



THE INSTITUTION OF ENGINEERS OF IRELAND

SUBMISSION TO GOVERNMENT

ON

DELIVERING SUSTAINABILITY

**OUTCOME OF 2003 ANNUAL CONFERENCE
BELFAST – OCTOBER 2003**

DECEMBER 2003

INTRODUCTION:

The Institution of Engineers of Ireland (IEI) with 21,000 members spanning the public and private sectors, is the largest all island professional body on the island of Ireland. The Institution held its 2003 Annual Conference in October 2003 in Belfast with the theme "Delivering Sustainability". Sustainability is perhaps the main challenge facing society and governments in the early years of the 21st century. We need to make decisions on what kind of world and quality of life we wish to create for those who will inherit our planet throughout the century and beyond.

The Institution's two day Conference was opened by Angela Smith MP, Parliamentary Under Secretary of State at the Department of the Environment (Northern Ireland) and keynote addresses were delivered by Ms Catherine Day, Secretary General EU Environment Directorate and Minister Pat the Cope Gallagher TD, Minister for State at the Department of the Environment & Local Government.

This submission to Government in the Republic of Ireland summarises the main output from the Conference based on papers delivered by the wide range of public and private sector speakers and the open forum discussion sessions.

IEI believes that there is significant opportunity for cooperation between Government and Government agencies in the Republic and in Northern Ireland in progressing a range of sustainability initiatives. Section 1 of this submission therefore covers advice to Government in both the Republic and in Northern Ireland on areas for potential North-South cooperation. A similar submission has been made to Government in Northern Ireland.

SECTION 1 – JOINT NORTH-SOUTH INITIATIVES:

1.1 Joint North-South Sustainability Agreement:

Progressing delivery of a sustainable future on the island of Ireland would be significantly enhanced if there was an understanding and plan of action on initiatives that could be jointly implemented by the Republic and Northern Ireland. Many of the challenges facing both parts of the island are common, actions taken by one party will directly impact on the other, and the resources available to both parties are limited.

This small island shares groundwater, sea, rivers, lakes and air and faces similar challenges in ensuring a sustainable supply of energy, water and other resources. There is no doubt that the issue of sustainability is one where society, north and south, faces common threats, challenges and opportunities and one where cooperation and joint action would be to the benefit of all. A high profile declaration of common intent and an associated sustainability action plan would provide a powerful signal to society, to industry and to business of the need for action and cooperation by all. It would also provide an understanding and acceptance of the separate actions that the administrations north and south need to take to deliver a sustainable future. Sections 1.2 to 1.5 of this submission summarise some of the areas in which IEI believes there should be cooperation and joint action.

Recommendation:

Formulate a joint North-South Sustainability Agreement that would include: -

- (i) A range of joint North-South sustainability policies and initiatives together with an associated action plan
- (ii) A range of policies and actions which need to be addressed separately by the administrations in the Republic and in Northern Ireland

1.2 Education:

Sustainability and the challenge it poses for governments, industry, business, educationalists and society at large is a relatively new concept. Delivering a sustainable future will involve government, government bodies, regulators and industry in making decisions which may not be popular or indeed acceptable to the general public or to certain sections of society, unless they are accompanied by appropriate education initiatives. Following our Conference in Belfast, the Institution believes that these initiatives should include: -

- (i) A general public education programme which highlights the sustainability challenges facing society, the consequences of not addressing these challenges and what actions must be taken by individuals, industry and

Government. Such a programme would highlight and build on the North-South Joint Sustainability Agreement proposed in Section 1.1 above and the specific sustainability initiatives to be actioned separately in each jurisdiction.

- (ii) Development of broad sustainability curriculum material for use in primary and secondary level education.
- (iii) Development of appropriate detailed sustainability curriculum material for use in third level education programmes not alone in technological and scientific programmes, but also for use in business, economic and humanities courses. In this area, priority should be given to engineering programmes because of the significant responsibilities engineers carry in ensuring sustainable development.
- (iv) Preparation of a portfolio of best practice examples on what has been and is being done in delivering sustainability both internationally and locally on the island. These examples should be used in educating decision makers in public bodies, and in industry and in developing the education programmes and curriculum material proposed in actions (i), (ii) and (iii) above.

IEI would be pleased to participate with both governments in these above initiatives.

Recommendations:

Jointly develop: -

- ⇒ A general public education programme on sustainability
- ⇒ Sustainability curriculum material for use in primary and secondary education
- ⇒ Sustainability curriculum material for use in third level education and in particular in engineering education
- ⇒ A portfolio of best practice sustainability examples

1.3 Energy:

It was evident from the papers delivered at IEI's Belfast Conference and the ensuing Open Forum discussions, that the issue of sustainable energy is one of the key challenges facing society and government North and South. There is already a significant degree of North-South cooperation in relation to energy. Both the electricity and gas networks are interconnected, and there is consultation and frequently coordination in relation to major maintenance programmes.

Security of supply and stability of the overall generation/transmission system is paramount in the electricity market. There is continuous communication between the system operators in both jurisdictions to make optimum use of the combined transmission and generation assets and to deliver the most reliable and cost effective electricity supply to customers.

Ireland faces particular challenges in the electricity area because of the island nature of the two systems and the scarcity of indigenous fossil fuel and hydropower. Both jurisdictions face the challenge of minimising greenhouse gas emissions and meeting EU and Kyoto targets. However, both also have the same potential opportunities in relation to generation of electricity from alternative energy sources.

The island of Ireland has some of the best wind and wave energy resources in the world with the opportunity for the island to become a significant generator of “green energy”. However, there is need for North-South cooperation on research and development into how these resources can best be exploited.

Progress in optimising both jurisdictions’ response to the energy challenges and opportunities is however hampered because of different North-South fiscal policies and energy market arrangements, and the fact that there are two separate regulatory regimes and regulators on the island. There would be distinct benefits, from both an environmental and a customer viewpoint North and South, in treating the energy market on the island as a single integrated market technically, operationally and economically.

IEI believes that there is the potential to obtain special EU designation, cooperation and financial support for the establishment of an All Ireland EU Energy Region which would further EU objectives of maximising the use of alternative energies, minimising greenhouse gasses and providing a secure supply of energy to customers at minimum price.

Recommendation:

Initiate North-South discussions with a view to the establishment of an All Ireland EU Energy Region with a single energy market and regulator. These discussions should seek to: -

- ⇒ Develop of a long term plan for the security and sustainability of energy supply on the island at minimum cost.
- ⇒ Maximise the use of alternative energies on the island.
- ⇒ Minimise the production of greenhouse gasses produced in the energy cycle.

1.4 Sustainability Advisory Guidelines:

Public sector clients and their professional advisors in both the Republic and Northern Ireland face similar environmental and technical challenges in delivering sustainability.

The issue of global warming and climate change will have similar impacts North and South in terms of changes in rainfall patterns, water availability and quality, groundwater levels, sea levels and the potential for flooding. The nature, scale and impact of climate change should be established and understood on an all

island basis. The outcome should be disseminated widely, in particular to public sector bodies and to professionals who have responsibility for planning and for the provision and design of infrastructure. The issue of sustainability should be integrated into development plans, decisions on development zones and implementation of spatial strategy. Most importantly, enforcement of sustainability must be ensured at the level of individual development planning applications with auditing during and after construction to ensure implementation. All local authorities should have a policy on sustainable planning and development and this policy should be incorporated into all the authorities plan and strategies.

Consideration should be given to producing both guidelines for local authorities on “Planning for Sustainable Development” and technical advisory guidelines for design professionals on “Designing Infrastructure to Accommodate Climate Change”.

Clients in both the public and private sectors need to ensure that in preparing the brief for the engagement of design consultants, that sufficient attention is given to the requirement for design proposals to adequately address sustainability, life cycle costs, energy and materials usage etc. It is very important to ensure that design proposals do not simply address short-term needs but that they also take account of long term sustainability issues. For example, it would be foolish to meet short term housing needs in an area which may be liable to significant future flooding or where the availability of groundwater supply is likely to reduce substantially. There could be a tendency on the part of clients to opt for “lowest bid” professional fees, without considering the impact on the life-cycle cost or sustainability of the design proposals likely to result from such “price only” fee bidding. IEI believes it would be useful to produce, on a joint North-South basis, advisory guidelines on “The Engagement of Consultants for Sustainable Design of Public Sector Projects.”

The Institution also believes that the criteria for evaluating tenders for public sector projects should include specific sustainability criteria. A set of guidelines for public sector bodies should be produced on “Sustainability Criteria for Use in Evaluating Tenders for Public Sector Projects”.

Recommendation:

Produce on a North-South basis a set of sustainability guidelines to include: -

- (i) Planning for Sustainable Development
- (ii) Designing Infrastructure to Accommodate Climate Change
- (iii) The Engagement of Design Consultants for Sustainable Design of Public Sector Projects
- (iv) Sustainability Criteria for Use in Evaluating Tenders for Public Sector Projects

1.5 The Green Belt:

There was a significant body of opinion at the Institution's Conference in Belfast that green belts are not compatible with transport corridors if maximum benefit is to be gained from the infrastructure developed. Green belts are not sustainable and as they are pushed further out, they give less advantage to the metropolitan area they were conceived to protect. The pressure on green belts forces them further and further from the centre of our towns making the development of city centre living less and less attractive. Green belts also encourage the spread of scattered dwellings which lead to very expensive provision of utilities and unnecessary use of energy.

Green belts should be replaced by "green wedges" or "green lungs". These are a continuation of the green countryside into the town heart by a combination of agriculture land and parkland. The development of this concept would allow urbanisation along and optimum use of transport corridors and the retention of green areas right into the town centre.

Recommendation:

- ⇒ Review current planning policies and produce planning guidelines for the replacement of green belts by "green wedges" or "green lungs".

SECTION 2 – REPUBLIC OF IRELAND INITIATIVES:

2.1 Formalise National Sustainability Principles:

The need for government departments, agencies and bodies, and semi state companies to take account of the principles of sustainability in planning and managing their operations is now generally accepted. Indeed many of these now formally publish their commitment to, and policies on, sustainability. However, the understanding of sustainability and the implementation of sustainability practices vary significantly across the public sector.

Comhar, the National Sustainable Development Partnership was established by Government to advance the agenda for sustainable development. During 2002 Comhar developed a set of principles for sustainable development. IEI welcomes the establishment of Comhar and endorses its set of principles (see Appendix 1). In order to promote greater integration of the principles into the operations and decision making process of government departments and public sector bodies, IEI recommends that the principles for sustainable development enunciated by Comhar should be formally endorsed by the Dáil and communicated by Government to government departments and public bodies.

Recommendation:

Government to arrange for the Dáil to formally endorse the Principles for Sustainable Development prepared by Comhar and to subsequently communicate these to government departments and public bodies.

2.2 The Western Transport Corridor:

The National Spatial Strategy (NSS) published by Government in 2002 sets out national policy for sustainable spatial development. A primary objective of the strategy is to counter the economic and social pull of the eastern side of the country and in particular that of the Greater Dublin Area. The Institution has welcomed the National Spatial Strategy and endorses its proposals.

The NSS has identified a national framework of gateways and hubs, which are to provide the necessary scale of infrastructure and services to increase the economic and social attractiveness of every region in a sustainable manner. Publication of the NSS provides the policy framework for planning. However, IEI believes that the objectives of the NSS will not be achieved if early progress is not made in converting some of the more critical elements of strategy into concrete plans. IEI believes that this is particularly important in relation to transport infrastructure along what is known as the Western Corridor.

The current National Development Plan includes the upgrading of the major inter-urban road transport routes between Dublin and Waterford, Cork, Limerick, Galway and Belfast to the border. NDP also includes provision for the upgrading of rail infrastructure between Dublin and the Regions.

On completion of the NDP, there will be quality road and rail transport linkage along the Eastern Corridor joining Belfast to Rosslare via Dublin. However, the Institution is of the opinion that there is need for Government to prepare detailed plans for provision of a similar transport capacity along the Western Corridor from Killarney to Letterkenny and onward to the Border to link with Derry. Without such linkage and demonstration by Government that in publishing the NSS, it was serious in its intent, the NSS will remain just another strategy without substance and much of the western half of the country will become more and more unsustainable as Dublin pulls investment and population to itself.

Recommendation:

Government to prepare a plan for provision of quality transport infrastructure along the Western Corridor from Killarney to Letterkenny and onward to the Border to link with Derry.

2.3 Transport Challenges:

In addition to the need to provide quality transport infrastructure along the Western Corridor, there are a number of other challenges to be addressed in delivering sustainable transport for the country.

A key challenge is in ensuring optimum contribution of the transport sector in meeting Kyoto targets. It is vital that the incentive to private commuters to transfer to public transport is maximised, thus reducing greenhouse gas emissions from the transport sector. This will only happen if a quality public transport system exists and congestion is eliminated from urban roads to enable such a public transport system to operate effectively.

Integration of Transport Modes

There is need to place greater emphasis on making it easier for the public to avail of public transport and to transfer from one transport mode to another.

The efficiency of both public and private transport would be significantly improved by the introduction of a modern integrated comprehensive transport information system for use both by the public and by public transport operators.

While there has been some progress in cooperation between public transport, rail and bus companies in relation to interoperable ticketing, this has only commenced. There is room for significant further progress to be made in introducing innovative, flexible ticketing systems for use across all public transport modes and companies. Such ticketing systems are needed to provide an adequate public transport system and to minimise greenhouse gas emissions.

In order to ensure optimum use of public transport, the provision of park and ride facilities should be expedited as a matter of urgency.

Quality Bus Corridors (QBCs) and Bus Lanes

The introduction of QBCs and Bus Lanes have proved to be very successful. Their introduction has resulted in faster bus journeys, a significant increase in the number and share of passengers carried by bus and a reduction in the number of cars entering Dublin City Centre. The success of the limited number of QBCs introduced to date highlights the need to complete those QBCs which are not complete over their full length, to add additional QBCs and to address the unacceptable scale of delays to buses at traffic lights.

Remove Traffic Bottlenecks

The efficiency of both public and private transport in our main cities, and particularly in Dublin, is significantly reduced because of bottlenecks in our urban road systems. There is need to complement investment in inter-urban roads, ring roads and public transport with investment in improving the quality of urban roads and in particular access for road traffic from city centres to ring and inter-urban roads.

Recommendation:

Department of Transport to develop and implement a plan to improve the efficiency of both public and private transport and to encourage optimum use of public transport. This plan to include: -

- ⇒ An integrated comprehensive transport information system for use by the public and by public transport operators.
- ⇒ An interoperable flexible ticketing system for public transport.
- ⇒ Provision of increased park and ride facilities.
- ⇒ The introduction of more extensive QBCs and Bus Lanes.

2.4 Climate Change, Water Availability and Flooding:

There is now general acceptance that climate change is an issue that should be taken seriously. Depending on the scale and rate of such climate change, it could have significant impact on the availability and quality of water for domestic, industrial and agricultural use and on the potential for extreme flooding in Ireland.

The 2003 EPA Report “Climate Change – Scenarios and Impacts for Ireland” predicts: -

- Dramatic changes in rainfall pattern: Winter rainfall will increase by up to 10% while Summer rainfall will decrease by up to 40% on parts of the south and east coasts;

- Summers will warm by up to 2°C with areas in the central midlands experiencing typical summer daytime temperatures of up to 24.5°C;
- Winter temperatures will increase by up to 1.5°C by mid-century, resulting in winters in the northern half of Ireland becoming similar to those presently experienced along the south coast;
- Changes in frost frequency and in the growing season are likely to be experienced;
- Sea level rises, coupled with predicted increases in the frequency of extreme weather events, will render low-lying areas extremely vulnerable.

Climate change considerations have not historically been central in the formulation and development of policy in Ireland. However the impact of scenarios described above imply that this needs to change. Decisions about what crops to grow, what landscapes to protect, where to build transport corridors in coastal zones, how we design and maintain our water and sewerage infrastructure, and perhaps most importantly of all, where to build new residential areas urgently require to be “climate change proofed”.

There will be particularly serious implications for water management policies, both for the supply and for the quality of water. IEI has commenced work on preparation of a submission to Government on “Delivering a Sustainable Water Service for the 21st Century”. This will be completed and forwarded to Government in the second quarter of 2004.

It should be noted that developing and implementing responses to the issues raised above will involve significant time and investment. Work on analysing what the climate change impacts might be and how we should address them, should commence immediately.

Recommendation:

Government to appoint an inter-agency Task Force to: -

- (i) Progress implementation of the proposed joint North-South initiatives proposed in sections 1.1 to 1.5 of this submission
- (ii) Report to Government on the likely impact of climate change and what actions need to be taken in Ireland with particular emphasis on addressing the issue of water availability and flood potential.

2.5 Sustainable Drainage Systems (SUDS):

The subject of surface water drainage, particularly in urban areas, is one in which the traditional design approach is increasingly being reconsidered. The conventional approach, which aims to move surface water as quickly as possible downstream to prevent upstream urban flooding, can lead to increased flooding further downstream and an increasing problem with diffuse pollution in urban areas. It can also lead to negative impact on the availability of water resource, on habitats and on bio-diversity.

Sustainable drainage is a concept that focuses decisions about drainage design, construction and maintenance on the quality of the receiving environment and society's use of that environment. The SUDS approach includes measures to prevent pollution and to reduce run-off at source, and a range of physical structures, including swales, ponds and wetlands, designed to reduce surface water run-off and maintain groundwater resources.

While the concept of SUDS is generally accepted as the best and most sustainable approach to surface water management, it is not yet widely practised and there are barriers to it becoming the norm across Ireland. These include legislative constraints, long-term ownership and maintenance of SUDS features and defining "whole life" costs and performance of SUDS compared to conventional drainage.

Recommendation:

Department of Environment, Heritage & Local Government to establish a Task Force to prepare proposals on ensuring that future surface water management initiatives are based on the Sustainable Drainage Systems (SUDS) approach, by inserting appropriate requirements into Building Regulations and other relevant public sector guidelines and codes of practice.

2.6 Residential Energy Usage:

Ireland has a housing stock of 1.3 million units, which accounts for approximately 27% of national energy use and also CO₂ emissions. This translates into annual CO₂ emissions totalling 11 million tonnes and the value of the energy spend in this sector is €1.2 billion per annum. The majority of the current housing stock, i.e. 800,000 units (61%) were constructed before 1980 either to energy performance standards far below those now required or indeed to no energy performance standards at all. There is the potential for very significant reductions in Ireland's energy usage and resulting CO₂ emissions and energy cost, by the upgrading of the energy performance of houses constructed prior to 1980.

Recommendation:

Sustainable Energy Ireland in consultation with relevant other Government departments and agencies to bring forward measures and targets for the upgrading of the 800,000 residential units constructed prior to 1980.

APPENDIX 1

PRINCIPLES FOR SUSTAINABLE DEVELOPMENT

(Ref: Republic of Ireland, Comhar Annual Report 2002)

Themes	Principles
Satisfaction of human needs by the efficient use of resources	<i>The use of non-renewable resources should be minimised</i> <i>Use of hazardous/polluting substances and wastes created should be minimised; waste management should be environmentally sound</i>
Equity between generations	<i>Renewable resources should be used within the capacity for regeneration</i> <i>The quality of soils and water resources should be maintained and improved</i>
Respect for ecological integrity and bio-diversity	<i>The diversity of wildlife, habitats and species should be maintained and improved</i>
Equity between countries and regions	<i>Air and atmosphere should be protected and human-induced effects on climate minimised</i>
Social equity	<i>Social inclusion should be promoted to ensure an improved quality of life for all</i> <i>Sustainable development depends on cooperation and agreement between states</i>
Respect for cultural heritage/diversity	<i>The quality of landscapes, the heritage of the man-made environment and historic and cultural resources should be maintained and improved.</i>
Good decision-making	<i>Decision-making should be development to the appropriate level</i> <i>Stakeholder participation should be promoted at all levels of decision-making</i>