Architect, Sweden)

Within this existence which human beings are themselves shaping, individuals and even large groups of people no longer feel that they have the freedom to remain apart from the rest of society. Furthermore, the health and happiness of everybody else now depends very much on which model of *capitalism* is being advocated by economic gurus in a small number of geographic locations. Is the emphasis being placed on capital and shareholders' value, or on human resources and added value? These and other existing economic models, however, are extremely wasteful of resources.

Should a more 'person-centred' approach to how we organize and order our society be adopted? A welcome addition to the European Plan of Integration - a **Charter of Fundamental Rights**^[4] - is currently being agreed within the European Union. Social justice and the protection of human rights are founding principles of the Union, and are the single most essential prerequisite for its growing legitimacy. In fact, an extensive body of E.U. legislation already exists relating not only to social concerns, but also to environmental, energy, economic, institutional and political matters - all of which fall precisely within the '**zone of pertinence**' for the concept of Sustainable Development. Where E.U. legislation exists it is superior to, i.e. takes precedence over, the national legislation of its Member States.

Rooted firmly, therefore, in the elaborate legal base of the European Union, international agreements and treaties to which it is a signatory, and the aims and objectives of international organizations in which it agrees to participate, it has been possible to make rapid progress with the construction of an interim, rational understanding of Sustainable Development which makes sense for Europe - not for anywhere else - and to propose within that unique context how, for example, a more coherent and comprehensive programme of action concerning *people with activity limitations* might be implemented. This exercise also allows the robustness of the interim understanding to be tested, as it is developed, and evolves.

3. Sustainable Human and Social Development

Significant progress was made in the last treaty addition to the primary legislation, or Constitution, of the European Union - the 'principle of sustainable development' was explicitly incorporated in the **1997 E.U. Amsterdam Treaty**¹⁵¹, although it was not defined or expressed in the clearest terms. This concept was first presented, internationally, at a 1972 United Nations Conference¹⁶¹ in Stockholm, but elaborated in a readily understandable form, only at the end of the 1980's, in a Report **Our Common Future**¹⁷¹ which was produced by the World Commission on Environment and Development and dated 1987.

It is convenient, therefore, to go back to that Report, and to start with the following definition of 'sustainable development' (also known as the Brundtland definition, after the Commission's Norwegian Chairperson - Gro Harlem Brundtland)

'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'.

However, with the benefit of many years' hindsight since then, a more thorough explanation of 'sustainable development' must also embody a resolution of the some further issues :-

- the place of human beings in the environment, and the relationship between both ;
- the nature of human, social, cultural, economic, institutional and political development, their current imbalances and inequities, and their future course ;
- the healing of existing harm and injury to the 'natural environment'.

It is important, here, to distinguish between the natural environment, and the 'built environment', i.e. anywhere there is, or has been, an intrusion or intervention by a human being in the natural environment - which may be urban, rural or marine, and which includes not only buildings, but also civil engineering projects, infrastructural networks, service and support systems, and transport, etc.

Principle 1 of the Rio Declaration on Environment and Development¹⁸¹ states

'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.'

And the World Health Organization, in the preamble to its Constitution, defines 'health' as

'A state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity.'

The 1994 European Energy Charter Treaty¹⁹¹ also provides some necessary definitions

Environmental Impact :

'Any effect caused by a given activity on the environment, including human health and safety (and welfare), flora, fauna, soil, air, water, (and especially representative samples of natural ecosystems), climate, landscape and historical monuments or other physical structures or the interactions among these factors ; it also includes effects on cultural heritage or socio-economic conditions resulting from alterations to those factors.'

Energy Cycle :

'The entire energy chain, including activities related to prospecting for, exploration, production, conversion, storage, transport, distribution and consumption of the various forms of energy, and the treatment and disposal of wastes, as well as the decommissioning, cessation or closure of these activities, minimising harmful environmental impacts.'

A definition of 'energy cycle' is required because, more and more, the potential life cycle cost of future actions which modify or influence the built environment has to be considered, and carefully examined. EN ISO 14040^[10], an International Standard also adopted as the European Standard, defines *Life Cycle Assessment* as follows

'Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product (and/or service) system throughout its life cycle.'



Figure 2 How will our planet cope with the next 6 Billion people ?

As we begin the 21st Century, a growing consensus in Europe is finally acknowledging that in order to accommodate further human and social progress, with an assured minimum quality of life and health for all peoples, harmony between global regions, and world economic stability, it will be necessary to convert from current irresponsible patterns of human development, with their attendant wasteful environmental destruction and societal stresses.

So the long-term goal over the next century and a half in Europe, will be to convert to sustainable human and social development, i.e. the creation of a sustainable 'built environment' within a flourishing 'natural environment', each co-existing with the other in harmony and dynamic balance, and each in their own way, capable of providing for responsible and equitable human, social, cultural and economic development. Previous injury to the natural environment must be healed in order to arrive at this outcome ; and initial damage repair by human intervention, sufficient only to promote a process of natural self-healing and self-management, is suggested.



Figure 3 Sustainable Human and Social Development

4.0 European Charter on Sustainable Design & Construction^[11]

Intended primarily for senior policy and decision makers within the Commission (the sole E.U. Institution with the power of initiative), the European Charter on Sustainable Design & Construction was a logical next step following a major study project co-ordinated by Working Commission 82 of the International Council for Research and Innovation in Building and Construction (CIB). The project culminated, during May 1998, with the production of **CIB Publication 225 - 'Sustainable Development and the Future of Construction'**^[12] - comprising national reports from fourteen different countries, accompanied by an International Synthesis.

The structure of the European Charter reflects the fundamental view that Sustainable Construction is the response, in built form, to the concept of 'sustainable development', and its initial formal articulation at global level - the **Rio Declaration** of 27 Principles, with **Agenda 21** as detailed supporting guidance - both agreed at the United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, from 3rd-14th June 1992.

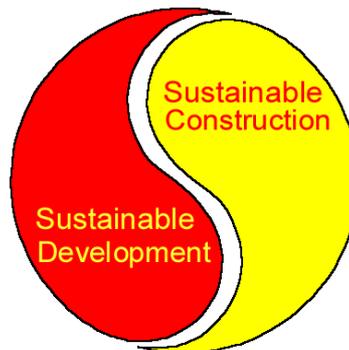


Figure 4 Relationship between Sustainable Development and Sustainable Construction

However, it is **Sustainable Design** - a quantum leap in design philosophy - which will direct the future course of this innovative approach to construction.

For the first time in the European Charter, a comprehensive scope of concern, relating to ethics and social values, is outlined for the subject; a rational decision making framework is presented; human development, social justice and inclusion, environment and energy issues are discussed in a coherent format; and finally, technical terms are defined for better communication.

Preserving intact the legal intent of the Rio Declaration on Environment and Development, the European Charter also comprises **27 Principles**

- ◆ each principle of the original Rio Declaration was closely examined, re-drafted to suit more closely a European context and, on the basis of existing E.U. primary and secondary legislation, and international agreements and treaties to which it is a party, was strengthened considerably in expression (ordinary typeface);
- ◆ where appropriate, a clause (bold typeface) relevant to sustainable planning, design, construction / de-construction and maintenance was added.

The European Charter also places special emphasis on implementation through the informed application of **Construction Related Sustainability Performance Indicators**, i.e. short statements of targeted, 'real' performance in the 'built environment'.

4.1 The European Charter & People with Activity Limitations

The long-term importance of the 1997 Amsterdam Treaty for Europe lies in the emphasis it places on the individual citizen in society. It brings the Institutions of the E.U. and their services closer to people, and it requires that the baseline for public health and consumer protection be set at a high level. Prior to the national referendum on Ireland's ratification of the treaty in 1998, therefore, a public seminar, entitled

'Citizens in the E.U. ~ Equality of Opportunity for Minority Groups in Society',

was organized on behalf of the Dublin Branch of the European Movement in order to promote awareness of these treaty changes.

For the first time in Ireland, so many representatives of the Unemployed, Refugees, Travellers (indigenous nomadic people), Gays & Lesbians, the Homeless, People with Activity Limitations, the Elderly and Single Parents gathered in one room for a day of interactive discussion and an exchange of views. The day's proceedings were a revelation to everyone who attended - it was more fully appreciated that there are many 'minority' groups in society, and that they must co-operate with each other and not compete. Restrictions on participation in society are numerous, rigid, and certainly do not always take the form of physical barriers. It was also important to accept that not all people wanted to be included in mainstream society. Details of the seminar are contained in Appendix 4 of the Irish National Report, CIB Publication 225.

In addressing the wider context of sustainable human and social development, therefore, it was a purposeful intention to deal positively and directly in the European Charter with issues which concern, and are of concern to, people with activity limitations - as one 'minority' group, among many, in society :-

- (i) Principle 20 of the Charter states

' Women have a vital role in environmental management and development. Their full participation is essential to achieve sustainable development. The experience and wisdom of the elderly should be valued ; the abilities of every person should be cherished ; and the creativity, ideals and courage of youth should be mobilized to forge a European partnership in order to ensure a better future for all.'

The original Rio Declaration did not contain any reference to either people with activity limitations, or the elderly.

- (ii) Amongst a small number of relevant extracts from the 1997 Amsterdam Treaty, Appendix I of the Charter quotes the new **Anti-Discrimination Clause**

' Without prejudice to the other provisions of this Treaty and within the limits of the powers conferred by it upon the Community, the Council, acting unanimously on a proposal from the Commission and after consulting the European Parliament, may take appropriate action to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation.'

This isolated clause will be added to in successive treaties, and the currently extensive texts devoted to gender equality in E.U. primary legislation will be matched.

- (iii) Appendix III of the European Charter provides a useful list of terms and definitions. A principle must be that everyone has the right to choose exactly what they wish to be called. There should be, accordingly, much greater tolerance and acceptance of the use of the different terms, e.g. '**people with activity limitations**', '**people with disabilities**', '**disabled people**' and '**disABLED**', in different regions of the world.

- (iv) the Preamble to the Charter makes reference to a coherent European '**Guideline Framework on Social Justice and Inclusion**'^[13], which is later outlined in Appendix II

Guideline Framework

Achievement of Equality of Opportunity & Social Inclusion For Every Person in the European Union (E.U.)

Direct and meaningful consultation with people, partnership between all sectors of society, consensus, transparency, institutional openness, and political accountability are essential elements in '**social wellbeing**'. Set out below are a number of areas which should be actively considered by the Institutions of the E.U. and relevant authorities in each Member State, implemented, and effectively monitored through the informed application of sustainability performance indicators

1. Empowering People for Participation in Society

- respecting dignity, autonomy and independence
- re-adjusting education and training programmes to facilitate participation
- re-adjusting welfare and other supports to facilitate participation
- moving towards a 'person-centred' approach in the design / implementation of support services
- mainstreaming
- ensuring seamless provision of services
- ensuring the principle of social participation

2. Removing Physical Restrictions on Participation

- respecting dignity, autonomy and independence
- viewing access / egress / evacuation and health / safety / welfare issues in the light of equality of opportunity, the right to participate, and the elimination of direct / indirect discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation
- developing effective legislation, standards (nationally transposed EN Standards), and technical guidance in order to eliminate all forms of restriction
- monitoring and controlling compliance with legislation
- moving towards a 'person-centred' approach in the planning / design / construction / maintenance of a sustainable built environment

3. Opening Up Every Facet of Society

- respecting dignity, autonomy and independence
- upholding the equal civic status of every person
- promoting employment for people, and education, as keys to social inclusion

4. Nurturing Opinion of the Public, Government Administrators, and Design Professions to be Receptive to 'Person-Centredness' of the Built Environment

- respecting dignity, autonomy and independence
- concerted programmes of awareness raising and education at all levels

- (v) Finally, the concept of '**person-centred design**' is introduced, and referred to, throughout the document

Principle 1 of the European Charter on Sustainable Design & Construction states

'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Movement towards a 'person-centred' and 'socially inclusive' approach in the planning / design / construction of a built environment, i.e. placing real people, their needs and responsible desires at the centre of creative endeavours, should be encouraged and fostered by every key sector in society.

The method of work in the various processes of planning / design / construction should be widely multi-disciplinary. An active dialogue between practitioners, researchers and end-users, based on meaningful consultation, partnership, and consensus should become the standard.'

5.0 Development of 'Person-Centredness' as a Design Concept

Also defined in Appendix III of the European Charter is the concept of '**Person-Centred**' Design , which is

' that design process which places real people at the centre of creative endeavours and gives due consideration to their health, safety and welfare in the built environment - it includes such specific performance criteria as a sensory rich and accessible (mobility, usability, communications and information) environment ; protection from fire ; air, light and visual quality ; protection from ionizing and electromagnetic radiation ; thermal comfort (EN ISO 7730) ; unwanted or nuisance noise abatement ; etc. '

An important 'person-centred' design aid is the questionnaire survey, carried out by an independent, competent, non-threatening individual on a person-to-person basis, and which comprises both open and closed format questions. These surveys are not only valuable sources of information, but they formalize the process of meaningful consultation between practitioners and end users.

Two key architectural projects, in particular, led to the development of this design concept.

5.1 The Sessions House (1797) - A Major Civic Building

From May to September 1995, an extensive literature review led to the development of

'SEED' - **S**ustainable **E**nergy-efficient **E**nvironment-friendly **D**evelopment

..... an acronym which brought together, for the first time, three separate areas of concern, and crystallized the single idea that building performance cannot be evaluated in isolation from interrelated human factors. In practice, 'SEED' gave shape and resolution to an array of new methods of work in construction.

Later that year, a detailed **Energy Survey** ^[14] was carried out on The Sessions House (1797) , Dublin. Part of the process of working with **EN ISO 7730** ^[15] - a questionnaire survey - proved to be a very useful design aid because of the reliable information which it uncovered. It had also facilitated, in a formal way, meaningful consultation with the building's occupants, and other users. In what might have been described as a 'problematic workplace', morale improved dramatically following the survey. From then on, the employees were working with the project team, instead of resisting its every action.

In the model proposed by the European and International Standard, thermal comfort is dependent on air speed (draughts), relative humidity (damp walls), radiant temperature (the ability of thick walls to heat up quickly), and air temperature. During the survey, it was found that if comfort was lacking in one aspect it was overcompensated for in another. For example, electrical misuse in one office could finally be explained by the need to compensate for uncomfortable draughts with higher room temperatures (27-28 °C). The uneconomical use of portable electrical heaters, as heat sources throughout the building, then became understandable. In this case, the standard allowed the team to comprehend what was happening, but it was the questionnaire survey which permitted the building user to be seen as a real **'person'**. Once the problem was examined from the point of view of that person, practical and effective design solutions were quickly formulated. Recommendations in the completed Energy Survey Report for this historical building reliably identified potential savings in energy costs of approximately **51%**, while working properly within the constraints of the ICOMOS Venice Charter^[16].

5.2 Local Authority (Public) Housing in Dublin^[17]

Towards the end of a difficult summer in 1996, the most extensive cross-sectional energy study of existing public dwellings ever carried out in Ireland was completed. Its objective was to develop a more precise understanding of the issue of 'fuel poverty' among low income groups in the urban 'built environment' of Dublin. As project co-ordinator and technical controller, this writer reported the study's principal findings to a Paris Conference co-organized by CIB / CSTB, **'Buildings & the Environment'**, from 9th-12th June 1997.

In demanding to observe the real energy performance of real buildings, the use of long wave (8 - 12 micron waveband) infra-red thermography opened up a world which hitherto had been closed off to full exploration because of an unquestioning reliance on 'reference' documentation and computer software, which were either limited in scope and/or not properly validated.

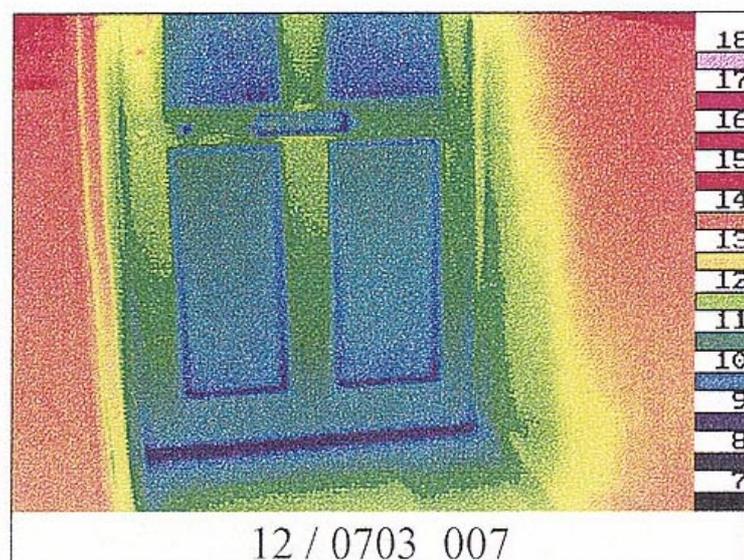
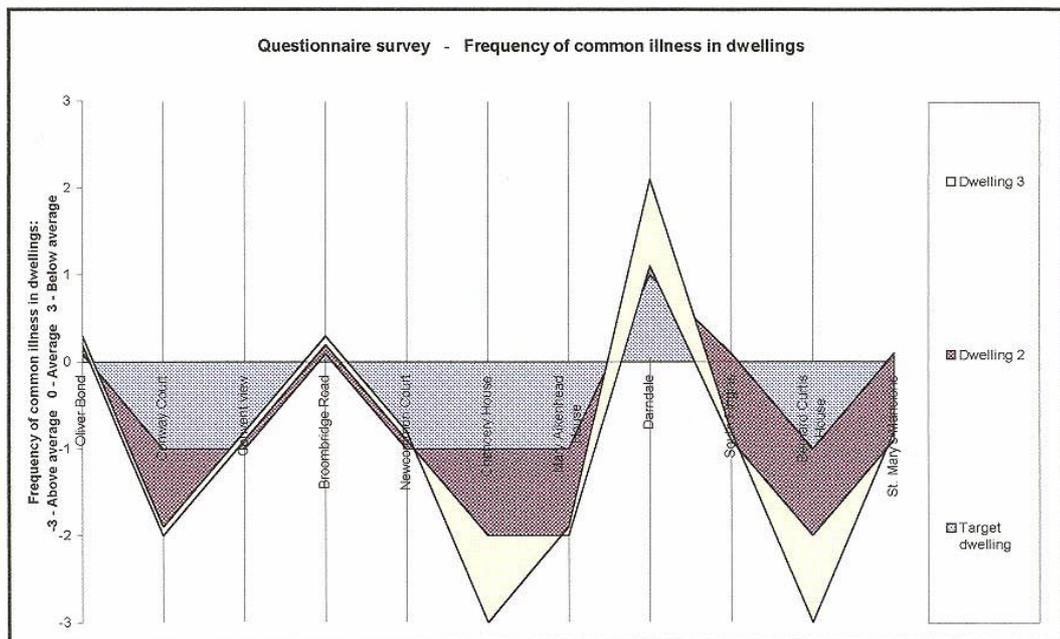
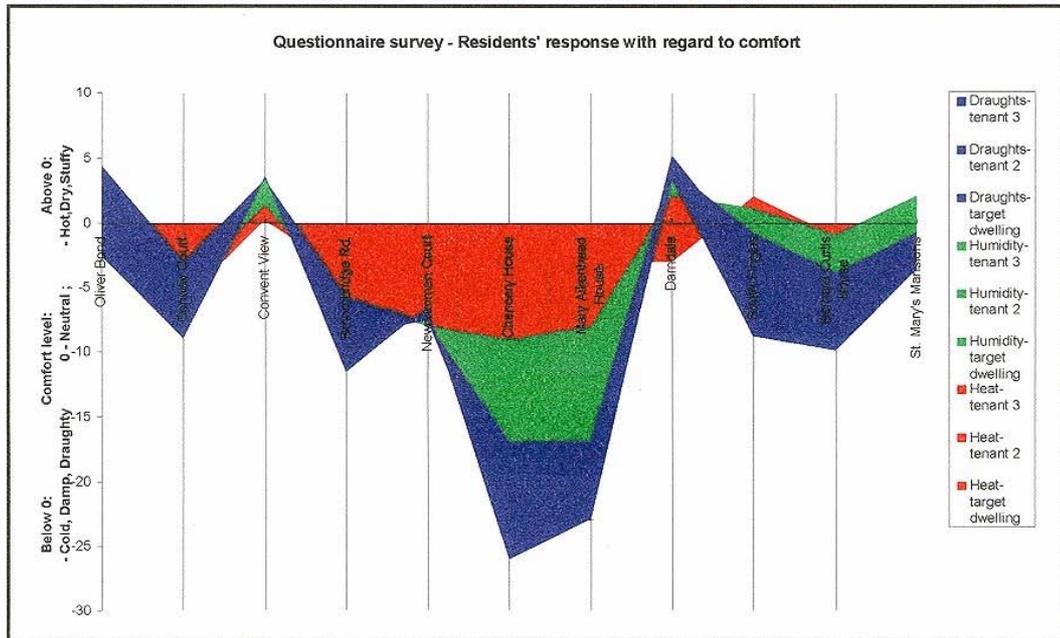


Figure 5 Door to Exterior. Thermal image of interior showing cold surfaces (in blue).

Apart from the obvious benefit of reliable energy flow information, thermal imagery also showed us areas of dampness, porosity, and poor maintenance of a building's fabric - factors which not only influenced energy consumption, but also had a direct impact on human thermal comfort and health within the building.

Comfort Chart



Frequency of Illness Chart

Figure 6 Relationship between poor thermal performance in dwellings and occupant ill-health^[17]

5.3 The Sustainable Building

Slowly, a profile is emerging of what may be the 'sustainable building' of the future
 it will relate, in harmony and balance, with its 'natural environment', and will be :-

- 'person-centred' & socially inclusive ;
- 'flexible' & 'adaptable' ;
- spatially complex, with some ambiguity, and yet understandable, e.g. easy for building users to find their orientation, and to 'connect' with the exterior ;
- electronically 'mature', yet energy efficient throughout ;
- a 'place' of stimulation and encouragement to human creativity ;
- always at the limits of economic viability & technical feasibility ;
- beneficial with regard to overall 'environmental impact'.



Figure 7 Design concept of the future 'Sustainable Building'

At international level, further research and development work is already being undertaken which focuses on **Sustainable Planning** of the 'built environment', and **Sustainable Civil Engineering, Service and Infrastructural Construction** .

6. Real Implementation of a Sustainable Built Environment

As previously stated, the European Charter on Sustainable Design & Construction places emphasis on real implementation, which is reproducible, by means of the informed use of **construction related sustainability performance indicators** , i.e. some understanding and competence is required.

In particular, Principle 26 of the Charter states

' Harmonized short, medium and long-term strategies in the policy areas of energy efficiency, environmental protection and sustainable development should be planned for implementation in the European Union over the following time frames :-

- (i) up to 2010 ; (ii) between 2011 and 2040 ; (iii) between 2041 and 2100.

Such is the threat to quality of life and human progress caused by current environmental degradation, and such is the great timelag between implementation of corrective actions and resulting beneficial environmental impacts, that sustainability performance should be benchmarked at year 1990 in the Member States of the E.U.

Detailed performance indicators for all stages of planning, design, construction / de-construction, maintenance and disposal should be used to target improvements in sustainability performance, verify target attainment, and continually re-adjust targets at appropriate intervals thereafter. '

The primary purpose of Construction Related Sustainability Performance Indicators is to commence, in earnest, the practical task of implementing a sustainable approach to the future development and modification of the 'built environment' in Europe, while also playing our part in ensuring a flourishing future for the 'natural environment' by carrying out sufficient repair to past, present and potential future damage directly or indirectly caused by construction

- Principle 26 of the European Charter on Sustainable Design & Construction signalled that a futures scenario should be developed which would cover the short, medium and long-terms, at least until the end of this century ;
- Using this futures scenario, incremental improvements in construction performance required to achieve a sustainable 'built environment' within a flourishing 'natural environment' may then be plotted. The focus of attention must always be on 'real', rather than theoretical, performance ;
- Construction related sustainability performance indicators, 'harmonized' for application in the European Union, will allow us to target, reliably quantify and monitor construction performance in the built environment which, by general international agreement, has been benchmarked at 1990 levels. Rigorous procedures will be required to process the data and statistics generated in order to ensure that they, too, are reliable.

A secondary, short term purpose in Ireland will be to develop a Sustainability Label Award Scheme - initially for buildings - which will be a major departure from existing methods of energy and/or environmental rating systems. Based on an understanding of 'sustainable development' which is current and generally held at any particular time, an objective sustainability performance statement may be made about a specific building, the performance of different buildings may be compared, or more favourable working methods in the building design process itself may be identified.



Figure 8 Harmonized European Sustainability Label for Buildings & Civil Engineering Works

At global level, the Implementation Plan for the United Nations Commission on Sustainable Development (UNCSD) Work Programme on 'Indicators of Sustainable Development' is now in its 3rd Phase : 1998 until 2001. An initial Working List of Indicators^[18] has already been produced which is intended for global application. It is, therefore, necessarily general in nature (and not at all construction related). These indicators cover four aspects of Sustainable Development, i.e. **Social**, **Economic**, **Environmental**, and **Institutional**, and are presented in a **Driving Force - State - Response** framework. Trial application of initial indicators is taking place in four global regions : Africa, Asia & Middle East, Europe, Americas & Caribbean. In Ireland, we are also working on a fifth aspect of Sustainable Development, i.e. **Political**.

Supported by a **Value System**, there are five **Essential Requirements** most directly related to the Construction Sector, therefore, in order to achieve Sustainable Human & Social Development

- (i) Social Justice & Inclusion ;
- (ii) Economic Equity ;
- (iii) Beneficial 'Environmental Impact' ;
- (iv) Institutional Openness ;
- (v) Political Accountability.

To manage all of this information on performance indicators, it was necessary to develop a **Fundamental Matrix**. See Appendix B to this Chapter.

The following are three examples of relevant Indicators

❖ **Equality of Opportunity for Every Person in Society**

To advance the principle of sustainable development, and in order to combat discrimination and remove restrictions on participation in society ~ by the year 2010, every new building shall be fully and independently accessible with regard to mobility, usability, communications and information.

❖ **Fire Protection in Buildings**

To advance the principle of sustainable development, and in order to provide a high level of protection and improvement of the quality of the environment ~ by the year 2010, every new building shall be designed, constructed and managed so as to ensure the least adverse **environmental impact** in the event of fire.

❖ **Indoor Climate / Air Quality in Buildings**

To advance the principle of sustainable development, and in order to provide a high level of human health protection ~ by the year 2010, radon activity (incl. Rn-222, Rn-220, RnD) in every new building shall, on average, fall within the range of 10 - 40 Bq/m³, but shall at no time exceed 60 Bq/m³.

The underlined text in each Indicator is a direct quotation from the 1997 E.U. Amsterdam Treaty (97/C 340/01).

7. Importance of Targeted Research & Demonstration

Without a concerted programme of innovation, research, development, demonstration and precise observation of results, the desired end condition in Europe, i.e. **a sustainable 'built environment'**, cannot be attained. Sustainable Design is tailor-made as the most cogent concept, and the most relentless driving force for this task in construction of the future.

Stage I

The realistic end condition, or 'reality', is a sustainable built environment - the response, in built form, to the concept of sustainable human and social development. It may take another 7-10 years before we fully understand this concept.

Literature dealing with 'reality' is reviewed. Relevant hypotheses are extracted, and as many variables as possible are identified. Inputs also include the futures scenario(s), and initial construction related sustainability performance indicators. Use of statistics is limited to those which can be shown to be impartial, reliable, objective, scientifically independent, cost-effective and statistically confidential [see the Amsterdam Treaty - New Article 213a in the TEC].

Stage II

An 'artificial reality' is designed which is complex enough to permit testing of the hypotheses formulated in **Stage I**. Observations must be capable of description in quantitative terms.

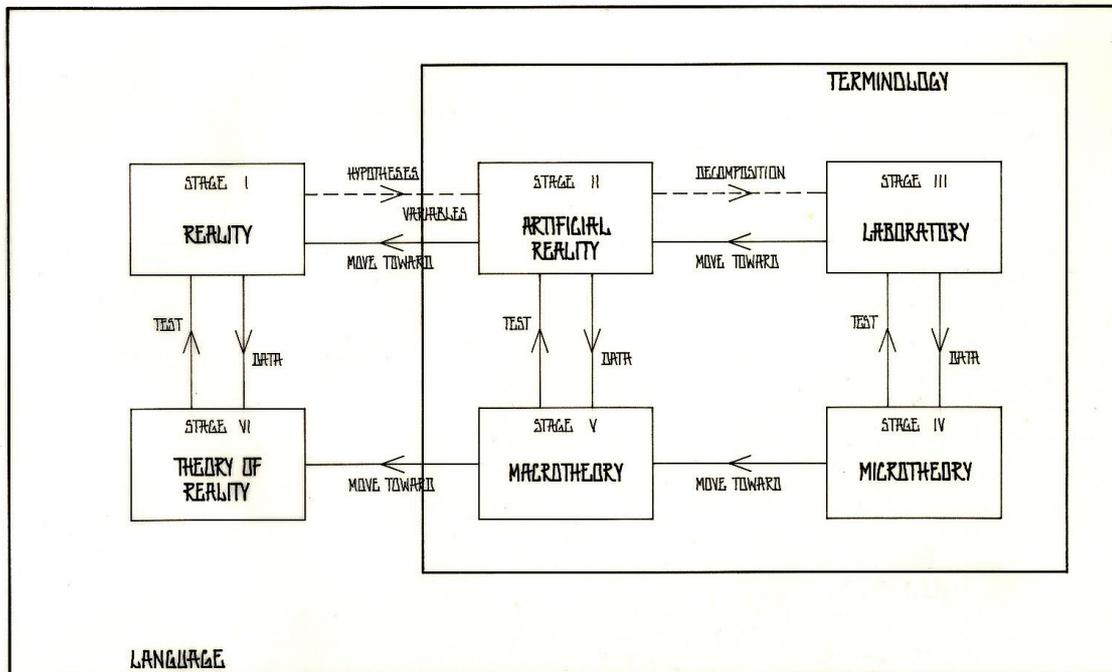


Figure 9 Route Map to a Sustainable 'Built Environment' in Europe

Stage III

'Artificial reality' is broken down into simple experimental situations at small and medium scale, e.g. advanced energy surveying of buildings or groups of buildings using infra-red thermography, detailed analysis of air quality in buildings and at external locations, real time monitoring of thermal comfort (EN ISO 7730) conditions in buildings, etc., which generate test results under controlled conditions, i.e. a laboratory in the real environment.

Special attention is paid to measurement / calculation uncertainty, and test method precision. Computer models must be transparent to practitioners, and validated by an independent, competent individual and/or organization.

Questionnaire surveys are carried out with real users of buildings, civil engineering works and infrastructural networks, e.g. transport. To be effective, it is essential that a survey is carried out, on a person-to-person basis, by an independent, competent, non-threatening individual, using open and closed format questions. These surveys formalize the process of meaningful consultation between practitioners and end users.

Stage IV

A simple theory, or microtheory, is developed to explain the test results, e.g. 'person-centredness' of the built environment. When this microtheory is tested and found valid, it is expanded to contain test results in more complex situations. This process is repeated until a macrotheory is formulated which explains the 'artificial reality'.

Stage V

'Artificial reality' is modified in the direction of 'reality' and **Stage IV** is repeated yielding a fresh macrotheory. The process is repeated again and again.

Stage VI

When a macrotheory is sufficiently developed, it can be used to extrapolate an explanation of 'reality' .

It is essential that such a 'theory of reality' be accessible to all concerned with the implementation of sustainable design, construction / de-construction and maintenance in the built environment and, therefore, a boundary to the use of terminology is delineated.

Terminology must focus on, and be always directly related to, the realistic end condition.

8. Conclusion - A Regional Disability Agenda for Europe

On 12th May 2000, the European Commission issued the following Communication¹⁹¹

'Towards a Barrier Free Europe for People with Disabilities'

It has been proposed, in this document, to declare the year 2003 as the European Year of Disabled Citizens, with the objective of 'strengthening the concept of citizenship for people with disabilities'. There is also much text devoted to a 'renewed approach to disability', 'major steps forward', 'a new impetus', etc., etc. - still all very aspirational and well meaning.

The reality of present day Europe, however, is far from being ideal. Notwithstanding the fact that different types of E.U. legislation have existed for many years which require that buildings and places of work be accessible, a naked lack of political will on the part of European politicians and controlling authorities at national and local levels has ensured that, even today, countless barriers to that accessibility are still being erected in the 'built environment'. In particular, the non-existence of comprehensive technical guidance on protection from fire in buildings has resulted in the creation of a far more pervasive form of physical restriction on the full 'inclusion' of people with activity limitations into the economic, cultural and social life of the general community. Access to accessible buildings is regularly being refused in Ireland, as an example, for reasons of fire safety.

Sustainable Design, on the other hand, represents a quantum leap in the evolution of design philosophy. Accessibility of buildings and the 'built environment' is approached, and effectively solved, on a person-centred basis. There is no competition between different demographic groups, as every person is an individual. This approach is directly supported by Principle 1 of the Rio Declaration, further reinforced by the more elaborate Principle 1 of the European Charter on Sustainable Design & Construction, and placed within a coherent and comprehensive agenda on Social Justice and Inclusion - a core value of Sustainable Human and Social Development. In turn, this value is rooted, at a fundamental level, in elaborate European Union legislation.

The language of Sustainable Design is positive, progressive and facilitating with regard to the future provision of a sustainable, sensory rich 'built environment' which will stimulate and encourage human creativity - an environment where the abilities of every person will be cherished.

Aided by a careful examination of Contextual Factors, therefore, it is possible to outline the elements of an effective Disability Agenda which is appropriate for the region of Europe

- A coherent **Action Programme**, initially covering the short term up to the year 2010 ;
- A properly harmonized and multi-lingual **E.U. Vocabulary** of disability ;
- A reliable **E.U. Database** of disability related statistics ;
- **Targeted Research and Demonstration** which answers the 'real' needs of people with activity limitations, and those who plan, design, construct and manage an accessible built environment ;
- A comprehensive array of disability related **Performance Indicators** ;

- An effective E.U. regime of **Performance Monitoring and Technical Control** ;
- The positioning of 'social justice and inclusion' within the area of responsibility for E.U. Inter-Institutional **Action Co-ordination** by the Secretary-General of the European Commission.

Furthermore, this Agenda simply cannot be limited any longer to considering technical issues of accessibility in splendid isolation, e.g. what should be the clear width of a door opening ; it must now be extended, under legal imperative in the European Union, to deal comprehensively with the **Social Wellbeing**^[20] of people with activity limitations in the 'built environment'. A reasonable concern about the 'Universal Design / Design-for-All' concepts is that their dated and inadequate scope hinders this new approach.

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11. Appendices

[A] **Vocabulary of Useful Terms** ~ Disability and Perception.

[B] **Fundamental Matrix** ~ Construction Related Sustainability Performance Indicators.
This table was developed from a programme of work initiated by CIB Working Commission 82 : Futures Studies in Construction.

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Appendix A ~ Vocabulary of Useful Terms

Accessibility : (Building)	Ease of independent approach, entry and/or use of a building and its services and facilities, by all of the building's potential users ~ with an assurance of individual Health, Safety and Welfare during the course of those tasks.
Accessibility : (Built & Virtual Environments)	Ease of independent mobility throughout the built and virtual environments, and/or use of the facilities, services and information available in those environments, by any person or group of people ~ with an assurance of individual Health, Safety and Welfare, and group Wellbeing, during the course of those activities.
Activity : (WHO, 2000)	An action performed by a person - at any level of complexity, including complex skills and behaviour. Activities may be simple physical functions of the individual as a whole (e.g. grasping, moving a leg or seeing), or complex mental functions (e.g. remembering past events or acquiring knowledge), or an amalgam of physical and mental activities at various levels of complexity (e.g. driving a car, personal social skills, interacting with individuals in formal settings).
Activity Limitation : (WHO, 2000)	A difficulty in the performance, accomplishment or completion of an activity at the level of an individual person. Difficulty encompasses all of the ways in which the performance of the activity may be affected : doing something with pain or discomfort ; doing it too slowly or quickly, or not at the right time and place ; or doing it awkwardly or otherwise not in a manner expected ; or not being able to do it at all. An activity limitation may range from a slight to a severe deviation, in terms of quality or quantity, in performing the activity to the extent or in a manner which is expected. This term replaces 'disability' in the WHO International Classification of Impairment, Disability and Handicap (1980).
Adaptability :	The extent to which a building, or a building component, is designed when new, or capable of being easily modified at any later stage, to meet the changing life and living needs of the broad average of potential users, who may / may not have activity limitations or develop a health condition during the life cycle of that building or component.
Body Functions : (WHO, 2000)	The physiological and psychological functions of body systems.
Body Structures : (WHO, 2000)	Anatomical parts of the body, such as organs, limbs, and their components.
Built Environment :	Anywhere there is, or has been, an intrusion or intervention by a human being in the natural environment.
Contextual Factors : (WHO, 2000)	The factors which, together, constitute the complete physical context of a person's life and living, i.e. environmental and personal.

Disability : (WHO, 2000) This is a generic term, which is only used when reference to the three dimensions of the WHO International Classification of Functioning, Disability and Health (Prefinal Draft - Full Version, December 2000) - Body Functions & Structures, Activity and Participation - is intended.

Egress : (Building) Independent emergence of the user(s) from a building, under normal conditions, and removal from its immediate surroundings.

Environmental Factors : (WHO, 2000) Those factors which are external, or extrinsic, to the context of a person's life and living, e.g. the physical world and its features, other people in different roles, social attitudes and values, institutional policies and action programmes, legislation, service and support systems in society.

Evacuation from a Fire Building : To withdraw, or cause to withdraw, all users from a fire building, in planned and orderly phased movements, to a place of safety.

Flexibility : The extent to which a building interior is designed when new, or capable of being easily varied at a later stage with minimal cost and user inconvenience, to meet changing living / working needs.

Human Health : (WHO) A state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity.

Health Condition : (WHO, 2000) An alteration or attribute of the health status of a person which may lead to distress, interference with daily activities, or contact with health services ; it may be a disease (acute or chronic), disorder, injury or trauma, or reflect other health related states such as pregnancy, ageing, stress, congenital anomaly or genetic predisposition.

Impairment : (WHO, 2000) The loss or abnormality of a body function, or body structure.
The word 'abnormality' is strictly used here to refer to a significant deviation from an established population mean, within measured statistical norms.
Impairments may be physical, mental or psychological.

Panic : A sudden overwhelming feeling of anxiety, which may be of momentary or prolonged duration.
Anxiety is the normal response of the human body to recognised danger. Numerous reflexes are involved. The supply of blood to the muscles is greatly increased, partly because the heart beats more rapidly and strongly, and partly because the blood vessels of the muscles dilate while those of many other organs constrict, diverting the flow of blood to where it is most needed. The muscles themselves are tensed. Breathing is deeper and more rapid. The mind becomes more alert, and the pupils dilate, admitting more light to the eyes.

Participation :
(WHO, 2000) A person's involvement in life and living situations, particularly in relation to Health Conditions, Body Functions, Activities and Contextual Factors.

This term refers to all areas of human life, including full experience of being involved in a practice, custom or social activity. Domains of participation - personal maintenance, mobility, exchange of information, social relationships, education, work and employment, economic worth, civil status - are 'social' in the sense that the character of these complex experiences is shaped by society and the socio-economic environment.

Participation Restriction :
(WHO, 2000) Some reduction in the degree or extent of participation in a community, society or culture - expected of a person without a health condition or physical / mental / psychological impairment - which is created or increased by Contextual Factors, i.e. environmental and/or personal.

People with Activity Limitations :
(Personnes à Performances Réduites) Those people, of all ages, who are unable to perform, independently and without aid, basic human activities or tasks - because of a health condition or physical / mental / psychological impairment of a permanent or temporary nature.

This definition is derived from the World Health Organization's International Classification of Functioning, Disability and Health (Prefinal Draft - Full Version, December 2000).

The above **terms** include

- wheelchair users ;
- people who experience difficulty in walking, with or without aid, e.g. stick, crutch, calliper or walking frame ;
- the elderly (people over the age of 60 years) ;
- the very young (people under the age of 5 years) ;
- people who suffer from arthritis, asthma, or a heart condition ;
- the visually and/or hearing impaired ;
- people who have a cognitive impairment disorder, e.g. delirium, dementia or amnesia ;
- pregnant women ;
- people impaired following the use of alcohol, other 'social' drugs, e.g. cocaine and heroin, and some medicines ;
- people who suffer any partial or complete loss of language related abilities, i.e. aphasia ;
- people in this present generation, and potentially those people of future generations, impaired following exposure to environmental pollution and/or irresponsible human activity ;

and

- people who panic in a fire situation or other emergency ;
- people, including firefighters, who suffer incapacitation as a result of exposure, during a fire, to poisonous or toxic substances, and/or elevated temperatures.

Personal Factors :
(WHO, 2000) Those factors which are internal, or intrinsic, to the context of a person's life and living, e.g. age, gender, level of education, socio-economic status, and life experiences.

'Person-Centred' Design :

That design process which places real people at the centre of creative endeavours and gives due consideration to their health, safety and welfare in the built environment - it includes such specific performance criteria as a sensory rich and accessible (mobility, usability, communications and information) environment, fire safety, air, light and visual quality, protection from ionizing and electromagnetic radiation, thermal comfort (EN ISO 7730), unwanted or nuisance noise abatement, etc.

An important 'person-centred' **design aid** is the questionnaire survey, carried out by an independent, competent, non-threatening individual, and which comprises both open and closed format questions.

Place of Safety :
(Building)

Any location beyond a perimeter which is [100] metres from the fire building or a distance of [10] times the height of such building, whichever is the greater.

Precautionary Principle :

Where there is uncertainty as to the existence or extent of risks of serious or irreversible damage to the environment, or injury to human health, adequate protective measures must be taken without having to wait until the reality and seriousness of those risks become fully apparent.

Proprioception :

The perception by a person of stimuli relating to his/her own position and movement in space, and his/her posture, equilibrium, and internal condition.

Social Wellbeing :

A general condition - in a community, society or culture - of health, happiness, creativity, responsible fulfilment, and sustainable development.

Sustainable Design :

The art and science of the planning, design, supervision, and control of related construction / de-construction, and maintenance of sustainability in the built environment.

As a core value, Sustainable Design embodies the concept '**person-centred**' **design** .

Sustainable Development :
(Brundtland Report, 1987)

Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

An improved definition of 'sustainable development' must also embody the following concepts

- the place of human beings in the environment, and the relationship between both ;
- the nature of human, social, cultural and economic development, their current imbalances and inequities, and their future course ;
- the healing of existing injury to the natural environment.

Sustainable Development :
(EU Regulation 2493/2000)

The responsible improvement of the standard of living and wellbeing of a community or society within the limits of the capacity of regional ecosystems by maintaining natural assets and their biological diversity for the benefit of present and future generations.

Welfare :

A person's general feeling of health, happiness and fulfilment.

