

# Sustainable Development Evaluation of Road Infrastructure Programmes and Projects

## Section 2

### Sustainability Assessment and Transport Policy

Brian Guckian

February 2007



The Foundation for the Economics of Sustainability

Cad a dhéanfaimid *feasta* gan adhmaid? Tá deireadh na gcoillte ar lár  
'What will we do in the future without wood? The end of the forests has come'

We would like to gratefully acknowledge the assistance of the following: Tadhg O'Mahony, Kevin Woods and Brian Donlon (EPA), John O'Neill, DoEHLG, Hugh Creegan, Michael Egan, Vincent O'Malley and Christian Nea (NRA), Rob Verheem, (Commissie voor de milieueffectrapportage), Mary Twomey, (Forfás), Emer Ó Siocrú, Enid O'Dowd and Clare Taylor (FEASTA)

## ACKNOWLEDGEMENTS

This report has been prepared as part of the Environmental Research Technological Development and Innovation Programme under the Productive Sector Operational Programme 2000-2006. The programme is financed by the Irish Government under the National Development Plan 2000-2006. It is administered on behalf of the Department of the Environment and Local Government by the Environmental Protection Agency which has the statutory function of co-ordinating and promoting environmental research.

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## SOCIO ECONOMICS

The Socio Economics Section of the Environmental RTDI Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in this area. The reports in this series are intended as contributions to the necessary debate on Socio Economics and the environment.

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## Introduction

This report examines the sustainability of the NDP / ESIOP National Roads Programme, with specific focus on the area of Transport Policy.

## Scope

The research evaluated broad policy objectives in relation to transport policy and made use of previous research from the Stage 1 Report on Environmental Impact Assessment and Transport Policy (FEASTA / EPA November 2005).

## Methodology

Methodology for the report consisted of a detailed study of the following documentation;

*Agenda 21 (UN, 1992)*

*Evaluation of Eco-Auditing in the Context of the NDP 2000-2006 (Scott/Bacon/Fry, 2003)*

*Evaluation of Investment in the Road Network (Fitzpatrick Associates, 2002)*

*Forfás reports, various, 1996-2000, cited in text*

*Ireland's Environment 2004 (EPA)*

*Making Ireland's Development Sustainable (Department of the Environment & Local Government, 2002)*

*Mid-Term Evaluation of the Economic and Social Infrastructure Operational Programme (Indecon International Economic Consultants, 2003)*

*The Mid-Term Evaluation of the National Development Plan and Community Support Framework for Ireland 2000 to 2006 (ESRI, 2003)*

*NDP 2000-2006*

*NDP Economic & Social Infrastructure Operational Programme 2000-2006*

*National Investment Priorities For The Period 2000-2006 (ESRI)*

*Recommendations for Sustainability Assessment in The Netherlands (Netherlands EIA Commission, 2002)*

*Review of Relevance of NDP / CSF Horizontal Principles to OP Measures*

*Review of Transport Infrastructure Investment Needs (DKM Economic Consultants, 1999)*

*Solving Congestion (Professor P.B. Goodwin, University College London, 1997)*

*Statement of Strategy 2003-2005 (Department of the Environment and Local Government, 2003)*

*Study of the Environmental Implications of Irish Transport Growth and Related Sustainable Policies and Measures (Oscar Faber et al., 1997)*

*Trunk Roads and the Generation of Traffic (SACTRA / UK Department of Transport, 1994)*

## Transport Policy – Stage 2 Introduction – Sustainability Assessment

The Stage 1 report (Feasta / EPA November 2005) was largely concerned with transport policy in EIA and set this in a broad introductory context. This report expands in greater detail upon the issues raised and concepts outlined in Stage 1, but within the higher level framework of *Sustainability Assessment*. This inclusive term covers both the relatively new methodology of Strategic Environmental Assessment (SEA) as well as Environmental Impact Assessment. SEA can be viewed as an EIA methodology for higher level plans and programmes, rather than individual projects, although Stage 1 showed how existing EIA techniques already contain elements of SEA.

### *Sustainability Definitions*

The definition of sustainability used in this report is based on an agreed concept developed by the FEASTA / EPA Transport Project research team. This takes as its starting point the 1987 Brundtland Report definition of sustainability - “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. However the Brundtland definition incorporates assumptions about the nature and benefits of economic growth, which have latterly been strongly questioned. To deal with this, the research team has agreed to use the World Bank Four Capitals approach (1996), which defines sustainability in terms of Social, Human, Physical and Natural Capital. This is further refined to incorporate absolute limits to how far each individual Capital can be depleted, whilst allowing for some degree of “trade-off” between them (in that a loss in one of the Capitals can result in a gain in another). This method imposes limits on the economic growth model and represents a more contemporaneous approach to the sustainability issue. Reference has also been made to sustainability concepts developed in the Netherlands. Here, a matrix-based approach has been devised as a practical aid to project evaluation:

Time frame	Economic sustainability	Ecological sustainability	Social sustainability
Short-term (less than five years)			
Medium-term (5-15 years)			
Long-term (15-100 years)			

Importantly, this is designed to aid the decision-making process from the very beginning, and is not an “add-on” like other methods discussed below.

### *Sustainability Assessment of the NDP*

In general, the NDP was found to be very heavily focussed on economic development, with relatively minor treatment of the social sphere, and little discussion of the environment. A more accurate title would have been National *Economic* Development plan, or NEDP.

This is made clear from the opening paragraphs onwards;

The new National Development Plan is designed to underpin the development of a dynamic competitive economy over the period 2000-2006. It aims to build on the unprecedented economic progress of recent years and to strengthen the foundations for further strong and sustainable progress in the years ahead.

The central challenge...is the implementation of public policies which will increase the capacity of Ireland's economy to maintain strong and sustainable output and employment growth.

The following national objectives will underpin the strategy for the National Development Plan (NDP) 2000-2006

- continuing sustainable national economic and employment growth;
- consolidating and improving Ireland's international competitiveness;
- fostering balanced Regional Development;
- promoting Social Inclusion.

Where the word *sustainability* was used, this referred only to *sustainable growth*, which is a debateable concept if the growth paradigm itself is questioned, as Agenda 21 did:

4.11 Consideration should also be given to the present concepts of economic growth and the need for new concepts of wealth and prosperity which allow higher standards of living through changed lifestyles and are less dependent on the Earth's finite resources and more in harmony with the Earth's carrying capacity. This should be reflected in new systems of national accounts and other indicators of sustainable development.  
(Agenda 21, Chapter 4)

It is interesting to note that an association made between road-building and economic growth in the NDP had not been foregrounded in the Operational Programme for Transport (OPTRANS), which preceded the NDP and ran from 1994 to 1999. OPTRANS had instead emphasised the need for

adequate cost-effective *sea and air transport* ...for sustainable economic growth and employment creation  
(Author's italics)

The NDP was also revealing in how it interpreted social development. This was placed within the narrow concept of social inclusion, the implication being that such inclusion means inclusion within the market economy and the economic growth paradigm. Essentially, this is a very narrow definition of social development, and one which flows from the over-arching economic-based point of view used throughout the NDP.

There were 52 references in the NDP Executive Summary to economics and related words, whilst there were only 24 in relation to social issues, and in fact 14 of these referred to the narrow concept of social inclusion. This left just 10 references to wider social issues in the document.

Significantly also, the NDP listed a relatively small number of consultees, many of whom were from an economics background, and there appears to have been no public consultation. This undermines the validity of the NDP strapline "Your Plan Your Future".

Where the NDP mentioned the environment at all, it did so only in the context of environmental *impact*. The clear implication was that the plan requirements overrode those of the environment, and that the plan would have an impact which must be dealt with. This important distinction reveals much about how policy-makers understand the importance and function of our environment, treating it as a separate entity to the economy and society, which can be managed and manipulated to suit the needs of the former. In fact, the subsidiary NDP Economic and Social Infrastructure Operational Programme (ESIOP) went one step further in relation to road-building and stated:

“With careful planning and adequate prior public consultation, these [road] projects will have little or no adverse environmental effects and will deliver positive impacts in terms of reduced road accidents and vehicle emissions” (NDP ESIOP, from Fitzpatrick, p. D23)

even though Fitzpatrick (in the same paragraph) states:

Major road development projects can have a negative impact on the environment (habitats, noise, visual, etc.) (p. D23)

This general viewpoint was carried through into the formal environmental policy area. Notably, there are a great many references to environmental “protection”, “management” and “regulation” even in reports issued by the Environmental Protection Agency (EPA) - in whose own title the first of these concepts is embedded.

Environmental *protection* implies that our environment is in fact under constant attack, yet this attack is to be accepted, and *managed* and *regulated* rather than reduced or eliminated. Again, this thinking (also identified in the Stage 1 report) stems from an incomplete and inverted intellectual position around our environment and how we relate to it. Regrettably, this is rarely questioned, and results in those charged with looking after our environment having to accept the economic growth paradigm, and take somewhat contorted positions:

Due to relative underdevelopment, Ireland was spared the serious environmental damage that affected many European countries in the first half of the twentieth century.

However :

...the State has undergone accelerated development as it benefited from its membership of the European Union...its relative economic performance now surpasses that of most of the other EU States...this is a very welcome development (Ireland’s Environment 2004, p.21)

#### *Foregrounding of Economics in the NDP Roads Programme*

It is of further significance that narrow economic thinking was clearly carried down into the roads programme of the NDP; the primary function of the investment was not broadly-based, as in theory a transport infrastructure programme should be. These excerpts are typical:

...the relatively poor state of development of the road network...has generated serious congestion in the larger urban areas...this is having a major impact on economic activity. (NDP ESIOP p.6)

Undoubtedly, these and other infrastructural deficiencies are adding to the cost base of Irish industry, thereby damaging its competitiveness. (Do.)

A well-functioning road infrastructure is of critical importance in maintaining the competitiveness of the economy (ESIOP Executive Summary, p.4)

Both the ESRI and Fitzpatrick had reservations about the adequate application of the four NDP Horizontal Principles (poverty relief / social inclusion, rural development, sustainable development and equal opportunity), which were meant to situate each Operational Programme within the broadest context of national development:

- financial viability and programme Horizontal Principles are not frequently applied across Measures / Sub-Measures (ESRI, p.238)

While it is recognised that all national roads are important for balanced regional development, no specific roads were identified as being of particular importance from this perspective (Fitzpatrick, p.D3)

...no explicit linkage made between this objective [social inclusion] and road investment. (Do., p.D21)

There was also notable tension and contradiction in the NDP ESIOP between an acknowledged need to control traffic-induced emissions on the one hand, and yet the effective facilitation of continued traffic / economic growth on the other:

It is clear...that significant reductions from all these sectors must be achieved if the Kyoto limit is to be achieved. (NDP ESIOP, p.7/8)

...the increasing numbers of vehicles on the road and increasing vehicle miles travelled are negating the technological improvements in some respects. (Do., p.47)

But in the section on National Roads Priority Objectives the following was stated:

The principal objectives of the National Roads Priority are -

- to improve the reliability of the road transport system by upgrading major inter-urban routes to motorway / high dual carriageway standard, removing bottlenecks, remedying capacity deficiencies and reducing absolute journey times and journey time variance (NDP ESIOP, p.27/28)

And, in a key paragraph that would be repeated in many road scheme EISes to come, the NDP stated:

Ireland's road network as a whole carries 96% of passenger traffic and 90% of freight traffic, reflecting a reliance on roads which is one of the highest in the EU....In view of our small land area and dispersed pattern of population settlement and economic activity, the road network is, and will continue to be, the dominant mode of internal transport in Ireland. (NDP ESIOP, p.18)

Unfortunately this analysis overlooked not only the environmental effects of such policy, which were actually acknowledged elsewhere in the NDP, but also the fact that the road mode would lose this dominance if there was comprehensive investment in a meaningful national public transport and railfreight network. Instead, the door was opened to large-scale road-building, based on forecasted traffic growth predictions which did not take into account any future modal shift:

...as traffic increases, an increasing percentage of the network will fail to meet the specified level of service objective without ongoing improvements to the network.

This is the classic “predict and provide” approach to transport which has been discredited:

From the late 1950s onwards the...axiom was : *first we forecast how much traffic there will be, and then we build enough roadspace to accommodate it*....The flaw was, the programme would not keep pace with traffic growth....Supply of roadspace will not – because it cannot – be increased to match demand...a strategy with road building at its heart would not deliver improvements in travel conditions. (Goodwin, p.3)

Public transport and demand management policies...may have significant influences on the...forecasts of road traffic. It is not appropriate, therefore, to control the growth in road traffic...to that given by the NRTFs [National Road Traffic Forecasts] which take no account of such policies. (SACTRA, p.179)

And, there are some indications that public transport investment was not an objective in itself, but was actually intended to assist in justifying high investment in the road mode:

...a well-functioning public transport infrastructure is vital for making optimal use of road infrastructure...(ESIOP Executive Summary, p.5)

But if one were to actually disregard all environmental and social considerations and accept the argument that the road mode should indeed dominate, and essentially carry the entire transport burden, one would then expect a carefully planned network. But this is not so. Fitzpatrick shows how, at policy level, no thorough cost-benefit analysis or consistent overall planning was carried out on the ESIOP roads programme:

...there is limited use of formal project appraisal techniques, i.e. cost-benefit analysis or multicriteria analysis. (p.iv)

...many of the necessary projects were not identified at the outset and so were not explicitly costed. (p.B41)

While it is recognised that all national roads are important for balanced regional development, no specific roads were identified as being of particular importance from this perspective. (p.D3)

...the absence of targets and indicators for major components of the roads programme is a matter of concern...is out of line with standard practice in other Operational Programmes in the NDP. Absence of routine use of cost-benefit analysis...(p.D34)

The ESRI and Indecon voiced concern at the level of road specification in the NDP:

...there is a concern that the level of service...provided for may be excessive relative to prospective demand...(ESRI, p.130)

...no economic analysis has been offered to our knowledge to justify the design inflation which appears to have occurred (Do.)

The current plans are proposing to put in place capacity on parts of the MIU network that based on a specific service standard are in excess of demand. (Indecon, p.96)

Indeed, concerns regarding road specification were voiced as early as 1999 by DKM:

The Needs Study has proceeded on the basis that certain roads should be completed to motorway or dual carriageway standard, regardless of traffic volumes (p.11)

There was evidence that PPP funding may have had a bearing on specification level:

Classification of PPP Schemes as motorways is desirable for two reasons:-

- Motorway status protects in the clearest way possible access to and from the tolled sections of the scheme.
- Motorway status indicates clearly the provision of a high quality facility by the private sector partner.

(M7/M8 Inspector's Report quoting Laois Co. Co. Evidence, p.64)

However, this assertion has been opposed by the NRA, who insist that classification of road schemes as motorways has been a function of government policy ahead of decisions on funding arrangements (NRA meeting, April 2006).

What is clear though, is that designation of schemes as motorways seems to have been uncoupled from engineering or other considerations.

Examination of the initial NDP routes approved also showed a radial pattern radiating from Dublin - a layout which differed significantly from that recommended in the subsequent National Spatial Strategy of 2003.

These significant tensions and contradictions support the conclusion that though there were commendable efforts towards environmental responsibility, the NDP roads programme was not primarily about social, environmental or even transportation objectives, but rather about facilitating economic growth:

Investment in the road network has been shown to yield significant benefits to the economy (NDP ESIOP, p.44)

(Further, this statement was not backed up in the NDP documentation).

#### *NDP Monitoring Reports*

Not only did the NDP roads programme appear to be an instrument of economic growth, disassociated from an integrated, broad-based and sustainable transport strategy, but so too the reviews of the Plan were conducted mainly from the same narrow viewpoint.

The ESRI's *Mid-Term Evaluation of the National Development Plan and Community Support Framework for Ireland 2000 to 2006*, Fitzpatrick Associates' *Evaluation of Investment in the Road Network* (2002) and Indecon's *Mid-Term Evaluation of the Economic and Social Infrastructure Operational Programme* (2003) display the same inverted environment-economy relationship as the NDP ESIOP, discussing environmental matters in a circumscribed, management-orientated manner:

The roads programme...pays considerable attention to environmental considerations and this attention could justifiably be increased by more resourced analysis of effects. (p.214)

Where the Roads Priority is concerned, environmental principles are to affect its manner of delivery...(p.213)

Environmental information on the Roads Priority could be improved with indicators of impacts on habitats, wilderness areas, areas of ground covered, size of continuous land areas, and qualitative information on future maintenance requirements. (p.218)

Fitzpatrick is similar:

...the efficient delivery of the national road programme in a manner that minimises adverse environmental effects and respects all applicable legislation. (p.D23)

Environmental Impact Statements...aim to better inform the route selection process and the identification of environmental mitigation measures. (p.D24)

Indecon:

The Programme [ESIOP] will be implemented through a four pronged strategic approach: effective implementation and enforcement of environmental legislation; integration of

environmental concerns in other policies; using a mixture of appropriate instruments in order to achieve the best efficiency and effectiveness possible; wide stakeholder involvement in the development and implementation of policies. (p.34)

And indeed, the various reports studied not only unwittingly highlighted the difficulties caused by this restricted agenda, but also displayed how such a limited viewpoint is relatively ineffective in suggesting radical re-appraisal and / or solutions:

Environmental effects are generally not well captured by the indicators...the indicators should relate to the major environmental challenges – water quality, climate change and so forth – listed in the introduction. (ESRI, p.217)

To date, attempts to incorporate workable environmental parameter values into a cost-Benefit Analysis have not been successful. (Fitzpatrick, p.D24)

In short, the environmental aspects of transport (roads) policy were seemingly secondary to the imperative of economic growth and development. Environmental effects were seen as a sidebar phenomenon to be managed and monitored rather than being central to the process, and ongoing traffic growth and concomitant increases in roadspace were taken as given.

#### *NDP Horizontal Principles and Eco-Audits*

The NDP did attempt to moderate the overruling economic objectives by introducing two concepts, firstly, “horizontal principles” and secondly, “eco-auditing”. The former were meant to underpin the broad aims of the NDP, with five identified as follows: environment, social inclusion (poverty), rural development, gender equality and general equality (disability, age, refugee and traveller status).

However, in the *Review of Relevance of NDP / CSF Horizontal Principles to OP Measures* it was found:

These reports [mid-term evaluations] highlighted considerable problems around the integration of the horizontal principles to the operational programmes. Among the main difficulties cited were the following:

- Lack of understanding of the overall goals of the principles and how they could be integrated into programme implementation.
- Poor quality and unclear ex-ante analysis of the relevance of the principles to measures in the programme complement documents.
- Absence of indicators or other data to capture progress in terms of the principles.
- Poor quality, formulaic reporting, often amounting to little more than a repetition of programme complement statements.
- A lack of guidance or support to implementing bodies.

Specifically in relation to the NDP roads programme, Fitzpatrick found that:

...we have identified no systematic consideration or research in relation to the impact of road investment under the NDP in terms of any of these considerations. It would also appear that the issue [social inclusion] is not a high priority in the context of poverty-proofing of the NDP, e.g. the Combat poverty Agency work on NDP poverty indicators does not include road investment. (p. D22)

Fitzpatrick concluded:

- no formal linkage is made between road investment and promotion of social inclusion in any of the NDP documentation and there is no explicit consideration of inclusion objectives in programme implementation;
- it is likely that the issue of road investment is not a high priority in terms of equality or poverty-proofing considerations, given its nature as a general investment in infrastructure rather than a targeted intervention. (p. D22)

The eco-auditing system fared better in relation to the roads area, with the ESRI reporting good compliance with the requirements laid down in the eco-auditing Guidelines (ESRI, p.215).

However, the ESRI had significant reservations about how the general eco-audit process itself was implemented:

A recurring observation by the OP managers was that the pilot eco-audit was constrained by the short time available to undertake the exercise, by the late stage at which it was introduced, and by the lack of resources, particularly of know-how.  
(p. 215)

On the issue of management overall, the attention paid in the OP Mid-term Evaluations themselves to assessing the environmental management and outcomes is patchy and understanding is occasionally poor.  
(p. 216)

The ESRI also stood in the same place as others in assuming that economic development was the overriding goal, and that this would have an inevitable impact on a manageable and pliable environment, which could be mitigated:

...in the case of Roads, the progress report gives good qualitative information on how the environmental damage of transport infrastructure can be reduced...effects can be mitigated by careful planning, design, implementation and maintenance of road schemes.  
(p. 217)

What very much comes across here is a “closing the stable door after the horse has bolted” approach. The ESRI effectively conceded this when it reported:

As for the likely environmental **impacts** of the programme, not unexpectedly given the data situation these are difficult to assess at present. Even in ideal circumstances difficulties would arise in reporting so soon because (a) as stated, environmental responses are often slow, (b) projects have only been in operation for two years, if that, and (c) the analysis of environmental data can often take time.  
(p. 216, ESRI bold)

A further report on eco-auditing of the NDP, *Evaluation of Eco-Auditing in the Context of the National Development plan 2000-2006* (Scott et al., 2003), had similar concerns. Though acknowledging that:

...in the case of Roads at the Implementing Body level, procedures were found to fully comply or go beyond the stated pilot eco-auditing process. (p.ii)

the inherently problematic nature of the eco-auditing process was again highlighted:

...it was noticeable that **eco-auditing was subject to various interpretations**.  
(p.i, Report authors' bold)

In the case of the Economic and Social Infrastructure OP the checklist as filled in should have triggered the actions listed in the guidelines, but these do not appear to have been undertaken. (p.ii)

At the level of Priorities and Ops, the quantitative criteria in terms of **indicators are frequently not available** or the sustainability criteria are insufficiently articulated (p.ii, Report authors' bold)

Active participation by external organisations, groups and individuals - which might have strengthened the eco-auditing process - was not provided for:

...the pilot eco-audit process lacked formal **requirements for NGO involvement**, although some consultation did occur. It also lacked provision for public participation and there was no evidence that any took place. (p.iii, Report authors' bold)

Scott et al. also recognised the inherent *post facto* nature of the process:

The term [eco-auditing] is a broad one, used to describe the essentially retrospective procedures for identifying and evaluating the environmental performance of any actions, whether at the level of policies, plans, projects or organisational activities. (p.i)

and made a number of recommendations, including the broadening out of eco-auditing into SEA:

The experience gained during the eco-audit should be capitalised upon and the momentum maintained by **initialising a full policy pilot SEA**. It is recommended that this should be conducted on the national transport policy, since this is an area for which there is likely to be appropriate baseline data. (p.iv, Report authors' bold)

The realisation of the significance of SEA for major infrastructure projects, as implied in the latter point above, was further strengthened in this recommendation:

A **unit should be established** in an appropriate government department or agency, or an existing team should be strengthened, and shall be given responsibility for co-ordinating SEA for all planning activities. (p.v, Report authors' bold)

Finally, the report addressed the serious lack of democratic participation by citizens in their own national development plans and projects:

**Measures for public involvement should be strengthened to provide appropriate participation at each stage of the planning and assessment hierarchy** (p.vi, Report authors' bold)

### *NDP and Rail / Coach Modes*

Though the roads programme was nothing less than expansive, there was no discussion of either coach or rail network expansion or extension in the NDP. This extract shows where the government's priorities in fact lay:

The Cabinet Committee is focussing initially on transport, notably the core inter-urban road network and the Dublin Transport Package

Rail and coach were to be funded purely on a "going concern" basis:

There will be a major investment in Public Transport outside Dublin comprising the following main elements:

- Implementation of the *Railway Safety Programme*
  - Significant investment in mainline rail *renewal*...
  - Regional bus *improvements*...[Not specified]
  - Bus Éireann *ongoing fleet replacement and re-equipment*...
- (Author's italics)

Rail had been given a hard time generally, going back before the NDP itself:

The rail system is not...a critical component of the overall public transport capability, and it is always important to weigh the attractiveness of rail investments against improvements to the capacity and performance of the bus system, which serves the wider market. (DKM, p.49)

Promotion of railfreight, or network extension, which might open up new markets for rail and significantly reduce harmful car and HGV dependency was never discussed; and, ignoring environmental, social and other considerations completely, DKM further asserted:

Rail is not competitive for shorter inter-urban trips, because total journey times, allowing for mode changes, will be shorter by car. (p. 82)

A lack of investment or poor services which might lead to low patronage was not considered:

...there is a group of routes which have shown static traffic volumes, or even decline...

Several lines are shown as carrying less than 100,000 passenger journeys per annum...barely enough to justify a bus route. (p.83)

In later reports – despite growing knowledge of climate change etc., it appears nothing had changed:

In terms of the future inter-city [rail] investment programme, there are important decisions to be made. (Indecon, p.138)

Investments in marginal and non-economic routes are hard to justify unless it is felt that loss-making railways are important to helping the development of under-developed parts of the country in line with the objective of balanced regional development....In all probability, the road network will be the main means of transport in areas of low population density. (Do., p.139)

...we feel that investment in the inter-city network should be considered in the context of the on-going investment in the road network. (Do.)

Ironically, the extent of this unconscious anti-rail bias becomes clear if the last quote were to be inverted, viz.:

“...we feel that investment in the road network should be considered in the context of the on-going investment in the rail network”

Similarly, the ESRI, though acknowledging the roads programme overspend, recommended that spending should be increased (ESRI, p.126), but advised against increases in national rail:

Rail safety and mainline track renewal: no further commitment without proper economic cost-benefit analysis (p.126)

This contradictory approach, when e.g. roads spending could be increased despite cost over-runs and lack of cost-benefit analysis (per Fitzpatrick *ibid.*) whereas rail could not, reveals much about how policy makers and advisors think about transportation. It is clear that (a) the road mode is to get special treatment over others, ignoring deep-rooted problems in roads planning and financing, and (b) modes are viewed in an adversarial way (road versus rail, rail versus bus, and so on). The reasons for this limited and ultimately unhelpful approach become clear when one realises that roads are intimately related to notions of economic growth, and not to actual transportation needs.

Finally, there was no integrated, nationally-based, multi-modal approach to creating a sustainable transportation system for the country, and thus the NDP represents a huge lost opportunity in this regard.

#### *Consequences – the NDP ESIOP Allocations*

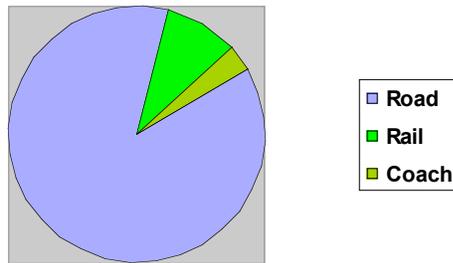
If roads were the only transport mode “at the races”, and more sustainable modes such as coach, rail passenger and in particular rail freight (hardly ever mentioned in the documentation) were seen as unimportant, evidence of such policy imbalance is seen in the eventual NDP ESIOP transportation allocations.

Figs 2 through 5 (following pages) graphically illustrate the disparity in NDP transport funding across modes. Importantly, the national rail and coach modes are broken down with the Dublin element of the plan “stripped out” to allow true comparison across *national* modes.

Thus, Fig. 2 shows how mainline rail *in toto* accounted for just over 9% of expenditure, and national coach (i.e. Bus Éireann) for just 3.5% approximately. The balance – just over 87% - was consumed by the NDP roads programme.

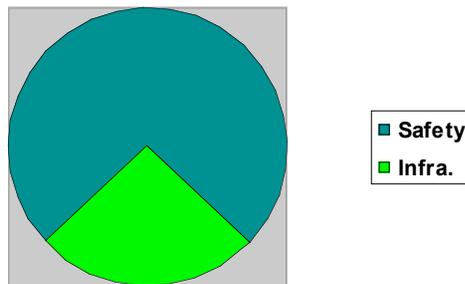
But even here, the figures are deceptive. For example, the mainline rail allocation was mostly a safety upgrade, with “actual” improvements at just 26% of the main allocation (Fig.3). Thus, the genuine expenditure in services represents just **2.37%** of the entire NDP transport allocation. Additionally, Fig 4 showed mid-term NDP spending was running at twice the rate for roads as for all other modes, and Fig. 5 shows how just over two-thirds of public transport spending was concentrated on Dublin in the overall NDP allocation – countering the common belief that substantial public transport investment is nationwide and equitable.

Allocation	€ Millions	% of Roads Priority	% of All
NDP National Roads	<b>6748.45</b>	-	87.34
NDP Mainline Rail*	<b>705.00</b>	10.45	9.12
NDP National Coach	<b>273.00</b>	4.05	3.54
	7726.45		



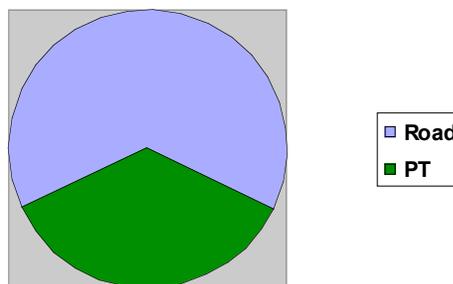
*Fig 1 – NDP National Transport (excluding DTI) - Allocation Table & Chart*

	€ Millions	% of Roads Priority	% of All
Safety	<b>520.00</b>	-	74
Infrastructure	<b>185.00</b>	2.74	26
Total	705.00		Ratio c. 3:1



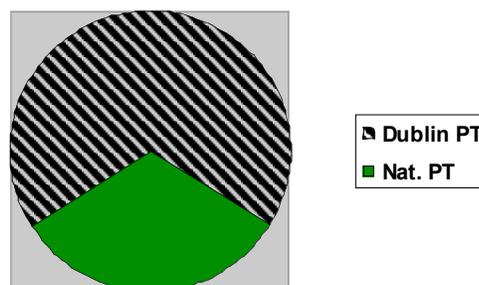
*Fig 2 – Breakdown of NDP Mainline Rail Allocation – Table & Chart*

Actual Mid-Term Spending	€ Millions 2000-2002	% of Total
NDP National Roads	<b>2615.1</b>	64
NDP All PT incl. DTI	<b>1470.1</b>	36
Total	4085.2	Ratio c. 2:1



*Fig 3 – ESRI Mid-Term Review of NDP - Spending Table & Chart*

	€ Millions	% of Total
Dublin PT	<b>2073.3</b>	68
National PT	<b>978.0</b>	32
Total	3051.3	Ratio c. 2:1



*Fig 4 – NDP Dublin v. National PT Spend – Table & Chart*

*Sustainability Contexts: Agenda 21*

Could one argue that the NDP was framed at a time when sustainability concepts had not been developed, and that policy-makers did not, and could not, have known any better? The answer is clearly no, if one examines worldwide policies on sustainable development and environmental responsibility in the years leading up to the NDP.

A primary starting point is the Agenda 21 framework for sustainable development adopted after the Earth Summit at Rio de Janeiro in 1992, and signed up to by 179 Heads of State and Government.

Agenda 21 is quite clear on transportation issues in Chapter 7:

7.48 Transport accounts for about 30 per cent of commercial energy consumption and for about 60 per cent of total global consumption of liquid petroleum. In developing countries, rapid motorization and insufficient investments in urban transport planning, traffic management and infrastructure, are creating increasing problems in terms of accidents and injury, health, noise, congestion and loss of productivity *similar to those occurring in many developed countries.*  
(Author's italics)

Section 7.52 recommends among others;

...all countries should:

(a) Integrate land-use and transportation planning *to encourage development patterns which reduce transport demand;*

(b) Adopt urban transport programmes *favouring high-occupancy public transport* in countries as appropriate;...

(Author's italics)

In Chapter 9 it is stated:

9.13 The transport sector has an essential and positive role to play in economic and social development, and transportation needs will undoubtedly increase. However, since the transport sector is also a source of atmospheric emissions, there is a need for a review of existing transport systems, and the more effective design and management of traffic and transport systems.

And, in Section 9.15 it is recommended amongst other things:

9.15 Governments...should:

a. Develop and promote, as appropriate, cost effective, *more efficient, less polluting and safer transport systems, particularly integrated rural and urban mass transit, as well as environmentally sound road networks*, taking into account the needs for sustainable social, economic and development priorities, particularly in developing countries;...

d. In accordance with national socio-economic development and environment priorities, evaluate and, as appropriate, promote cost effective policies or programmes, including administrative, social and economic measures, *in order to encourage use of transportation modes that minimize adverse impacts on the atmosphere;*...

(Author's italics)

Cont.../

*Sustainability Contexts: 1990 Intergovernmental Panel on Climate Change*

In 1990 the Intergovernmental Panel on Climate Change stated that global emission cuts of approximately 60% were needed if atmospheric concentrations of greenhouse gases were to be stabilized worldwide. Significantly, Ireland accepted at the time the European Community target of stabilising emissions at their 1988 level by the year 2000.

Consequently, one would have expected those planning major transportation projects would have taken on board the need to restrict fossil fuel use from this time onwards. Instead, exactly the reverse happened in Ireland.

*Sustainability Contexts: Policy Development prior to the NDP*

Given that there was a nine-year lead-in from the Intergovernmental Conference on Climate Change and an eight-year lead-in from the time of the Rio Summit, one would have thought that at least some cognisance would have been taken of their recommendations in formulating the transportation projects in the NDP.

Regrettably however, all the evidence is that no meaningful account at all was taken of the need for emissions curtailment or environmental sustainability in various reports for government carried out prior to the NDP commencement.

Perhaps the greatest flaw is that many of these were carried out purely from an economic standpoint. The DKM report, referred to previously, took an oddly contradictory approach, advocating road investment over rail on the belief that the latter was largely uneconomic (*ibid.*) while at the same time proposing rail use as a way of absorbing future traffic growth:

The second [demand management strategy] is to minimise the road space requirement implied by a given level of demand, through diverting traffic onto bus, rail and air modes. (p.9)

DKM's concern at the time seems to in fact relate more to the enormous potential costs of providing such additional road space, rather than any environmental awareness:

...a trebling of expenditure is not financially realistic and might not even be logistically attainable for the years from 2000, even if finance were not a constraint. (p.8)

The ESRI had input via their *National Investment Priorities For The Period 2000-2006*. This repeats the same limited approach used by DKM, and went further in recommending that investment in mainline rail for example, be actually *reduced* (Table 4.9, p.156).

Later, the report even recommended line closures:

On the basis of information available to date it would seem that the likely rate of return does not warrant investing in those other lines which have not benefited from investment under the current plan. The corollary is that they should be closed when they reach the end of their natural lives [sic.] (p.161)

As with DKM, the ESRI showed no understanding of the economic benefits stemming from the environmentally-friendly nature of rail and coach transport. The same low patronage and usage arguments, referred to earlier, were also employed by the ESRI:

...the External Evaluator's team drew attention to the very low volumes of freight and passenger traffic on many of these lines, and to the heavy capital costs envisaged, relative to traffic or revenue. (p.161)

No cognisance was taken of any current or future policy initiatives which might actively encourage modal shift away from the roads and onto rail and coach, and indeed the latter mode merited only a very short, rather vague paragraph in the ESRI's report:

In the case of the rural system, consideration should be given to developments which serve to strengthen the "development nodes" suggested in Section 3.4, by improving access to them from the surrounding rural areas. (p.161)

The ESRI also took no account of the serious environmental effects of road-building in their investment recommendations, nor of phenomena such as induced traffic, placing their thinking firmly within the discredited "predict and provide" paradigm:

...unrelenting traffic growth [sic], the size of the inherited backlog and programme slippage, have combined to create a situation where the main inter-urban road network still contains numerous inadequate sections, and many rural towns need to be bypassed. Rapid unabated traffic growth [sic] has created a situation where many sections now cater for traffic volumes which exceed the capacity of an undivided two-lane road, or will do so shortly. (p.157 / 158)

This makes subsequent references to the Kyoto protocol, road pricing and demand management in later sections (p.162 / 163) ring rather hollow.

Environmental issues of transportation infrastructure provision appeared to be explicitly dealt with prior to the NDP in the *Study of the Environmental Implications of Irish Transport Growth and Related Sustainable Policies and Measures* (Oscar Faber et al., 1997). However this turned out to be far less thorough than it would first appear, and with a disturbing willingness to simply accept the status quo:

In the future the passenger travel market will continue to be dominated by private car travel...(Chapter 8)

Traffic would keep "growing" uncontrollably:

Overall road traffic is expected to grow by 91% over the 14 year period 1996 to 2010 (Chapter 6)

Within the passive acceptance of this paradigm there is no mention of modal shift or any policies to actively bring this about. Instead, recourse is made to the belief that the nation can "buy its way out of" transport-related environmental problems:

...significant benefit could be achieved by targeting environmental costs using the 'polluter pays' principle (Chapter 8)

Recommendations were made for road pricing, reform of vehicle taxation, taxation of car parking spaces and reform of fuel subsidies and rebates, but this was a one-sided, rather limited approach. Tellingly, expansion of the rail mode was not discussed, and was described only in terms of its weak market share compared to road. Referring to a modal allocation chart, the report stated:

The dominance of the road mode, for domestic passenger transport, is illustrated below...

It can be seen that road transport accounts for 97% of domestic (excluding international) travel (Chapter 3)

However, the same chart showed bus / coach and rail modes together accounting for 17% of journeys. Insofar as the road mode was said to be “dominant”, it could equally have been stated that public transport modes were, for example, “under-utilised”.

Again, the flawed and frankly biased nature of these reports is a cause of considerable concern in this process.

#### *Other Policy Influences Prior to the NDP – The Role of Forfás*

Account must also be taken of other inputs into the formulation of the NDP. Given that transportation is a very broad area, it is impossible to review absolutely every policy document and paper that may have been produced by a multitude of organisations, companies and groups prior to the publication of the NDP. However, some general industrial development information from the period has proven useful, in particular a number of reports produced by Forfás:

A minimum fifteen year period should be used in planning infrastructural investment, operated on a rolling basis of five years reviews. The long term investment requirements for attaining best international practice in infrastructural facilities should be identified by the responsible Government Departments. *Private sector involvement in the financing of transportation infrastructure should be encouraged through more extensive use of toll facilities* and joint ventures with public sector agencies  
(World Class Logistics to Serve the World, 1996, author’s italics)

Air Freight: Air freight will grow in importance due to the speed advantages it offers. An assessment of the potential for developing a wider range of air freight services than exist at present to key Continental European Markets should be an immediate priority;

Sea Ports: A long-term ports development policy should be developed and implemented in consultation with port users. The new Northern access route to Dublin port should be completed on schedule and new port management systems should be implemented. The application of state-of-the-art information technology in all Irish ports should be promoted. In the longer term, increases in port traffic to Dublin and Dun Laoghaire may result in costly congestion and delays for Irish business. Accordingly, the development of a new East coast Ro-Ro port terminal, dedicated to freight, should be considered;  
("Shaping our Future" A Strategy for Enterprise in Ireland in the 21st Century, '96)

At this point, there were the first hints of the PPP procurement method (*ibid.*) and the emphasis was primarily on air and sea transport.

But by 1999, the situation had changed appreciably. A consultation with regional business seems to have had a striking outcome:

The availability of infrastructure has an important bearing on enterprise location. Regions and centres that do not possess an adequate volume and quality of supporting infrastructure such as *roads*, telecommunications, electricity, water and housing will inevitably experience a slow expansion of their enterprise base. *In recognition of this, in 1999 Forfás conducted an examination of the infrastructure priorities for enterprise development in the regions. This has involved extensive consultations with the development agencies and business representatives in the regions to identify the key infrastructure deficiencies. Access infrastructures such as roads and telecommunications*

*that impact on the exchange of goods, services and information emerged as the major priorities for regional businesses.* In response to these concerns, Forfás made a number of recommendations for *investment in roads and broadband telecommunications that have been adopted by Government in the new National Development Plan (NDP) 2000-2006.* (Forfás Annual Report, 1999, author's italics)

A more detailed analysis of Forfás' "examination of the infrastructure priorities for enterprise development in the regions" is appropriate here. The relevant document, published by Forfás' Enterprise and Trade Policy Division in April 1999, and obtained by the research team, is entitled *Infrastructure Priorities for Enterprise Development in the Regions*.

Significantly, the report was overwhelmingly concerned with road infrastructure provision as a perceived driver of economic growth, rather than with such provision forming part of a balanced, integrated and sustainable transportation system. Consistent reference was made to "roads and other infrastructures", or "roads and transport systems" (pp. 1, 5, 8), revealing this significant disconnect, which has been identified earlier in this discussion.

Notably, Forfás also quoted studies that showed how *infrastructure* provision benefited economic growth (which in itself is never questioned), but made this specifically mean roads in their report. No explanation was given for this very narrow interpretation of the meaning of the term infrastructure, outside of these statements:

...participants in the regional consultations have argued that their overriding investment priority is the national road network (p.3)

...these businesses wanted the government to prioritise the next round of EU funding (2000-2006) toward investment in roads *and transportation* (p.8, author's italics)

...the respondents have argued that their overriding investment priority is roads...there is an urgent need for expanded investment in road infrastructures (p.11)

Curiously, the middle quote above seems to indicate that businesses surveyed had at least some inkling of other transport modes beyond roads. But this was focussed even tighter by Forfás in the next extract – "*The respondents have argued that their overriding investment priority is roads*".

But even allowing for this, the contention that road-building benefits the economy is eminently debateable. For instance, the UK-based Standing Advisory Committee on Trunk Road Assessment (SACTRA) published a report in the same year entitled *Transport and the Economy* – which showed how the external costs of road transport had an economic impact which was not being quantified.

Also in the Forfás report, there was no discussion whatsoever of railfreight or national coach services, and where passenger rail was mentioned at all, it was done so only in the context of expanded commuter rail links into Dublin and some modest improvements in existing Dublin-centred mainline rail services. Indeed the total lack of appreciation of the potential of rail was reflected in one of the report appendices, where desired investment was broken down by region. In both the Border and Mid-West areas, rail was dismissed as "Not a priority" (pp. 27 & 29), and the rail mode even suffered the ignominy of being included in columns of "Estimated NRA costs" – entries for which were marked "N/A"!

Forfás also employed the self-justification argument for road-building –

Roads are the dominant mode of transport for eighty-nine percent of the country's freight traffic [sic] and ninety-six percent of its passenger traffic (p.3)

- which would later find its way into the NDP, as highlighted earlier.

Regrettably, this incredibly myopic view of transportation infrastructure – with zero consideration of the environmental effects and costs of pursuing an entirely roads-based policy – appears to have had an undue influence on the subsequent formulation of the NDP:

In response to these concerns, Forfás made a number of recommendations for *investment in roads and broadband telecommunications that have been adopted by Government in the new National Development Plan (NDP) 2000-2006.* (Forfás Annual Report, 1999, author's italics)

And the emphasis on road-building continued throughout 1999:

Road density in Ireland is somewhat below that of the EU average. Ireland has 1.3km of road for every 1km<sup>2</sup> of land area, compared to 1.6km for every 1km<sup>2</sup> in the EU. In terms of total roads Ireland lags substantially behind other EU member states at just 88 per cent of the EU average. The contribution of the road network to overall competitiveness is obviously determined by its quality rather than by the quantity of roads. In Ireland primary roads constitute only 3 per cent of the total road network with motorways making up only 0.1 per cent of Ireland's total road network. This is just 5 per cent of the EU average level, the lowest ranking in the EU. As can be seen from Figure 5.2 below, expressed per 1000 of the population Ireland's ranking in terms of the stock of roads of motorway quality is, apart from Greece, the worst in the EU. (Forfás Annual Competitiveness Report 1999)

As illustrated in Figure 5.2 the quality of the Irish road infrastructure is, unsurprisingly, perceived to be relatively low by users, again one of the lowest rankings in the EU. This finding is confirmed by the results of an IBEC Survey carried out to assess the views of Irish enterprises regarding the condition of road infrastructure. *A survey of Irish enterprise commissioned by the Competitiveness Council carried out late last year (which is summarised in Annex 1 of this Report) found that over half of Irish businesses identified the quality of existing roads and transport costs as having a negative effect on their activities. In this survey 43 per cent of business felt that the roads and transport area should be a priority under the next round of structural funds.* The next highest suggested priority, education and training was lagging 19 percentage points behind at 22 per cent (Do., Author's italics)

Pressure on Ireland's road infrastructure is likely to intensify. DKM Economic Consultants have projected annual average growth in car numbers of 5 per cent until 2011, higher than that the 4 per cent per annum forecast made by National Roads Authority. These projections appear reasonable in the context of trend growth rate estimates for the Irish economy in the region of 4-5 per cent on a GNP basis over that period. Hence, the volume of cars on Irish roads could have more than doubled relative to the 1996 level by the end of the next decade (Do.)

Forfás finally “woke up” to rail in 2000, but by then too late for the NDP:

Rail infrastructure remains at the bottom of the EU countries. Associated with this, the number of rail vehicles for passengers and goods is over eleven times lower than the best

performing country, Luxembourg and three times lower than the EU average. This indicator is composed of a combination of rail indicators including the scale of the electrified rail network and the length and density of the rail network.

While rail usage for goods transportation is under 9 per cent of total goods transportation, Ireland's haulage is four times lower than the EU average and only six per cent of the best performing country.

(Forfás Annual Competitiveness Report 2000)

What was notable over the period 1996 -1999 was the lack of a defined viewpoint on what kind of transportation system we should have, and notably, no cognisance or understanding of the need for sustainability. There was also a simplistic implication that Ireland must have motorways, not because of any engineering requirement, but because businesses wanted them, and our motorway length was “low” compared to the rest of the EU – a comparator that is not scientific in nature. Also, it is very clear that regional businesses were simply not aware of more sustainable transportation modes such as rail, and saw their transportation needs purely in terms of roads.

Finally, it appears that inputs into the NDP from groups and bodies concerned with the environment or with general sustainability were not given serious consideration; certainly there is no evidence of this in the documentation.

*Was the NDP Sustainable in relation to Transportation?*

Using the matrix-based approach, evaluating the policy research and taking cognisance of the Four Capitals, the answer in broad terms must be no. In adopting an overwhelmingly roads-based strategy the government flew in the face of commitments on emissions reduction and sustainable development strategies outlined on the international stage seven years before the formulation of the plan. The NDP roads programme was acknowledged in several policy documents as leading to growth in emissions, not reduction, and this was seen as a phenomenon related to (positively-viewed) economic growth, and as a side-effect to be managed and mitigated, rather than as a serious problem which required significant curtailment. Policy actually increased Ireland’s exposure to oil and other fuel dependency, as well as exposure to the later Kyoto Protocol penalties, and was not focussed on social objectives (physically evidenced by the lack of public transport investment). Policy further increased car dependency, excluding non-car using sections of the population, and exposed people to a greater risk of health problems (car-induced obesity, respiratory illnesses, less social contact through severance, etc.). The matrix below, based on the evidence throughout these reports, shows short-term economic gains at the expense of short-, medium – and long-term ecological and social sustainability, and of medium- and long-term economic sustainability:

Time frame	Economic sustainability	Ecological sustainability	Social sustainability
Short-term (less than five years)	YES	NO	NO
Medium-term (5-15 years)	NO	NO	NO
Long-term (15-100 years)	NO	NO	NO

*Short-Term Economic Sustainability*

*Positive: Shorter journey times*

*Medium-Term Economic Sustainability*

*Negative: Congestion, fuel and pollution costs*

*Long-Term Economic Sustainability*

*Negative: Congestion, fuel and pollution costs*

*Short-Term Ecological Sustainability*

*Negative: Environmental damage*

*Medium-Term Ecological Sustainability*

*Negative: Environmental damage*

*Long-Term Ecological Sustainability*

*Negative: Environmental damage*

*Short-Term Social Sustainability*

*Negative: Inequality, health problems, severance*

*Medium-Term Social Sustainability*

*Negative: Inequality, health problems, severance*

*Long-Term Social Sustainability*

*Negative: Inequality, health problems, severance*

And, had the Four Capitals approach been known of and applied, Social, Human, Physical and Natural Capitals would each have shown depletions, and such a clear and broad-ranging analytical framework would have signalled a great deal of the problems described in this report well in advance.

## Conclusions

This Report has shown:

- 1) The NDP was essentially a business-led economic plan, with no balancing public input, and should be more correctly entitled the National Economic Development Plan, or NEDP. Its evaluation also took place mainly from an economic standpoint;
- 2) The NDP showed no understanding of, nor took any cognisance of, the concept of sustainable development, instead proffering the notion of *sustained economic growth*;
- 3) The NDP used a pseudo-analysis of its own sustainability, employing post-applicable concepts such as Horizontal Principles and Eco-Auditing, which proved largely ineffective, and which were poorly implemented in any case;
- 4) With an overwhelming concentration on short-term economic growth above all other criteria, the NDP transport plan failed in all but one category of the sustainability matrix;
- 5) The NDP unfairly and inequitably focussed on road-building to the great detriment of public transport development and the more sustainable modes of rail and coach, based on an unscientific and challengeable belief that roads were essential to economic growth. Not only is the nature of such growth questionable, but such an approach effectively removed roads from any meaningful environmental appraisal;
- 6) The NDP ESIOP roads programme firmly followed an unsustainable and discredited “predict and provide” approach, wherein traffic inflation was passively accommodated rather than actively tackled;
- 7) The high level of specification of many NDP ESIOP road schemes was questioned in several external evaluation reports studied.

## Recommendations

- 1) Sustainability must be placed at the heart of, and deeply embedded in, the next National Development Plan and subsequent plans. This means putting the next NDP through the Strategic Environmental Assessment (SEA) process, with full and meaningful public participation and input at all levels;
- 2) Such an approach must be accompanied by a genuine commitment to developing a sustainable transport system using rail and coach modes as part of a balanced, holistic and integrated approach to land transportation;
- 3) The existing NDP projects currently underway should be reviewed immediately in terms of sustainability and modified as necessary, e.g. a scaling down of the roads programme in favour of rail and coach network extension;
- 4) The relationship between the economy and our environment must be re-inverted so that the economy and human activity is seen to operate *within* our environment, and not be superior to it;
- 5) This new relationship must be reflected in organisational structures as well as policies, e.g. the EPA have its title changed to Environment Agency, etc., removing the implicit notion of threat or attack inherent in the expression “environmental protection”.

Appendix – (Informative)

Note: the following charts show how the dramatic rises in car and road haulage in the period 1994 – 2004 approx. were not restrained in any way, by for example a policy of switching to other modes. Transport spending passively followed this growth by providing infrastructure to accommodate it (“predict and provide”).

Most noticeable are the relatively modest rise in coach use and the dramatic decline of railfreight, soaring CO<sup>2</sup> emissions levels, and significant rises in passenger rail use in spite of a static network, demonstrating significant latent demand for more sustainable transportation modes.

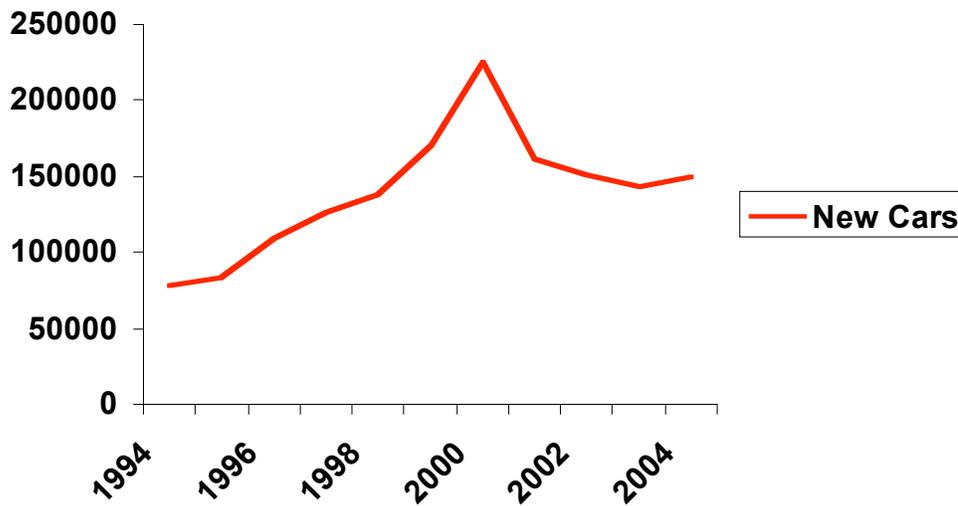


Chart 1 – New car sales per annum, 1994 -2004 (Source: CSO)

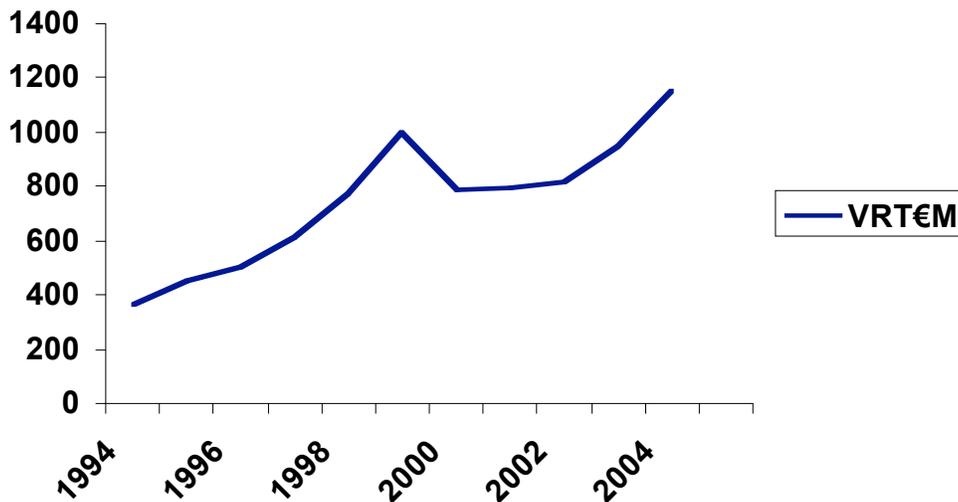


Chart 2 – VRT revenues 1994 – 2004 (Source: Dept. of Finance)



Chart 3 – Dept. of Transport funding allocations 2002 – 2006 (Source: Dept. of Finance)

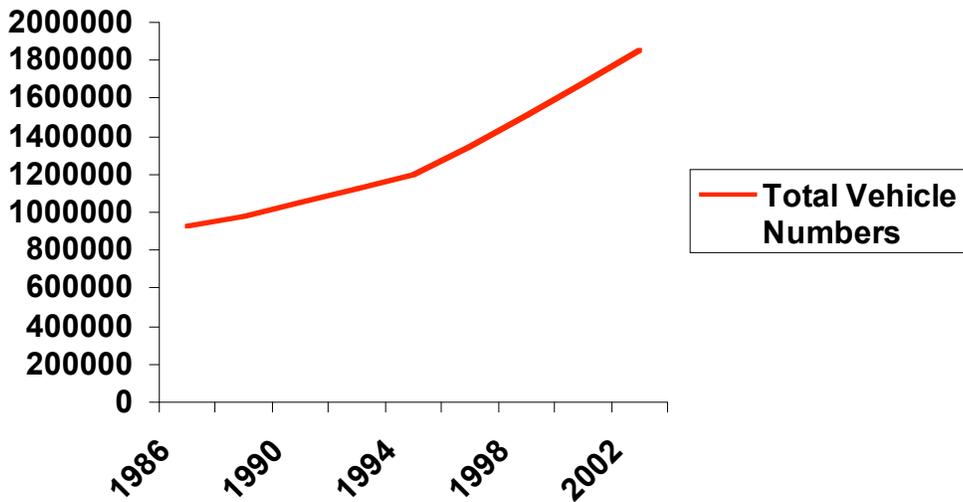


Chart 4 – Total vehicle numbers in Ireland, 1986 – 2002 (Source: CSO)

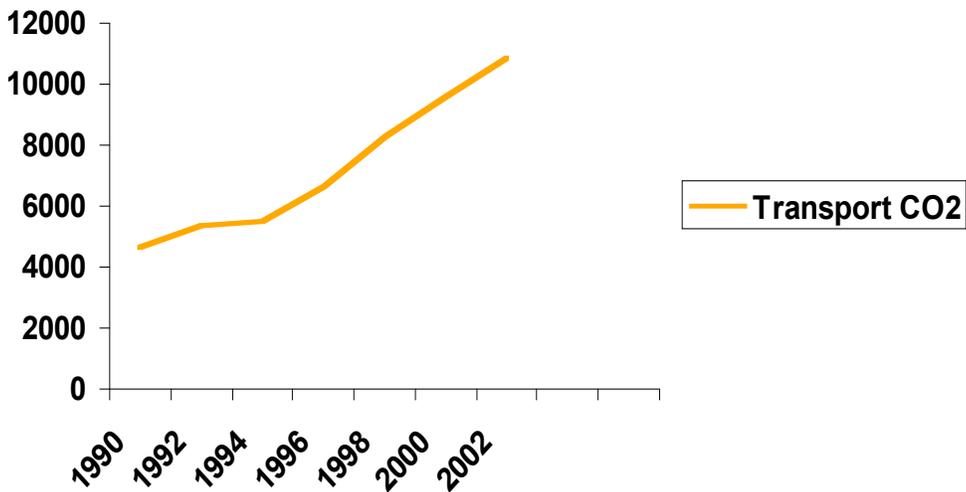


Chart 5 – CO<sup>2</sup> emissions from transport, 1990 – 2002 (Source: CSO)

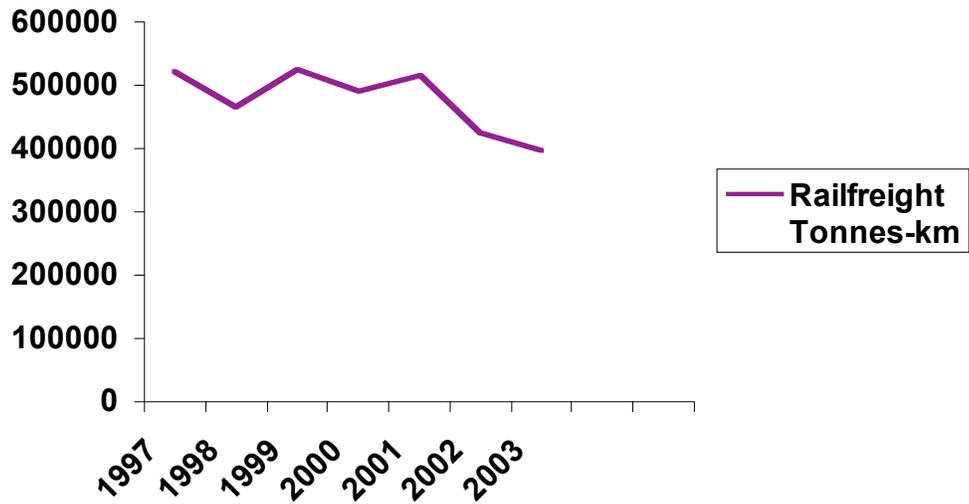


Chart 6 – Ireland railfreight volumes in tones/km, 1997 – 2003 (Source: CSO)

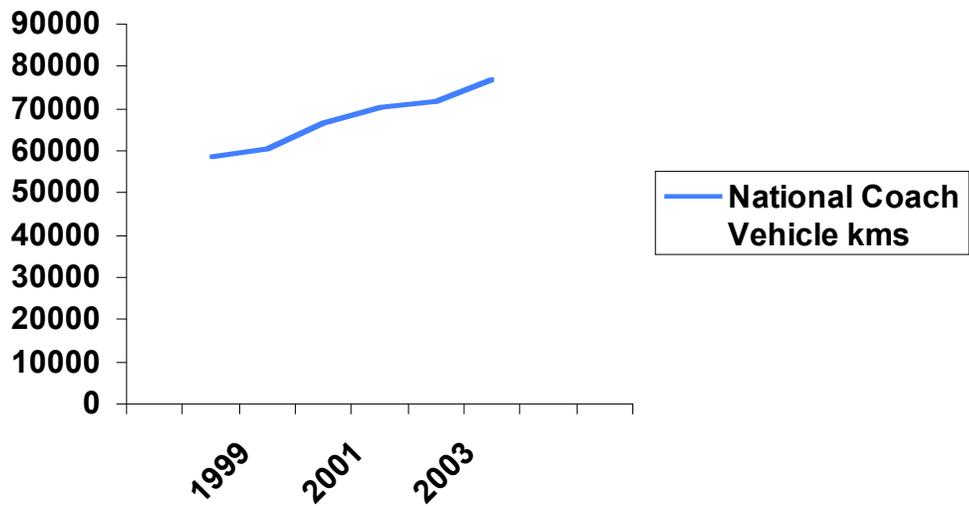
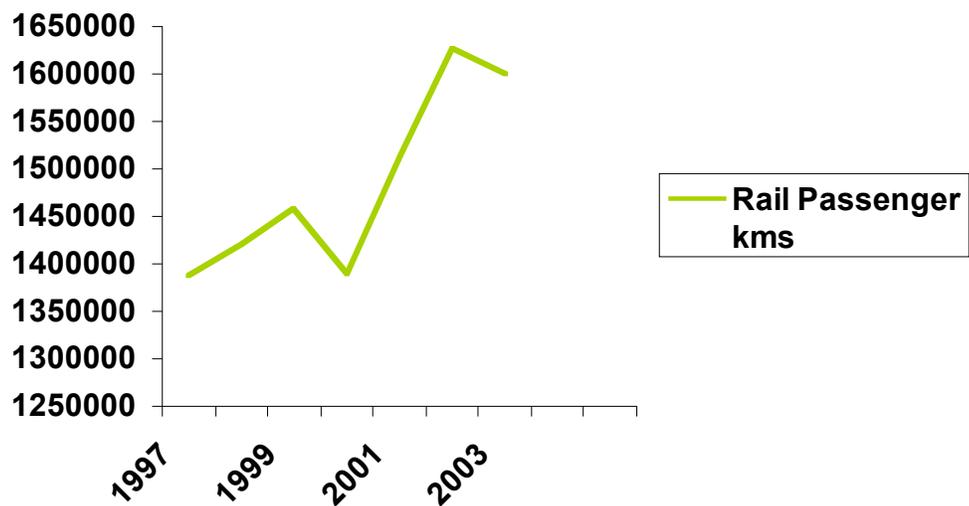


Chart 7 – National coach usage in vehicle kms, 1999 – 2003 (Source: CSO)



Ireland rail passenger usage in passenger kms, 1997 – 2003 (Source: CSO)