

## **Sub-national Sustainable Development Indicators**

### **A Briefing Paper**

**Prepared for**



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# Sub-national Sustainable Development Indicators

## A Briefing Paper

### 1.0 Introduction

The development of Sustainable Development Indicators (SDIs) in Ireland is driven by policy. The *Policy Agreement for a Government of Renewal* (published in December 1994)<sup>1</sup> was Ireland's earliest policy initiative in the sphere of SDIs. It states the Government's commitment to working towards a new set of indicators of sustainable economic development, taking account of environmental and social factors, and to be used alongside existing measures of economic activity such as GDP.

As a response, Ireland published its first National Sustainable Development Strategy (NSDS) in 1997<sup>2</sup> (revised in 2002)<sup>3</sup>. The Strategy included the remit to devise suitable indicators that in the long term, are intended to qualify, from a sustainable development perspective, the standard information of traditional National Accounts. Following the adoption by the European Union of a revised EU Sustainable Development Strategy (EU SDS) in June 2006, Ireland is currently preparing a revised NSDS for publication in 2009. Ireland fully embraces the policy guiding principles set out in the EU SDS.

Comhar Sustainable Development Council (SDC), established by the Minister for the Environment, Heritage and Local Government in 1999 is the forum for national consultation and dialogue on all issues surrounding Ireland's pursuit of sustainable development. It plays an important part in the development and implementation of policy in this regard. Comhar SDC has commissioned research on sustainable development indicators aimed at informing forthcoming recommendations to Government on the review of the NSDS<sup>4</sup>. Comhar SDC published Principles for Sustainable Development in 2002<sup>5</sup>.

### 1.1 Aim of the briefing paper

This paper, prepared for Comhar SDC by the Centre for Sustainability, Institute of Technology, Sligo, aims to advance the methodological understanding of the way in which sub-national SDIs are being developed and used in Ireland and the EU and the extent to which they complement sustainable development (SD) actions at the sub-national level. The overall aim of the paper is to examine sub-national SDIs in Ireland and make recommendations regarding a potential set of such indicators. Specifically, the paper will provide an overview of "Best Practice" sub-national SDIs within both Ireland and Europe (including in relation to EU funded territorial programmes), make recommendations on a sub-national set of SDIs including selection criteria and the merits of both a bottom-up as well as a top-down approach in their development.

The briefing paper was written and presented within the context of Comhar SDC annual conference held on November 11<sup>th</sup> and 12<sup>th</sup> 2008 (in the Radisson Hotel Dublin) with

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<sup>1</sup> Stationery Office (1994) *Policy Agreement for a Government of Renewal*

<sup>2</sup> DOEHLG (1997) Sustainable Development - A Strategy for Ireland

<http://www.environ.ie/en/Environment/SustainableDevelopment/PublicationsDocuments/FileDownload,1825,en.pdf>

<sup>3</sup> DOEHLG (2002) Making Ireland's Development Sustainable: Review, Assessment and Future Action

<http://www.environ.ie/en/Environment/SustainableDevelopment/PublicationsDocuments/FileDownload,1839,en.pdf>

<sup>4</sup> Available at: [http://www.comhar-nsdp.ie/ComharDocs/Enviro\\_Counting\\_What\\_Counts\\_final.pdf](http://www.comhar-nsdp.ie/ComharDocs/Enviro_Counting_What_Counts_final.pdf)

<sup>5</sup> Available at: <http://www.comhar-nsdp.ie/COMHARDocs/Sustain.pdf>

the theme “Implementing Sustainable Development: Empowering Local Communities”. The paper was presented under the sub-theme of local and regional indicators for sustainable development.

## 1.2 Definition of sustainable development

The publication in 1987 of *Our Common Future*, by the World Commission on Environment and Development (WCED)<sup>6</sup> formally drew worldwide attention to the (un)sustainable nature of human development and its effect on the Earth’s resources. The Commission defines sustainable development as a process of change in which exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations; sustainable development meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

For the purpose of this paper, sustainable development will be defined as development or practices that provide, for this and future generations, equal consideration and accommodation for social, environmental and economic satisfaction within the carrying capacity of available natural stocks.

Sustainable development recognises that everyone has a role to play in protecting themselves and the environment.

## 1.3 Definition of indicators of sustainable development

'An indicator is a parameter, or a value derived from a set of parameters, that points to, provides information about and/or describes the state of a phenomenon. It has a significance beyond that directly associated with the parameter value.'<sup>7</sup>

Indicators are aggregates of raw and processed data which helps us to quantify and simplify phenomena and understand complex realities. They are a tool for operationalising sustainability and offer a number of different advantages in the SD sphere:

- Achievement of more effective public and private policy making;
- Measurement of progress towards stated SD policy goals;
- Sounding the alarm in time to prevent economic, social or environmental damage; and
- Stimulation of debate, communication, engagement and focusing attention on SD.

Whether an indicator is useful or not depends very much on context. For example, the rate of desertification is an important measure for many countries in Africa but is of limited importance in Europe. A careful selection process is needed to determine what is a relevant indicator in a given context—whether it is a region, an institution or a sector of the economy. During this process, indicators are selected based on context-specific conditions and general selection criteria.

Indicators for SD are usually of three major classes: environmental, social and economic. Some organizations (including the EU) add institutional indicators as a separate class.

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<sup>6</sup> WCED (1987) *Our Common Future*. UK: Oxford University Press

<sup>7</sup> Source: Lowell Flanders, Assistant Director (UN Division for SD) at the conference *Sustainable Development of Coastal Zones and Instruments for its Evaluation*, Germany, 23-26 Oct. 2000.

## 1.4 Sustainable development indicators' frameworks

Putting indicators in an appropriate context or framework can increase their usefulness. A conceptual indicator framework provides a convenient way to organise indicators in relation to system components and ensure they correspond to different purposes within the system. A well-defined conceptual indicator framework is essential for describing the process relationships between the origin and consequences of environmental problems and benefits.

In addition to the three major classes of indicators: environmental, social and economic classes, some indicator sets are further categorised based on whether the factor being indicated is a driving force of environmental change, is a pressure on the natural environment, is indicative of the state or condition of the environment, is an impact on population, economy and ecosystems, and whether it measures the extent of social responses to pressures and changing conditions. The essence of the driving force-pressure-state-impact-response (DPSIR) framework<sup>8</sup> is that it may help establish a causal linkage between factors of pressure, stress and response, linkages that could be ignored in narrow sectoral analyses.

In its original form, the DPSIR model is a general framework for organising information about the state of the environment (Figure 1).

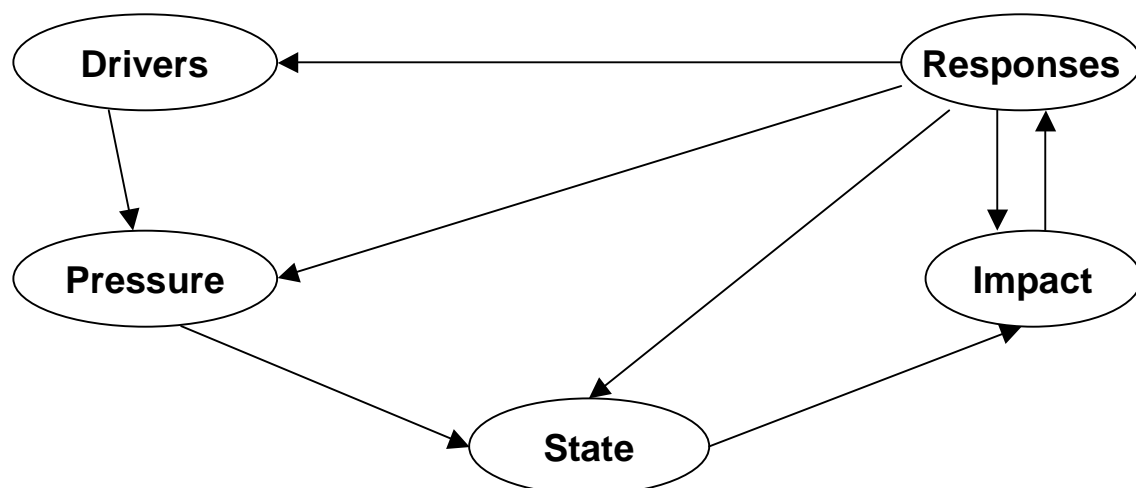


Figure 1: The DPSIR framework model

The idea of the framework was however originally derived from social studies and only later applied internationally, for organising systems of indicators in the context of environment and, later, sustainable development. The framework assumes cause-effect relationships between interacting components of social, economic, and environmental systems, which are:

- **D**riving forces of environmental change (e.g. industrial production)
- **P**ressures on the environment (e.g. discharges of waste water)
- **S**tate of the environment (e.g. water quality in rivers and lakes)
- **I**mpacts on population, economy, ecosystems (e.g. water unsuitable for drinking)

<sup>8</sup> Available at: <http://www.ceroi.net/reports/arendal/dpsir.htm>

- Response of the society (e.g. pollution controls)

Variations of the DPSIR framework include *inter alia* PSR (e.g. OECD 1994)<sup>9</sup> and DSR (e.g. UNCSO 1996)<sup>10</sup>.

Given the virtually unlimited number of potential indicators, a well-defined conceptual indicator framework should have a coherent, solid methodological and scientific basis for indicator selection. Conceptual frameworks help anchor indicator systems in theory (notably to operational concepts of sustainability); provide an organising structure; help identify useful indicators and data gaps; ensure indicator comparability; and help communicate with the public and decision-makers. The variety of frameworks, however, appears to signal that there is conceptual uncertainty or at least ambiguity with regard to the specific elements of sustainability, the inter-linkages among these elements, and their connections with indicators and indices. It also signals that different frameworks appear to resonate with different regions, organisations, cultures and political purposes.

### 1.5 Scope of the briefing paper

This paper examines sub-national sustainable development indicators in Ireland and makes recommendations regarding a potential set of such indicators. In particular, the paper reviews recent research outcomes to:

- Make an assessment of “Best Practice” sub-national sustainable development indicators in use in Ireland at present.
- Provide an overview of “Best Practice” sub-national sustainable development indicators in Europe (including in relation to EU funded territorial programmes).
- Identify potential research gaps in the Irish literature.
- Identify what actions are necessary so that a sub-national SDI set can be developed to facilitate the implementation of the forthcoming Sustainable Development Strategy.
- Make recommendations on a sub-national set of sustainable development indicators having regard to:
  - The need for both simplicity and feasibility in their formulation;
  - The potential usefulness of any given sustainable development indicator once formulated;
  - The robustness and associated with any given sustainable development indicator;
  - The regional SDI development process and whether it can guarantee the full participation and engagement of all actors concerned and in doing so create a sense of ownership; and
  - How sub-national sustainable development indicators can follow both a bottom-up as well as a top-down approach in their development.

### 1.6 Methodology

The briefing paper has been compiled on the basis of an extensive literature review of documents produced by Governments and other stakeholders across Ireland and the EU. Relevant publications were studied including web-based resources.

The briefing paper involves an assessment of the issues associated with the development of appropriate sub-national sustainability indicators based on public/stakeholder visions, values and concerns; availability of data, and international best practice. This was

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<sup>9</sup> OECD (Organization for Economic Cooperation and Development) (1994) *Environmental Indicators: A Core Set*. Paris: OECD

<sup>10</sup>UNCSO (United Nation Commission on Sustainable Development) (1996) *Indicators of Sustainable Development Framework and Methodologies*. New York: United Nations

conducted using consultants' reports, books, academic journals, leaflets, articles in the popular press, unpublished manuscripts, statistics and archives that are of relevance to the research topic. Database searches on the World Wide Web (internet) were carried out using the keywords such as sustainable development, sustainable development indicators, regional/local indicators, and sub-national indicators.

Telephone and face-to-face consultations where possible, were carried out to deepen the level of analysis. Report-based resources as far as possible constitute the factual basis for this report. Emails were sent to all Local Agenda 21 Officers in the Local Authorities across Ireland in an attempt to obtain more up-to-date information on any sub-national SDI initiative they may have commenced.

## **2.0 Assessment of “Best Practice” sub-national sustainable development indicators in use in Ireland at present**

Universally, sustainable development has become a dynamic concept, reflecting changing circumstances, pressures and opportunities. The only way to accurately measure progress towards sustainable development at local/regional level is to have a fairly stable set of sub-national SDIs which can be measured against a baseline. The following paragraphs elucidate the extent to which Ireland has embraced this concept at sub-national level.

### **2.1 Sub-national administration in Ireland**

Sub-national administration in Ireland can be divided into (a) local government bodies, which approximate to the general definition of "sub-national government" and (b) other regional/local or regionally based bodies, usually with sector-specific executive roles. Some national institutions also have sub-national elements.

There is, strictly speaking, only one level of directly elected local government but local authorities can be categorised as City/County, made up of five county boroughs (cities) and 29 counties, and sub-county. The term “sub-county” is, strictly speaking, a slight misnomer. These are town authorities which generally operate independently of the county council (although with more limited functions). The relationship is not hierarchical, but mainly geographic in nature. While the State is fully divided into counties, there is not a comprehensive sub-county network, town authorities being “isolated” units within counties. “Sub-county” comprises five boroughs, 49 urban districts and 26 other towns.

The National Development Plan 2000-2006 (Government of Ireland, 2000) introduces “sustainability proofing for regional development plans”. The regional level of governance was established in 1994 with the creation of eight Regional Authorities, followed by two Regional Assemblies in 1999. These authorities have responsibility for sustainable development strategy at a regional level and for the coordination of Local Agenda 21 amongst their constituent councils.

In practice, regional administration in Ireland needs further definition. There are, for example, ten waste management regions in Ireland, the Environmental Protection Agency (EPA) have seven groundwater resource regions for monitoring purposes, while the Department of Education and Science have four regional inspectorates. This scenario means that in gathering regional data for SDIs, adequate care must be taken in interpreting what type of regional arrangement is being referred to.

### **2.2 Sub-national sustainable development and Local Agenda 21 in Ireland**

Local Agenda 21 (LA21) was launched at the UN Conference on Environment and Development (UNCED, or Earth Summit) at Rio in 1992 and refers to Chapter 28 of

Agenda 21, the action plan for sustainable development adopted at the conference, agreed by over 150 countries<sup>11</sup>. Sustainable Development: *A Strategy for Ireland*, published in April 1997<sup>12</sup>, provides for local authorities to complete Local Agenda 21 Plans for their areas. Each county council and county borough has a designated Local Agenda 21 Officer, and these are networked at regional and national levels. The operation of the national network, established in 1998, is facilitated by the partnership arrangement of the Department of Environment, Heritage and Local Government and the Institute of Public Administration. It provides a forum for exchanging experiences and examples of good practices as well as assisting a coherent implementation of LA21 across the various local authorities.

In Ireland, two sets of guidelines have been published to provide guidance to Local Authorities in producing their own LA21 programmes. Both documents emphasise that through consultation and consensus building, local authorities would learn from citizens and from local, civic, community, business and industrial organisations and acquire the information needed for formulating the best strategies.<sup>13</sup>

The activities of Comhar SDC on LA21 have been more sustained in this area<sup>14</sup>. It is important to note that not only does it act as a national forum for sustainable development, but also it acts as a focus for debate, guidance and support of local sustainable development across Ireland. It has identified local sustainability/public participation and education as one of its key priority areas and directs the efforts of one of its four working groups to this end.<sup>15</sup>

The progress of local sustainable development is, however, disparate and needs acceleration through additional support and increased prioritisation at all levels of governance. It is clear that LA21 has been very successful in raising awareness of the possibilities of local sustainable development and in stimulating debate on how local areas can contribute to the challenges created by Ireland's links to a global community facing severe ecological, economic and social problems. The primary concern remains the ability to move from debate to action.<sup>16</sup>

## 2.4 Selection and use of SDIs in Ireland

Progress has been made in the last 10 years in developing SDIs for measuring Ireland's performance. These are set out in the series *Measuring Ireland's Progress* published by the Central Statistics Office<sup>17</sup> in 2003, 2004, 2005 and 2006. Table A in the series lists a total of 110 indicators covering 49 domain themes. Over 57 per cent of these relate principally to social domains (3 to 9), reflecting the emphasis on societal outcomes as the ultimate aim of policy measures. The other indicators cover the economy, innovation and the environment. Most indicators are presented in both a national and an international

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<sup>11</sup> United Nations Conference on Environment and Development (UNCED) (1992) *Agenda 21: Program for Action for Sustainable Development* New York: United Nations Conference on Environment and Development.

<sup>12</sup> Department of the Environment, Heritage and Local Government (DOEHLG) (1997) *Sustainable Development - A Strategy for Ireland*

<sup>13</sup> Department of the Environment and Local Government (DoELG) (2001) *Towards Sustainable Local Communities: Guidelines on Local Agenda 21*, Dublin, DoELG. First published in 1995 by the Department of the Environment as *Local Authorities and Sustainable Development: Guidelines on Local Agenda 21*, Dublin, DoE.

<sup>14</sup> Comhar SDC (2002) *Setting the Ground for Local Agenda 21: Seminar Report*. Dublin: Comhar SDC.

<sup>15</sup> Comhar SDC (2006) *Work Programme 2006-2008*.

Available at [http://www.comharsdc.ie/about/work\\_programme.aspx](http://www.comharsdc.ie/about/work_programme.aspx)

<sup>16</sup> Geraint Ellis, Brian Motherway, William J.V.Neill, Una Hand (2004) *Towards a green Isle? Local Sustainable Development on the Island of Ireland*. Available at: [www.crossborder.ie/pubs/greenisle.pdf](http://www.crossborder.ie/pubs/greenisle.pdf)

<sup>17</sup> Available at Central Statistics Office website [www.cso.ie](http://www.cso.ie)

context. The national context is generally in a time series format while the international context compares Ireland principally with other EU countries. It is recognised that more work is required in this area and this is being advanced in the context of the current review of the NSDS.

In recent years Ireland has improved its set of environmental indicators and its reporting on the state of the environment. The Environmental Protection Agency (EPA) published *Environment in Focus 2006 – Environmental Indicators in Ireland in 2006*<sup>18</sup>. It was previously published in 1999 and 2002. The report is divided into two parts: State of the Environment Indicators, focusing on the current state of the environment including sections on air, water, waste and land cover and biodiversity, and Sectoral Environmental Indicators, which examine the main environmental issues within the transport, industry, energy, agriculture, forestry and fisheries sectors. In all, 60 indicators are presented within this report. Sixteen new indicators have been included in this report which addresses areas of growing concern such as greenhouse gases and climate change, land use and transport.

The EPA published Ireland's third State of the Environment Report in 2004<sup>19</sup>. Comhar SDC has published research on sustainable development indicators which informed recommendations to Government on the review of the National Sustainable Development Strategy<sup>20</sup>.

## **2.5 Progress on selection and use of sub-national SDIs in Ireland (Best Practice case studies)**

In Ireland very few initiatives have been undertaken to develop SDIs for measuring progress towards sustainability at local/regional level. The extent to which these indicators lead toward sustainable development is an important consideration. Some of these initiatives at the regional/local level are enumerated following.

### **2.5.1 Quality of Life Indicators for Galway City**<sup>21</sup>

This study focuses on quality of life, as one discourse in the sustainable development literature, and reports on the development and testing of an operational framework for the assessment of quality of life in an urban setting. Core principles of sustainable development are translated into a set of operational criteria for investigating quality of life. The process of formulating these criteria and the manner in which they may be linked to policy and practice are outlined. The application of the framework is demonstrated by reference to the experience of implementing it in an urban centre in Ireland. The process of developing such indicators in Galway, one of the fastest growing cities in the EU as part of a project sponsored by the Irish Environmental Protection Agency (EPA), is examined in detail. The indicators are listed in Annex I.

The eight-step and four-phase framework adopted in the study represents a practical operational approach to assessing quality of life in the context of sustainable development in any particular locality. The framework is built around fundamental principles of sustainable development. It is flexible and adaptable and allows for context-specific elaborations to incorporate diversity. The specific focus on quality of life as a key element of sustainable development represents a significant new departure from previous

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<sup>18</sup> Available at: <http://www.epa.ie/OurEnvironment/EnvironmentalIndicators>

<sup>19</sup> Available at: <http://www.epa.ie/NewsCentre/ReportsPublications/IrelandsEnvironment2004/>

<sup>20</sup> Maguire, C. and Curry, R. (2007) *Counting What Counts: A Review of Sustainable Development Indicators for Ireland*, Enviro Centre and Comhar SDC, Ireland.

<sup>21</sup> Fahy, F., and O'Connide, M. (2006) *Community based quality of life indicators for urban areas as derived in Galway City, Ireland*. Department of Geography: NUIGalway.

studies. The study presented an operational framework for developing and testing quality of life indicators that are tailored to local contexts. The operational framework, the study claims, is adaptable to a wide range of geographical scales and is readily transferable to other urban and rural settings.

### **2.5.2 The EPA Rural Environmental Indicators<sup>22</sup>**

The rural environment in Ireland can be regarded as all areas outside of settlements of more than 1500 people. In 2001 when this study was undertaken, approximately 42 per cent (1.5 million) of Ireland's population live in areas classified as 'rural'<sup>23</sup>.

The study on rural environmental indicators builds on the previous indicator work at national level. It presents 29 key indicators describing the impact on the rural environment of various economic sectors. It is intended that the indicators can be used to monitor policies arising from the National Spatial Strategy and their potential impact on the rural environment. A table of the rural environmental indicators is presented in Annex II.

The study noted that it was difficult to develop certain indicators on Ireland's rural environment as national datasets are not always disaggregated in a way that allows the rural component to be determined. In addition, tourism indicators and others have been difficult to develop on a national level as the environmental issues are usually site specific.

These EPA environmental indicators (See Annex III) and rural indicators will undoubtedly make significant contribution to the operationalisation of the environmental aspects of the upcoming NSDS for Ireland. The first challenge will be to test their policy relevance and acceptability at regional/local level. The next challenge will be to disaggregate available data spatially to regional and local levels.

### **2.5.3 University of Limerick: Stakeholder Participation and Indicator Selection**

The complexity of sustainable development means that it is often difficult to evaluate sustainability and to communicate the concept of sustainability effectively to the public. One possible method to reduce complexity, and incorporate public opinion, while maintaining scientific objectivity, is public participation in the development of sustainable development indicators. The aim of this study was to create, and demonstrate the effectiveness of a method for effective stakeholder participation in the development of indicators of sustainable development. The method should not only incorporate public opinion in the development of indicators but also increase public awareness on the complex issues of sustainable development. The Q-method of discourse analysis is being used to identify and collate the opinions of members of the public on the issues surrounding sustainable development. The Q-method works on the basis that there are a finite number of discourses that cover any topic. Statements on the discourses surrounding sustainable development were collected during 11 focus group meetings with members of the public from a range of stakeholders groups. The statements collected during the meetings were then analysed and distilled down to 40 statements that covered the full spectrum of opinions expressed during the meetings. The next phase of this research involves 40 members of the public carrying out Q-sorts where they rank these 40 statements from -4 to +4. Using PCQwin software, which utilises factor analysis for the analysis of discourses, 3-4 'ideal' Q-sorts will be identified from the 40 Q-

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<sup>22</sup> Cawley, P. 2001. *Rural Environmental Indicators – A Discussion Document on Key Indicators*. Wexford: EPA.

<sup>23</sup> Cawley, P. 2001. *Rural Environmental Indicators – A Discussion Document on Key Indicators*. Wexford: EPA.

sorts collected. These 'ideal' Q-sorts will represent the spectrum of opinions that are likely to be held by members of the public in the study area. Through a combination of 'public opinion' with 'expert opinion' and using the DPSIR framework for indicator development, indicators of sustainable development can then be developed that are relevant to the public while maintaining scientific objectivity<sup>24</sup>. This process according to the researchers has led to greater "buy in" by the community toward the concept of sustainable development, and led to a greater appreciation of the concept of sustainable development<sup>25</sup>

#### **2.5.4 Local Government Management Services Board (LGMSB) Indicators**

The Local Government Management Services Board (LGMSB) was established in 1997 to be a centre of excellence in the provision of management services, human resource and industrial relations support and advice to local authorities in Ireland. The LGMSB in 2003 developed a set of forty two indicators to monitor trends in local government services in areas such as the environment, housing, planning, water and finance. Wide-ranging measurement of performance across 42 indicators was implemented in the local authority system in 2004. The approach was based on a report published the previous year, *Delivering Value for People – Service Indicators in Local Authorities*.<sup>26</sup> The LGMSB was given the task of external monitoring and verification of the data, as well as the compilation and analysis of a central set of indicators. The indicators for 2007<sup>27</sup> are presented in the following headings:

- Culture, Recreation and Amenity Facilities
- Housing and Roads
- Water
- Planning
- Fire Service
- Environment
- Motor Tax
- Finance
- Internal – Corporate Indicators

This was the fourth Service Indicators Report. The aim of the process is to measure performance by local authorities across a range of services. Once the Local Government Management Services Board has collated the indicators, the Independent Assessment Panel, appointed by the Minister for the Environment, Heritage and Local Government audits the data and reports to the Minister. It involves input from and collaboration with a number of different stakeholders and contributors including:

- Individual local authorities through the County and City Managers and their Implementation Teams;
- The Local Government Computer Services Board in gathering of the data and development of IT systems;

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<sup>24</sup> Kelly, R. and Moles, R. (2002) The development of Local Agenda 21 in the Mid-West region of Ireland: a case study in interactive research and indicator development. *Journal of Environmental Planning and Management*, 45(6), 889-912.

<sup>25</sup> Doody, D. G., Moles, R.A., O'Regan B and Kearney, P. (Draft Report) Working Title: Evaluation of the Q-method as a method of public participation in the selection of sustainable development indicators, University of Limerick and Queens University Belfast

<sup>26</sup> LGMSB (2002) *Delivering Value for People – Service Indicators in Local Authorities*  
Available at: [http://www.lgmsb.ie/Useful\\_Information](http://www.lgmsb.ie/Useful_Information)

<sup>27</sup> LGMSB (2008) *Service Indicators in Local Authorities 2007*. Available at <http://www.lgmsb.ie/upload/documents>

- Some agencies external to the local authority system which supplied data directly; these include the CSO, EPA, Vehicle Registration Unit (VRU), Tobin Consulting Engineers; and finally
- The Independent Assessment Panel appointed by the Minister to validate the data prepared by local authorities.

The report enables customers and other interested parties to get information on the performance of local authorities across a wide range of services. Another use for the indicators is that they permit local authorities to compare their performance with their peers – that is, to compare with those local authorities that are sufficiently similar to allow a valid comparison to be made.

### **2.5.5 Combat Poverty Agency Indicators**

Mapping poverty<sup>28</sup> is a longstanding concern, both for researchers and policy makers. This study updates and extends previous research on the spatial distribution of poverty using recent national data sources: the Census of Population (2002), the Living in Ireland Survey (2000) and, for the first time, the National Survey of Housing Quality (2001). The research uses three poverty indicators (household income, material deprivation and socio-demographic variables) to measure the distribution of poverty at various spatial and administrative levels, including county and city councils for the first time. The indicators processed include:

- Percentage age-dependent by local authority area
- Unemployment rate per local authority area
- Percentage with no education
- Percentage with third level education
- Consistent poverty risk by region
- Disparities in income poverty by local authority area
- Disparities in income poverty and deprivation by local authority area

The study addresses three key aspects of the spatial distribution of poverty:

- It identifies patterns with regard to the concentration of poverty and how these have evolved over time.
- It assesses if these patterns are significant in terms of the overall incidence of poverty.
- It considers the processes underlying poverty clustering, distinguishing between factors that influence the location and the causes of poverty.

The findings of this study increase our understanding of the location of poverty and highlight numerous implications for policy on combating poverty and social exclusions, including area programmes, social housing and local anti-poverty strategies. The study shows that there is little causal link between location and poverty. The key factors are socio-economic: unemployment, non-participation in the labour force due to old age or illness, lone parenthood, low levels of education, and social class.

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<sup>28</sup> Watson, D., Whelan, C.T., Williams, J., Blackwell, S. (2005) *Mapping Poverty: national, regional and county patterns*. Combat Poverty Agency Research Report Series No 37.

### **2.5.6 Sustainable Energy Ireland Indicators<sup>29</sup>**

Sustainable Energy Ireland (SEI) has a lead role in developing and maintaining comprehensive national and sectoral statistics for energy production, transformation and end use. This data is a vital input to meeting international reporting obligations, for advising policy makers and informing investment decisions. Based in Cork, EPSSU is SEI's specialist statistics team. SEI also publishes individual reports on energy use in the industry, transport, services and residential sectors with more detailed analyses.

Its current report *Energy in Ireland 1990 – 2007* examines energy trends in Ireland since 1990 with particular emphasis on 2006, discusses the underlying causes and relates the trends to Government and EU targets in order to inform the development of the policies and measures employed to meet the targets. The year 1990 is significant as a baseline, not least because, under the Kyoto Protocol and associated EU targets, Ireland's obligations to contain emissions of greenhouse gases are referenced against relevant emissions for that year. The bulk of these greenhouse gases are CO<sub>2</sub> derived from energy utilisation.

This report is based on data, compiled by SEI's Energy Policy Statistical Support Unit, which is used to generate the annual energy balance and to fulfil Ireland's legal obligations in completing questionnaires issued by EUROSTAT and the International Energy Agency. The report includes an assessment of the sectoral use of energy (see Annex IV). It examines energy usage, intensity and efficiency in order to provide context and background to discussions regarding future policy options. It is the first SEI/EPSSU report to focus exclusively on this topic. The report is intended to be a first step in an on-going process to develop and improve energy efficiency indicators. Data sources include Central Statistics Office, Economic and Social Research Institute, Department of Environment, Heritage and Local Government, Met Éireann, Odyssee, and Vehicle Certification Agency (UK).

### **2.5.8 Health Services Executive Performance Indicators**

The Health Service Executive (HSE) is responsible for providing Health and Personal Social Services for everyone living in the Republic of Ireland. The HSE provides thousands of different services in hospitals and communities across the country. These services range from public health nurses treating older people in the community to caring for children with challenging behaviour; from educating people how to live healthier lives to performing highly complex brain surgery; from planning for major emergencies to controlling the spread of infectious diseases. HSE services are delivered through four Administrative Areas - Dublin Mid Leinster, Dublin North East, South and West. A set of indicators (see Annex V) is used across the four regions to monitor performance annually<sup>30</sup>. Though very detailed, the HSE indicator set contains valuable measures of the state of public health delivery and performance in Ireland.

### **2.5.7 SDIs for the management of biosolids**

A 'suite' of twenty-two SDIs for the management of biosolids (treated sewage sludge) at local/regional level was developed at the Centre for Sustainability, Institute of Technology, Sligo in 2007, using a stakeholder participatory approach. The suite comprises of five headline, seven core and ten complementary SDIs. The indicators were

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<sup>29</sup> SEI (2008) *Energy in Ireland 1990 – 2007*. Available at [http://www.sei.ie/Publications/Statistics\\_Publications/Energy\\_in\\_Ireland/Energy\\_in\\_Ireland\\_1990-2007.pdf](http://www.sei.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy_in_Ireland_1990-2007.pdf)

<sup>30</sup> HSE (2008) *National Service Plan 2009*. Available at [http://www.hse.ie/eng/Publications/corporate/National\\_Service\\_Plan\\_2009.pdf](http://www.hse.ie/eng/Publications/corporate/National_Service_Plan_2009.pdf)

arranged according to the Driving force-Pressure-State-Impact-Response (DPSIR) framework and address all domains of biosolids management namely, production, quality, cost, legislation/regulation, training/research and recycling/disposal (See Annex VI). The stakeholder participatory approach adopted in the study meant that the indicator development process involved participants from varied background, knowledge, experience and perspective. Such a ‘mix’ is necessary in order to capture the multi-faceted criteria of sustainable biosolids management at local/regional level. The methodology and analysis of the survey results were designed to ensure an unbiased, critical, and fair input by the participating stakeholders. During the course of the study, a framework for formulating sustainability indicators at regional/local level using a stakeholder participatory approach was developed.<sup>31</sup>

### **3.0 Overview of “Best Practice” sub-national sustainable development indicators in Europe (including in relation to EU funded territorial programmes)**

At the Gothenburg Summit on 15-16 June 2001, the European Council agreed on a strategy for sustainable development, based on the principle that the economic, social and environmental effects of all policies should be examined in a coordinated way and taken into account in decision-making. In order to evaluate implementation and progress, the Sustainable Development Strategy foresees the development of a set of sustainable development indicators.

#### **3.1 EU Sustainable development strategy**

Sustainable development was first introduced as an explicit objective of the European Community in the Single European Act of 1987<sup>32</sup>. The requirement for environmental considerations to be integrated into all Community policies was added in the 1992 Treaty on European Union (Maastricht Treaty)<sup>33</sup> and reinforced in the 1997 Treaty of Amsterdam<sup>34</sup>.

The Cardiff European Council in June 1998<sup>35</sup> asked several Council formations to report on their steps towards integration of environmental concerns into their policies. This included a requirement to produce indicators to monitor progress. Eighteen months later in December 1999, the European Council session in Helsinki invited the European Commission ‘to prepare a proposal for a long-term strategy dovetailing policies for economically, socially and ecologically sustainable development to be presented to the European Council in June 2001.’<sup>36</sup>

In response, the European Commission produced a Communication which presented a proposal for an EU SDS.<sup>37</sup> This was considered by the European Council at their summit in Gothenburg in June 2001. The resulting outcome emphasised that EU’s SDS is based on the principle that the economic, social and environmental effects of all policies should be examined in a co-ordinated way and taken into account in decision-making. It agreed

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<sup>31</sup> Amajirionwu, M., Connaughton, N., McCann, B., Moles, R., Bartlett, J and O’Regan, B. (2008) Indicators for managing Biosolids in Ireland. *Journal of Environmental Management*, vol 88 (2008) p1361-1372.

<sup>32</sup> CEC (1986) Single European Act Official Journal L 169 of 29 June 1987

<sup>33</sup> CEC (1992) *Treaty of Union* Official Journal C 191, 29 July 1992

<sup>34</sup> CEC (1999) *Treaty of Amsterdam* <http://europa.eu.int/eur-lex/en/treaties/dat/amsterdam.html>

<sup>35</sup> Cardiff European Council (1988)

Available at: [http://ue.eu.int/ueDocs/cms\\_Data/docs/pressData/en/ec/54315.pdf](http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/ec/54315.pdf).

<sup>36</sup> Gothenburg European Council (2001)

Available at: [http://ec.europa.eu/governance/impact/docs/key\\_docs/goteborg\\_concl\\_en.pdf](http://ec.europa.eu/governance/impact/docs/key_docs/goteborg_concl_en.pdf).

<sup>37</sup> COM(2001)264 Final

a strategy for SD which completed the EU's political commitment to economic and social renewal, and added an environmental dimension to the Lisbon strategy to establish a new approach to policy making.

The EU SDS, which was renewed in June 2006, sets out a coherent approach to how the EU will more effectively live up to its long-standing commitment to meet the challenges of sustainable development. It reaffirms the overall aim of achieving continuous improvement of the quality of life and well-being on earth for present and future generations, through the creation of sustainable communities able to manage and use resources efficiently and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion.

In accordance with the EU SDS, the Commission of the European Communities, in collaboration with the Member States, submits a progress report on the implementation of the SDS in the EU and the Member States every two years. Member States are therefore obliged to produce and implement their own National SDS within the context of the EUSDS.

### **3.2 Selection and use of sustainable development indicators in the EU**

The EU SDS requires the Commission to develop indicators at the appropriate level of details to monitor progress with regard to each of the seven key challenges of the strategy. A first set of indicators was adopted by the Commission in 2005 and further reviewed in 2007 in order to adjust to the SDS. SDIs are used to monitor the EU SDS in a report to be published by Eurostat every two years.

The SDI framework is based on ten themes, reflecting the seven key challenges of the strategy, as well as the key objective of economic prosperity, and guiding principles related to good governance. The themes follow a general gradient from the economic, to the social, and then to the environmental and institutional dimensions. They are further divided into sub-themes to organise the set in a way that reflects the operational objectives and actions of the sustainable development strategy.

In order to facilitate communication, the indicator set is built as a three-level pyramid (see Figure 2).<sup>38</sup> This distinction between the three levels of indicators reflects the structure of the renewed strategy (overall objectives, operational objectives, actions) and also responds to different kinds of user needs, with the headline indicators having the highest communication value. The three-levels are complemented with contextual indicators, which provide valuable background information but which do not monitor directly the strategy's objectives.

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<sup>38</sup> Available at:

[http://epp.eurostat.ec.europa.eu/portal/page?\\_pageid=1998,66119021,1998\\_66292168&\\_dad=portal&\\_sc\\_hema=PORTAL](http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1998,66119021,1998_66292168&_dad=portal&_sc_hema=PORTAL)

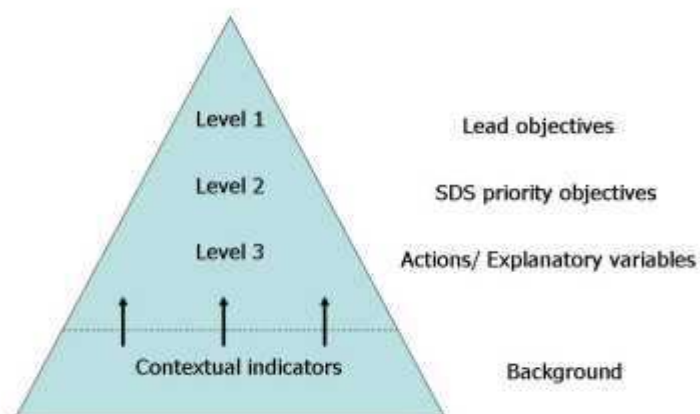


Figure 2: The three-level pyramid

In most Member States, the development of SDI sets is expressly linked to the drafting of National SD Strategies and the formulation of SDI sets is frequently intended to facilitate measurement of the degree to which the strategies' aims and objectives are being realised. The principal exceptions here are Portugal and Sweden which both developed a SDI set prior to their SD strategy. The priorities and areas of emphasis in the SD Strategies are therefore major influences on the types of SDIs selected.

The DPSIR-approach is widely used, implicitly or explicitly, across all Member States when formulating specific SDI sets. A possible reason for this is the lack of internationally accepted alternative methodologies for indicator development.

Several Member States including Belgium, France, Germany and Luxembourg have first elaborated a very large SDI set (often including several hundred SDIs) and have then reduced the number of SDIs on the grounds of both relevance to the national situation and data availability.

Austria, Denmark, France, Germany, Italy, Spain and the UK have avoided a model of SD based on the three pillar (Environment-Economy-Society) approach but rather have characterised SD in a more integrated and holistic fashion, often based on those SD themes which have been identified as being nationally important.

Denmark, Germany, Sweden and the UK have all produced 'headline' sets of around 15-20 SDIs for ease of accessibility to decision-makers and the general public in interpretation. Websites are the usual means of dissemination for these headline sets.

### 3.3 Sub-national governance in the EU – Policy background and territorial programmes)

The devolution of policy making and implementation in many fields to local and regional levels together with recognition of increasing diversity of rural areas and the trends within them provide cogent arguments for statistical indicators of "local" (sub-national) territorial units. Examples are the implementation of LEADER<sup>39</sup> and Structural Fund<sup>40</sup>

<sup>39</sup>LEADER, a three-Fund 'community initiative' was launched by the European Commission in 1990 and aimed at supporting Local Action Groups (partnerships) in integrated 'bottom up' rural development.

<sup>40</sup> The Structural Funds are the EU Regional Development Funds.

programmes and, in some jurisdictions, health, planning, social work, environmental programmes, education and training initiatives. Equally, if scarce resources are to be prioritised at national or EU level, and programmes at these levels are to be flexible enough to deal with diversity, then decision-making processes at EU and national levels need to be informed by appropriate local and regional data. In the EU there is a growing culture and practice of policy evaluation, both formative and summative, which needs to be based on reliable data at appropriate levels.

EU Regional Policy is perhaps the most robust and developed approach to local governance and development, stimulated within the borders of the EU. The European Commission acknowledged years ago the increasing importance of the regional and local level, and suggested ways for developing areas like employment, gender equality, social inclusion, economic development, innovation information society, etc. It remains determined to boost interaction between the national, regional and local authorities.

The European Fund for Regional Development (EFRD), the European Social Fund (ESF) and the Cohesion Fund contribute to the three overall objectives:<sup>41</sup>

- To create the conditions to promote growth and gradual convergence for the least developed Member States and regions.
- To strengthen competitiveness, create employment and foster the attraction of investments. The former programmes Urban II and Equal are part of these two objectives.
- To strengthen cross-border co-operation through joint local and regional initiatives, trans-national co-operation aiming at integrated territorial development, interregional co-operation and exchange of experience. It draws its know-how from the Community initiative - INTERREG.

The implementation of EU Structural Funds (SFs) programmes is credited with influencing the focus and content of domestic regional development activities, enhancing coordination of national and sub-national levels tasked with regional development and strengthening partnerships between public, private and voluntary actors.

The SFs were created to address increasing interregional disparities that might threaten the social and economic cohesion of the EU. Initially, they were regarded as supports to lesser developed regions as they were drawn into EU-wide markets but since the late 1980s a series of reforms have doubled the budget for the funds, extended their scope across EU regions and introduced a number of principles for their implementation. These principles remain at the core of SFs activities: programming (based on strategic, multi-annual plans instead of a project-based approach); concentration (on a limited number of objectives and focused on the least developed territories); additionality (to ensure that EU funding does not substitute for national expenditure); and partnership (the participation of national, sub-national and supranational actors in the design and implementation of programmes). Subsequent reforms have further reorganised the Commission's system of regional support, with the principle of subsidiarity supporting the administration of programmes at the smallest (or, the lowest) competent authority<sup>42</sup>.

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<sup>41</sup> Juergen K. Binder, Peter Slits, Rémi Stoquart, Dr. Joseph Mullen, Carlos Buhigas Schubert. (2007) *Towards an EU approach to democratic local governance, decentralisation and territorial development: Background Paper.* Project No. 2007/147439 - Version 1

<sup>42</sup> Ferry, Martin: Comparing the influence of Structural Funds programmes on regional development approaches in Western Scotland and Silesia: Adaptation or Assimilation?, *Refereed Articles Oct 2007, no 23, European Journal of Spatial Development* URL: <http://www.nordregio.se/EJSD/refereed23.pdf>

### **3.4 Issues and selection of sub-national sustainable development indicators in the EU and case studies**

In 2000, the European Commission under its 5th Framework Research Programme, initiated Promoting Action for Sustainability Through Indicators at the Local Level in Europe also called the Pastille project.<sup>43</sup> The overall objective of the project was to analyse the implementation of local sustainability indicators programmes, in a variety of contexts, and to develop models, methods and techniques to ensure that these indicators impact on decision making at the municipality level. In addition, the project has four more detailed objectives.

- To define the range of roles that local sustainability indicators can play and the variation in processes of indicator development.
- To examine the processes of indicator development and use in the participating cities and to relate these to the contextual factors operating in each case.
- To identify the role of local sustainability indicators in examples of public policy decision making and development within each partner city and to assess their impact and effectiveness.
- To disseminate research results in order to facilitate more effective urban governance and more relevant strategic European policies in the context of subsidiarity.

A consortium drawn from four countries (UK, France, Austria and Switzerland) undertook the Pastille project, which ran from March 2000 to September 2002. In each country there was a local research partnership comprising a municipality and a research team. The localities involved were: London (specifically, the London Borough of Southwark), Le Grand Lyon, Vienna and Winterthur. These partnerships adopted a common methodological basis to investigate the local sustainability indicators programmes in each municipality. Each municipality was chosen on the basis of an existing active involvement with sustainability indicators. The local partnerships analysed the factors influencing the impact of such indicators on decision-making in the context of a specific local case study within each municipality, again according to a common analytic framework. This approach allowed for: local diversity in the sustainability indicators programmes; the variety of functions that local sustainability indicators play; and the specificities of the local socio-economic, environmental and political/administrative context.

The recommendations regarding best practice that arose from the research have a broad applicability across different local contexts. It is a useful tool for policy makers, aimed at evaluating the scope of sustainability indicators within a given policy context. Particular relevance is given to the context into which indicators are used and their effectiveness is tested both in terms of indicator quality and of the arena of action. The benefit associated to this process is thus essentially to increase the effectiveness of research, particularly as interaction enables it to solve real problems to a great extent. Pastille highlighted the need for local indicators, reflecting the peculiarities of unique contexts, to be effectively implemented alongside a national core set of sustainability indicators. Only such a combination would in fact allow local authorities to obtain the complete sustainability picture: where the core information, comparable at a wider national and EU level. This is further enriched and completed with more specific information, relevant to aspects strictly peculiar of their local area.

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<sup>43</sup>More information available at: <http://europa.eu.int/comm/research/envir1.html>

In three of the four case studies, the stakeholder systems have chosen to focus on a definite dimension of sustainable development: quality of life for the local community in Southwark, air pollution in Lyons and CO<sub>2</sub> emissions in Vienna.

### **3.4.1 Vienna**

The Viennese Case Study focused mainly on the Vienna Climate Protection Programme (KliP). In order to reduce the city's CO<sub>2</sub> emissions (and other greenhouse gases), KliP takes into account three action areas: i) energy, ii) mobility and iii) procurement/waste, which have been detected as the most important and potentially effective action areas for reduction. It sets targets to be achieved through 36 sets of measures in the following fields of action:

- Generation of Electricity and District Heating
- Housing
- Businesses
- Mobility
- Municipal Administration

### **3.4.2 Lyon**

Lyon's experience with air quality monitoring is long-standing with a network of air pollution monitoring captors having been present in the urban area for 40 years. The history of these captor networks reveals that two separate 'pillars' have emerged in the development of the stakeholder system surrounding the networks. The first pillar is technically driven and comprises experts and technicians within the system. The second entails the administrative wing of the French local authority arrangement. Currently, the measurement system is based on fixed captors, mobile measurement sets, and more recently a LIDAR (Light Detection And Ranging) vehicle.

### **3.4.3 London Borough of Southwark**

PASTILLE's work in London was focused on the regeneration of the Elephant and Castle area of the London Borough of Southwark (LBS). This regeneration project involves the investment of over £23 million of central government funding (under the Single Regeneration Budget or SRB) together with equivalent funding from the local authority and other local institutions, with the aim of leveraging in an additional £600 million of private sector funding. The primary focus of the SRB is an improvement in the economic, social and physical conditions in Southwark. However, the project also fits within two cross-cutting concerns in the borough council. The first deals with the evaluation of public sector expenditure under the guidance of New Public Management practices and under pressure from local communities in the area. The second deals with a growing sustainability agenda within central and local government, and specifically within the Southwark. Progress on developing classic indicators has been delayed and, therefore, the main form in which indicator-type tools have been used within the ELP is through the development and operationalisation of sustainability criteria to assess various aspects of the project. The two instances where these criteria have been used are the evaluation of masterplans for the area and the SRB project appraisal process.

### **3.4.4 Winterthur**

The *Winterthur Sustainability Barometer* was developed as a prototype in 1999 to offer an easy-to-use tool for politicians to support and direct their decision-making towards local sustainability. The goal was also to stimulate a discussion amongst planners and decision-makers as to what the relevant criteria for sustainability in a community context are. The Sustainability Barometer helps to evaluate and optimise programmes,

plans and concepts. However it is not applicable for a sustainability assessment of the community as a whole or for a comparative assessment of different communities. The architecture of the Barometer has a three to four level design. The first level represents the three dimensions of sustainability, i.e. the environment, the society, and the economy. On the second level each dimension is characterised by four aspects:

- **Environment** Land use/Transportation, Energy, Resources, Pollutants
- **Economy** Private households, Public household, Employees, Employers
- **Society** Physical quality of life, Local offerings, Social security/Solidarity, Emotional identity/Participation.

Each aspect itself is characterised on the third level by several indicators and eventually on the fourth level by sub-indicators. The evaluation is based on a simple, qualitative assessment of the possible influence of the envisaged policy, programme, or plan on the indicators, grading each of them from +2 to -2. It is computer-based as to allow for easy variation of the assessment and for easy graphical representation and numerical evaluation.

### 3.5 Regional level SDIs in the EU

Three EU Member States (Belgium, Germany and the United Kingdom) have processes for formulating regional-level SDI sets in addition to their national-level sets. In Belgium, the three regions of Brussels, Flanders and Wallonia have SDI sets and in Germany, sets of regional SDIs are under development at the level of the *Länder* (Federal States). Major efforts are in place in the UK aimed at the formulation and evaluation of regional-level SDI sets (including sets for Scotland, Wales and Northern Ireland). No other examples of significant regional- or local-level SDI formulation are available across the EU-25.<sup>44</sup>

The Regional versions of the UK Government's indicators of sustainable development were first published on 13 December 2005 to help provide a perspective of sustainable development in each region. They were last updated on 31st January 2008. To support the new UK Government Sustainable Development Strategy, 'Securing the Future' (published in March 2005)<sup>45</sup>, there is a suite of 68 national sustainable development indicators. For 46 of these indicators, for which regional data are available, it has been possible to produce regional versions for the Government Office Regions. The indicators highlight issues within the priority areas of Sustainable Consumption and Production, Natural Resources, and Sustainable Communities. Other indicators provide useful contextual information (see Annex VII).

In Belgium, and within the scope of the Flemish urban policy, a City Monitor<sup>46</sup> for live-able and sustainable Flemish central cities has been drawn up. This is a policy tool which the Government of Flanders is presenting to the 13 central cities. This tool enables them to gain a better insight into the situation in their city. The City Monitor provides the content for the local debate and helps city authorities to outline their urban policy. This tool was developed in cooperation with experts from the 13 cities and from the Flemish administration, civil society organizations and the academic world.

The monitor consists of 190 indicators which describe the situation of the city and examine the 'societally' relevant evolutions in urban society. This tool was developed to give everyone involved in the development of the city an insight into their own city and

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<sup>44</sup> CEC (2004) *EU Member State experiences with sustainable development indicators*. Luxembourg: Office for Official Publications

<sup>45</sup> HM Government (2005) *Securing the Future: Delivering UK Sustainable Development Strategy*. London: TSO

<sup>46</sup> Block, T., Van Assche, J., Vandewiele, D., De Rynck, F. and Eynaert, H (2006) *City Monitor for live-able and sustainable Flemish cities*. Available at [www.thuisindestad.be](http://www.thuisindestad.be)

to provide support for discussions and choices. The City Monitor is above all an aid for designing the strategic policy of city authorities and to help them to carry out their own tasks and competences.

#### **4.0 Potential research gaps in the Irish literature**

There is currently a paucity of literature on many facets of issues relating to the selection and application of SDIs at local/regional level in Ireland. Some of the pertinent areas where baseline and advanced studies are required are outlined below.

##### **4.1 Public and stakeholder participation in selecting indicators at sub-national level in Ireland**

There are different motives for promoting public participation in SDI selection and application, namely; functional, empowering and philosophical. These motives reflect both the evolution to participation and the institutional positions of the different groups involved. Participation in development of sub-national SDIs is an approach which requires systemic and attitudinal changes across the selection and application process. These changes need to involve administrations, policy processes, institutional linkages, skills, values and perceptions of different people's knowledge systems.

There is need for studies into the formulation of an expanded framework for including the different types of relationship in the sub-national SDI process. Such process must incorporate stakeholder knowledge and the initiatives which local stakeholders have themselves made. Within this framework there is a need to consider the potential for all different stakeholders to become involved.

##### **4.2 Quality and impact of public and stakeholder participation in selecting indicators at sub-national level in Ireland**

A major criticism of participatory sub-national SDI process is that it lacks the objectivity of formal scientific research. The validity and reliability of participatory sub-national SDI selection process has been a significant question in the minds of many researchers.<sup>47</sup> An important issue in maintaining the quality of sub-national SDI process concerns who should be involved in process. Clearly the issue is not who or where they are trained but that the quality of the data collection is high and that it is shown to be high. The impact of the following on the quality of sub-national SDI processes in Ireland need to be studied:

- Awareness raising and training of community-based sub-national SDI process participants of the needs of the formal indicator process;
- Monitoring of the indicator process; and
- Using a multitude of methods to triangulate results.

Collaborative approaches to sub-national SDI process which unite the skills, approaches and knowledge of stakeholders with those of the professional study participants, offer an opportunity to face some of these problems. There is also little known of the methods used by stakeholders to generate their knowledge, how they validate it and how they communicate it.

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<sup>47</sup> Fahy, F., and O'Connide, M. (2006) Community based quality of life indicators for urban areas as derived in Galway City, Ireland. Department of Geography: NUI Galway.

### **4.3 Data availability, reliability and appropriateness at sub-national level**

The lack of data in general, and reliable data specifically, is a common problem in the indicator world. This is true for most indicator initiatives at most analytical levels. Due to their relative infancy, environmental data are difficult to come by compared to data for economic and social indicators.

The quality of local indicator estimates may be insufficient for use in a region. Often indicators collected for national significance don't have sufficient coverage in their data collection for use at local levels, for example Gross Domestic Product at community and district levels. Some national indicators have no meaning or are not relevant at a sub-national sense and need analogues to describe a similar measure. National statistical frameworks can often not be suitable for local concerns, even though the outcomes and themes used at a national context are similar to regional/local issues.

There is a need to study the different issues that work as constraints to the development of new and useful sub-national SDI data in the Irish context. These include institutional, technical and political constraints.

### **4.4 Value and use of sub-national indicators (information processing)**

The results of collaborative sub-national SDI process need to feed into the policy making processes. Sub-national SDIs are a way of providing a measurable definition of sustainable development at local/regional level, either as a holistic policy goal and/or as a specific aspect or subset of that goal. The key issue remains whether these SDIs are having any significant impact on decision making within the region/locality. For it is one thing to devise a more precise definition for sustainable development in the form of indicator sets. It is another to shape policy decisions and outcomes according to those indicator sets. This is another area where more literature within the Irish context needs to be generated.

### **4.5 Governance, capacity/institutional building and funding for selecting and operating indicators at sub-national level in Ireland**

The sub-national SDI process in Ireland will need studies to take a much more interdisciplinary approach to sustainable development governance which addresses the social science issues on a similar level to the technical and natural science ones. It will also need to view the sub-national SDI process much more as a multi-sectoral and multi-territorial one reflecting the structure of stakeholders' lives. Approaches to funding and capacity building for selecting and applying sub-national indicators need to be further developed.

### **4.6 Reporting, communicating and disseminating sub-national indicators in Ireland**

An indicator designed for a specific purpose will address a specific audience. The best way of communicating with that audience should be investigated and designed into the indicator. For example, will more qualitative and resonant indicators be more suitable for community audiences, or will more specialist audiences favour quantitative and technical indicators? There is need for more studies to ensure that appropriate sub-national SDIs are designed for a particular purpose and audience. This may require a process of consultation or even the active involvement of the audience in the actual development of a reporting framework for sub-national SDIs. Such involvement is also often recommended to heighten awareness and build commitment.

## **5.0 Actions necessary for a sub-national SDI set to be developed to facilitate the implementation of the forthcoming Sustainable Development Strategy**

Sub-national SDIs are bits of information that, when combined, generate a picture of what is happening in a local system. They provide insight into the overall local/regional direction: whether it is improving, declining, or staying the same, or it is some mix of all three<sup>48</sup>. To facilitate the development of sub-national SDIs and implementation of the forthcoming National Sustainable Development Strategy, we must:

### **5.1 Promote the need to develop sub-national indicators underpinned by strong public participation**

The United Nations Conference on Environment and Development (UNCED), the Earth Summit, in Rio de Janeiro, Brazil in 1992<sup>49</sup> adopted Agenda 21, a comprehensive plan of action to be implemented globally, nationally and locally by organisations, governments, and major groups in every area in which humans have an impact on the environment. Everyone, including governments, business people, trade unions, teachers, indigenous people, men, women and children have their roles, individually and collectively.

Sustainable development indicators can serve different purposes at different levels. At the global and regional levels, they facilitate comparison and sharing of experiences. At the national level, they can assist in development of policies that can improve the quality of sustainable development within the country, at national as well as sub-national levels. At the local level, they help in capturing the gaps and constraints in policy implementation, identifying specific capacity-building needs, and formulating change plans.

Disaggregation between national and sub-national levels is imperative because citizens' needs and overall sustainable development situation at the regional/local level are often quite different from the national level. Issues such as participation, accountability and efficiency have different policy and capacity implications at the local level than at the national level. As the level of government closest to the people, local governments are the primary providers of basic services such as water supply, sanitation, solid waste management, health, education and, in some cases, housing. It is thus imperative that they engage communities in decision making, build partnerships with stakeholders, be responsive and accountable to citizens, and ensure access of the poor and marginalised groups to these services and to decision-making processes.

In Ireland, although national sustainable development indicators are important for global comparison as well as national-level policy making, it is at the regional/local level that the quality of governance affects the citizen the most. Sub-national sustainable development indicators can thus play a very important role in assisting regional local authorities to improve their functioning in specific areas, engage more closely with the communities, and become more responsive and accountable.

### **5.2 Connect sub-national indicators with regional/local issues, visions and values**

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<sup>48</sup> Rhonda Phillips (2003) *Community Indicators*. The American Planning Association

<sup>49</sup> UNCED (United Nations Conference on Environment and Development) (1992) *Agenda 21: Program for Action for Sustainable Development* New York: United Nations Conference on Environment and Development

SDIs vary depending on the audience, and the geographic, political or social context (Pinter et al 2000)<sup>50</sup>. To be meaningful at local levels, the selected SDI must reflect community values, concerns and hopes for the future. Providing members of the community with information that they are not prepared to utilise is not productive (Pastille 2002)<sup>51</sup>. Indicators therefore must be tailored to the needs of the users: policy makers and the public. The public, on the other hand, must be able to provide their own contributions to addressing the problems to which they ultimately contribute.

Sub-national SDIs must relate to local/regional economic, environmental, cultural, social, and other priorities and issues that matter to stakeholders. To do this, policy-makers and formulators of local/regional SDIs must engage stakeholders in identifying the things they most value and in selecting the indicators (bits of information) that will measure change over time.

The aim will be to collect, analyse and interpret data for each indicator and periodically report back findings to the stakeholders. Individuals, community groups, and organisations in all sectors should use these reports to increase their knowledge, inform their decisions, and guide collective action to achieve the short- and long-term economic, environmental, cultural, and social progress that reflects their values and aspirations. In this way, sub-national SDIs build local/regional capacity to address challenges and seize opportunities.

### **5.3 Place sub-national indicators at the centre of strategic thinking at regional/local level (and developing policies which can achieve multiple aims)**

Sub-national SDIs indeed can and do serve a purpose in the continuing debate about sustainable development. They can help local/regional authorities assimilate and better understand stakeholders' views regarding sustainable development. They can add to the process of governance and when local context is considered, they can help guide and mould policy decisions. What is important for both policy makers and stakeholders alike is to understand that sub-national SDIs function inside the governance process. They are not exogenous factors parachuted in, which can act like a magic bullet causing decision-making to become instantly objective and scientific. Creating successful sub-national SDIs relies far more on focusing on how they are integrated into the processes of local/regional governance and far less of devising, designing, and tweaking particular indicator sets.<sup>52</sup>

Policy makers operating within their localities and having their own experiential knowledge of those localities can reflect on their own experience and obtain insight as to how their own sub-national SDIs are institutionally structured. The development and use of local/regional indicators in Ireland will depend on the existing networks of relationships between policy makers and on the specific form of local institutions. Understanding local institutions as a set of overarching traditions, norms, values, routines, and working practices, particularly the local political and administrative culture will help understanding of the role of sub-national SDIs at local/regional level. In order to fully appreciate the role sub-national SDIs play within institutions one must be able to reconstruct the specific discourse on indicators and sustainability and see how it is influenced by local institutional culture.

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<sup>50</sup> Pinter, L., Zahedi, K., Cressman, D.R. (2000) *Capacity Building for Integrated Environmental Assessment and Reporting – Training Manual*. Second Edition, IISD / UNEP, Ecologist International Limited.

<sup>51</sup> The Pastille Consortium. (2002) *Indicators Into Action: Local Sustainability Indicator Sets in Their Context*. Final Report. London: London School of Economics.

<sup>52</sup> The Pastille Consortium. (2002) *Indicators Into Action: Local Sustainability Indicator Sets in Their Context*. Final Report. London: London School of Economics.

It is not enough to require the publication or production of sub-national SDIs as a means of gaining support for predetermined policy positions, or worse still, to give ritualistic assurance about appropriate attitudes towards decision-making. This may result in indicator development but will not ensure that indicators are taken account of in decision making. Ideally, sub-national SDIs should inform decision-making by being conceptually used for enlightenment (as a tool to illustrate concepts, helping to change the understanding of an issue), and to disclose a direct relationship between indicators and decision outcomes. For example, they can be used to measure the impact of certain decisions, and when used to measure effectiveness, they can be instrumental in changing policies.<sup>53</sup>

There is a desperate need to acquaint policy makers with the fundamental requirement to incorporate sub-national SDIs into the decision making process and associated policy action at local/regional level.

#### **5.4 Create a sub-national indicator development framework that emphasises collaboration**

Engaging local/regional stakeholders is an integral part of any sub-national SDI development framework and is at the core of its operation. “Local/regional stakeholders” includes all members of the community whether they are the people who live and work in a Local Authority or Region, their formal and informal associations, and the organisations that make up the public, private, and not-for-profit sectors.

To effectively engage local/regional stakeholders, operators of the framework may develop a strong and compelling brand identity and use marketing and communications to create and maintain a high level of interest in the framework.

The first formal opportunity for engaging local/regional stakeholders will occur during extensive consultations to develop the shared vision and values, and identify issues and goals for the area. The second opportunity will occur when the framework reports back to local/regional stakeholders on the shared vision and invites feedback; the third engagement will occur when local/regional stakeholders are asked to comment on a draft set of indicators derived from second consultation; and the fourth during the communication, reporting and outreach phase.

As the framework develops and evolves, the nature of its engagement with local/regional stakeholders may become less sequential as various elements of the operating model engage with different groups of local/regional stakeholders, for different purposes, at different times.

Sub-national SDIs selection and development must engage stakeholders and experts in developing a set of indicators to measure local/regional progress toward their shared vision, and provide information on data sources. The framework must establish criteria for selecting indicators. The framework must have an information and knowledge system. The purpose is to manage and provide the indicators information required by the framework. The information and knowledge system will use information technology and data experts to create a data management system for collecting, analysing, and interpreting the indicators information as required. Evaluation, learning and improvement will occur on an ongoing basis within each element of the operating framework. Periodically the results of this process will be summarised in situation reports.

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<sup>53</sup> Hezri, A.A. (2003) *Sustainability Indicators and Policy Processes: Experience from Malaysia*: Paper presented at the International Conference on Sustainability Indicators, Valetta, Malta. 6-9 November.

By managing the ongoing process described in this operating framework, the sub-national SDI set will achieve its intended outcomes namely:

- A shared local/regional vision that has been developed, shared, and kept current by all stakeholders;
- Local/regional stakeholders informed about the community's progress toward its vision; and
- Local/regional stakeholders working collaboratively to address challenges and seize opportunities to achieve their shared vision for their areas through inputs into policy making and policy action.

### **5.5 Institute a governance model for developing and operating sub-national indicators**

A governance model for developing and operating sub-national SDIs framework will be required at local/regional level<sup>54</sup>. It will take into cognisance the framework's purpose and values including the need for accountability, credibility, participation, capacity, efficiency, sustainability, competence, independence and transparency. A model is presented in Figure 3.

This model assigns governance to a board that is dedicated to the main purpose of ensuring the framework's success, and taking an active role in championing the framework and engaging local/regional stakeholders. It should also create high visibility, a unique position, and a positive image for the framework. A board of directors should provide lead in the proposed governance model. The board's responsibilities will include developing policy, providing stewardship, and ensuring accountability. An executive committee will provide strategic direction to both the board and technical advisory groups and will also actively engage with local/regional stakeholders through the technical advisory groups.

The technical advisory groups will include volunteers who are expert in indicators selection, data management, marketing and communications, and other fields that are critical to the successful implementation of the framework's operation. Local and Regional Authorities should provide a secretariat consisting of LA 21 and Environmental Awareness Officers and experts working under secondment from partner organisations to support the executive committee, the technical advisory groups, and the board. The secretariat will also engage directly with local/regional stakeholders.

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<sup>54</sup> IISD (undated) *City of Winnipeg Quality of Life Indicators*. Available at <http://www.iisd.org/pdf/wpg.qoli.pdf>

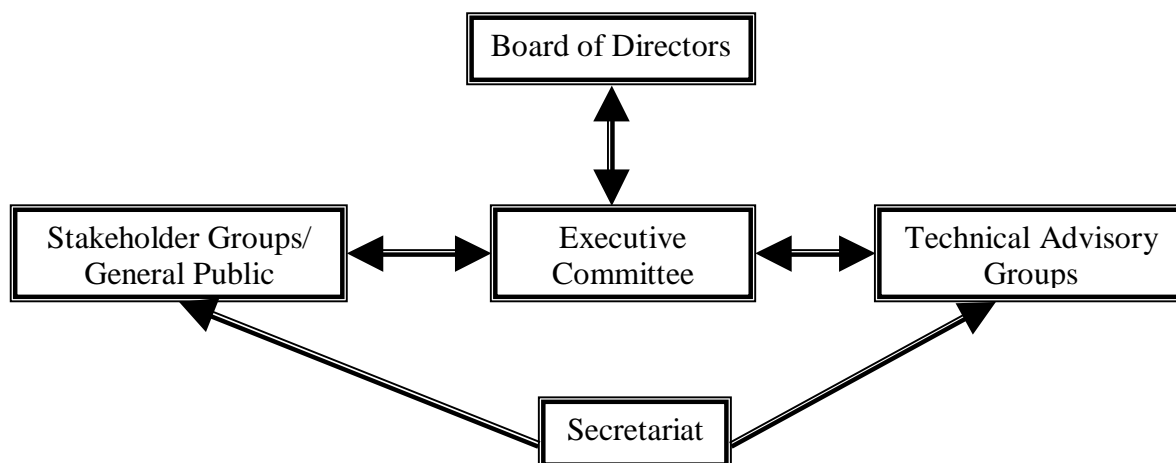


Figure 3: Suggested governance model for developing and operating the SDIs at local/regional level in Ireland

The model suggested above should have Comhar SDC as the board that is dedicated to the main purpose of ensuring the framework’s success, and taking an active role in championing the framework and engaging local/regional stakeholders. Comhar SDC is well placed to provide an independent assessment of the implementation of the NSDS through the regional and local level SDIs and should be resourced to do so as it can play a key role in communication and engagement of a wide range of stakeholders.

It is important that the development of a sub-national indicator set is resourced and coordinated properly and the appropriate structures put in place to support this. Comhar SDC, the Central Statistics Office, National Statistics Board, EPA, SEI, ESRI and NESCC should be resourced to carry out the development of appropriate national, regional and local SDIs. Comhar SDC should be resourced to take on a coordination role between data providers for operationalising sub-national SDIs.

### 5.6 Link Sub-national SDIs to a National SDI set and the NSDS

Ideally, indicators developed at local level should feed into regional-scale indicators, and hence into those developed at national and international level. This provides a seamless cascade of information between the different levels – and a means of ready communication and consensus. In practice, this is difficult to achieve, since local users are likely to be concerned about different problems, and want them expressed in different ways. Different users may read different messages from an indicator. Some potential users may simply gain nothing from a particular indicator, because it does not convey anything of obvious relevance. This is not to say that both vertical and horizontal linkage of indicators is not possible in Ireland. Rather, the issue is that these means of translation need to be developed if indicators are to have meaning for all those concerned.

Comhar SDC have developed a set of principles (Table 1) for sustainable development<sup>55</sup>, which could be used to determine whether policies, existing or future, are likely to lead to sustainable development. In other words, these principles can be used as a benchmark for policies. It will be advantageous that national and sub-national SDI sets in Ireland are

<sup>55</sup> Comhar SDC (undated). *Principles of Sustainable Development*. Available at <http://www.comharsdc.ie/files/comhar0218.pdf>

developed along these principles. This is a viable framework which elucidates the integration of central tenets of sustainable development so as to promote appropriate policy responses and associated practices with people's aspirations and lifestyles at both national and sub-national levels in Ireland.

Table 1. Comhar SDC Principles of Sustainable Development

<b>Principles of Sustainable Development</b>
<ul style="list-style-type: none"> <li>▪ The use of non-renewable resources should be minimised</li> </ul>
<ul style="list-style-type: none"> <li>▪ Use of hazardous/polluting substances should be minimised; waste management should be environmentally sound</li> </ul>
<ul style="list-style-type: none"> <li>▪ Renewable resources should be maintained and improved</li> </ul>
<ul style="list-style-type: none"> <li>▪ The quality of soils and water resources should be maintained and improved</li> </ul>
<ul style="list-style-type: none"> <li>▪ The diversity of wildlife, habitats and species should be maintained and improved</li> </ul>
<ul style="list-style-type: none"> <li>▪ Air and atmosphere should be protected and human-induced effects on climate minimised</li> </ul>
<ul style="list-style-type: none"> <li>▪ The development of resource potential in one region should not compromise the ability of other regions to achieve their own potential</li> </ul>
<ul style="list-style-type: none"> <li>▪ Social inclusion should be promoted to ensure an improved quality of life for all</li> </ul>
<ul style="list-style-type: none"> <li>▪ Sustainable Development depends on co-operation and agreement between states</li> </ul>
<ul style="list-style-type: none"> <li>▪ The quality of landscapes, the heritage of the man-made environment and historic and cultural resources should be maintained and improved</li> </ul>
<ul style="list-style-type: none"> <li>▪ Decision-making should be devolved to the appropriate level</li> </ul>
<ul style="list-style-type: none"> <li>▪ Stakeholder participation should be promoted at all levels of decision-making</li> </ul>

The development of an integrated system of socio-economic and environmental accounting is the foundation needed to measure Ireland's environmental performance now and in the future. The revised NSDS should reflect the EUSDS themes as well as the SD principles in order to provide Ireland with an integrated SDI system from the beginning as this will permit a consistent analysis of the contribution of the environment to the economy and the impact of the economy on the environment and social wellbeing.

## **6.0 Recommendations on a sub-national set of sustainable development indicators**

Local/regional SDIs play an important role in raising awareness of sustainable development. The development of local/regional SDIs is based on the working assumption that it provides an opportunity for communities to become involved in deciding what is important to ensure sustainable development in their local area and in measuring their progress or otherwise.

Initiatives to develop sub-national SDIs in Ireland have remained uncoordinated and unstructured given rise to a handful of spatially and temporally diversified indicators that

serve different aspects of the various dimensions of sustainable development as illustrated in Section 2.5. There is therefore, a cogent and urgent necessity to develop or adopt a basis for the formulation of sub-national SDIs in Ireland that would be relevant to the broad thematic areas of the NSDS including climate change and clean energy, sustainable transport, sustainable consumption and production, conservation and management of natural resources, public health, social inclusion, demography and migration.

To this end, it is the authors' consideration that the SDI set contained in the final report of the EUSDI Task Force<sup>56</sup> would be a useful starting point for formulating national and sub-national SDIs for Ireland. Enviro Centre<sup>57</sup> have in another study reviewed data that exist for many of these indicators and conclude that data are available for most of the relevant "best-available" indicators from the EUSDI set for Ireland at the national level. A further examination of the EUSDI set (during this study) suggests that a good number of indicators can be disaggregated to regional and local levels (see Annex VIII). SDIs marked 'Y' can be used to create a basket of sub-national SDIs for Ireland. Not all the SDIs identified in the list may be relevant at local/regional levels as their policy relevance and public acceptability will be put to test during consultations.

Theme 10 on Global Partnerships in the EUSDI set may not be a priority at sub-national level. The EUSDI selected for sub-national application should be augmented with indicators already in existence such as those of the EPA (Annexes II and III), SEI (Annex IV), HSE (Annex V), Combat Poverty Agency and LGSMB to form a national basket of sub-national SDIs for Ireland. Sub-national indicators can be selected by regional/local authorities from this pool via a participatory process to best reflect local circumstances using criteria such as simplicity and feasibility, robustness and associated qualities, practicality, data availability, usefulness to policy makers, and as a communication tool.

### **6.1 The need for both simplicity and feasibility in their formulation**

A good indicator is one that everyone can understand. People should be able to relate it to some common knowledge or personal experience. Defining the issue to be addressed is therefore the first essential step in selecting SDIs. This, however, poses its own problems, for issues are themselves multidimensional, and the definition of any issue is likely to vary, depending on the perspective of the user. Each of these may then be traced either backwards (towards their source) or forwards (towards the effects and consequences). Because of the many-to-many relationships involved, each will thus follow a different network of links, and result in a different definition of the issue of concern.

What good is an indicator if it can't be practically measured or if time is spent measuring it and losing focus on the actual project? An indicator should be easy to collect, measure and record. Effective indicators should be based on data that are easy to access. This is a principle that many proposed indicators fail to satisfy, primarily because the data needed to construct them are not available, or the methods or models for applying them are not well established. Simple availability of data is not enough. The data must also be accurate enough to enable changes in the target condition to be detected. In other words, the indicator must be sensitive to real variations in the target condition, and must not be blurred by errors, uncertainties, inconsistencies or gaps in the data.

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<sup>56</sup> Final Report of the Task force on Sustainable Development Indicators – November 2005  
<http://epp.eurostat.ec.europa.eu/portal/>

<sup>57</sup> Maguire, C. and Curry, R. (2007) Counting What Counts: A Review of Sustainable Development Indicators for Ireland, Enviro Centre and Comhar SDC, Ireland.

## 6.2 The potential usefulness of any given sustainable development indicator once formulated

By providing information relevant to sustainability in comprehensive and quantitative form, SDIs have become powerful aids for decision-making. SDIs are key mechanisms to measure progress of a system or society towards or away from sustainability. Measuring progress towards or away from sustainability is important to:

- Provide feedback on system behaviour and policy performance;
- Improve chances of successful adaptation;
- Ensure movement toward common goals;
- Improve implementation; and
- Increase accountability.

They comprise a characteristic or condition which can be described in a way which provides information about some other characteristics or condition which is, itself, not amenable to direct observation or measurement. Indicators help support sustainability assessment and are essential in policy formulation.

SDIs are developed based on available data, the information needs of decision makers and key policy priorities. They are potentially powerful tools for creating change because they go to the heart of decision-making. Although lack of data makes indicator development more difficult, it does not make it impossible. If no data directly related to an important issue are available, a number of techniques may need to be adopted to fill the gap.

However, one of the major criticisms regarding SDIs is that they attempt to encapsulate complex and diverse processes in a relatively few simple measures. Another is the unavoidable issue of subjectivity in the selection and evaluation of representative indicators. Stakeholders (including researchers and experts) involved in the construction of SDIs have certain scientific and social backgrounds and therefore a degree of subjectivity is inevitable. Other problems include lack of appropriate data and over aggregation of data. Lack of appropriate data may result to the omission of vital information. This will invariably lead to measuring what is measurable rather than what is important. Over aggregation could also lead to misinterpretation, bad communication and analysis incapability. Despite these shortcomings, it is generally accepted that indicators as measures of sustainability can be valuable aids to planning, forecasting and awareness building when chosen carefully and as systematically as possible.<sup>58</sup>

## 6.3 The robustness and associated qualities with any given sustainable development indicator

The main requirements for indicator design, arising from their consideration as a technical policy tool, are that indicators should be scientifically valid or analytically sound, and be responsive to changes that are occurring. The Organization for Economic Cooperation and Development (OECD)<sup>59</sup> has developed a set of criteria for selecting operational indicators based upon three simple ideas summarised below:

Interpretability                      *Scientifically credible* – based on known or strongly suspected relationships between what is being measured (indicators) and what they are intended to represent (target conditions)

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<sup>58</sup> The Pastille Consortium. (2002) *Indicators Into Action: Local Sustainability Indicator Sets in Their Context*. Final Report. London: London School of Economics.

<sup>59</sup> OECD (2001) *Environmental Indicators: Towards Sustainable Development*. Paris: OECD

	<i>Sensitive</i> – responsive to changes in the target conditions (and thus specific to those target conditions and reasonably unconfounded)
	<i>Consistent</i> – providing a coherent message (different indicators are not contradictory)
	<i>Transparent</i> – computed using a clear and explicit methodology (which can thus be repeated if necessary)
	<i>Understandable</i> – expressed in a way that can be easily and consistently understood by the user
Measurability	<i>Available</i> - based on data that are already available or obtainable within an acceptable timeframe and cost
	<i>Timely</i> - available soon after the event or period to which it relates
	<i>Spatially accurate</i> – at a sufficiently high resolution to show geographic variations in the target condition
	<i>Robust</i> – unaffected by minor variations in the data source or method of computation
Utility	<i>Relevant and Pertinent</i> – related to an issue of current or future concern to the user
	<i>Exclusive</i> – without unnecessary duplication
	<i>Comprehensive</i> – covering the whole area, time period and issue of concern
	<i>Cost Effective</i> – providing information that merits the costs of implementation.

Ideally, indicators developed at local level should feed into regional-scale indicators, and hence into those developed at national and international level. This provides a seamless cascade of information between the different levels – and a means of ready communication and consensus. In practice, this is difficult to achieve, since local users are likely to be concerned about different problems, and want them expressed in different ways. This is not to say that both vertical and horizontal linkage of indicators is not possible. Rather, the issue is that these means of translation need to be developed if SDIs are to have meaning for all those concerned.

#### **6.4 The regional SDI development process and whether it can guarantee the full participation and engagement of all actors concerned and in doing so create a sense of ownership**

One of the messages that emerged from the Brundtland Report (1987)<sup>60</sup> and the Rio Declaration (1992)<sup>61</sup> was that active public participation is a prerequisite for achieving sustainable development. Researchers such as Schelin *et al.* (2003)<sup>62</sup> call for involvement of the indicator users in the construction of SDIs in order to gain commitment, motivation and relevance.

Participatory methods, also labelled as interactive or deliberative methods, involve a plethora of process methods, varying from expert panels, to gaming, policy exercises and

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<sup>60</sup> WCED (World Commission On Environment and Development). (1987) *Our Common Future*. United Kingdom: Oxford University Press

<sup>61</sup> UNCED (United Nations Conference on Environment and Development) (1992) *Agenda 21: Program for Action for Sustainable Development* New York: United Nations Conference on Environment and Development

<sup>62</sup> Schelin, J., von Malmborg F. and Carlsson J.-E. 2003. Towards integrated environmental management: The case study of a Swedish urban engineering company. In *Int J Corporate Sustain* **10** (2), pp. 41–50.

focus groups. It was first argued that involvement of non-scientists is needed to ensure the relevance and later acceptance of the analytical (modelling) approach.<sup>63</sup> However, participatory approaches are not a fixed set of mechanistic tools but a diverse range of possible techniques which need to be flexibly adapted to particular situations and needs. The degree to which participatory methods realise their potential contribution depends critically on how systematically they are used and in what context.

The stakeholder participatory approach enables professionals, policy makers and stakeholders to contribute important knowledge and experience to the sub-national SDI selection and operation process. The participatory approach captures a wealth of information from participants of varied background, knowledge, experience and perspectives. The information obtained during regional/local SDI selection process from conventional data sources and stakeholders can be described as 'hard' (backed up with facts and figures) and 'soft' (seen more as nuances), respectively. The indicator development process not only includes, but also equally values both types of information. A mix of 'hard' (quantitative) and 'soft' (qualitative) information in the data collection process is better suited to capture the multi-facet criteria of sustainable development. Finally, the participating stakeholders have the opportunity to ensure that their viewpoint is integrated in the SDI selection process, and therefore create a sense of ownership.

### **6.5 How sub-national sustainable development indicators can follow both a bottom-up as well as a top-down approach in their development.**

The development of sub-national SDIs can be achieved in two ways – conventional (top-down) and participatory (bottom-up).

The conventional approach involves, for example, an external consultant who develops the indicators so that performance could be assessed against initial policy objectives. The organisation and content of the 'conventional' indicator set is at the discretion of the external formulator, and may have little or no consultation with stakeholders. These indicators while perfectly valid from a scientific viewpoint fail to resonate with the public. Top-down approaches can provide the systematic framework for guiding the search for indicators and assessing viability and sustainability of a given system. It cannot however, determine the final choice of indicators. This task remains to be completed in collaboration with the stakeholders. It is obviously wrong to let a group of experts make a selection of indicators in an area as complex as sustainable development. Experts are likely to focus on issues and items of their professional expertise while neglecting others that may have a significant effect in the real system. In conventional SDI process, a search for indicators can only be as complete and comprehensive as the imagination, knowledge and experience of the researchers allow. But the best knowledge of systems and problems, including their long-term perspective, can usually be found with those who have to cope with them daily: citizens, businesses, unemployed persons, managers and administrators, farmers, media practitioners, doctors, social workers, police, educators and so on. The principle is that people should be fully involved in issues concerning themselves and the society in which they live. Effectiveness of indicators and sustainability of a system depend practically, in part, on the commitment of interested parties or stakeholders.

The participatory approach works by having local stakeholders develop their own SDIs to manage a given activity, normally with facilitation by experts. Sub-national indicators

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<sup>63</sup> The Pastille Consortium. (2002) *Indicators Into Action: Local Sustainability Indicator Sets in Their Context*. Final Report. London: London School of Economics.

developed on the basis of local objectives may not, necessarily, be the same as the policy or programme objectives (depending on the level of consultation in defining the policy or programme objectives).

In theory, the accuracy of the local/regional SDIs should be strengthened by the broad range of perspectives brought to bear by the diverse participants, especially if a participatory approach is consistently used and the local participants are already familiar and comfortable with a wide range of participatory tools. Again, the 'local/regional' indicators are more likely to reflect the unique conditions of the policy or programme in relation to the community in question. There is an increased likelihood that such SDIs will be used directly by the stakeholders to manage, monitor and improve a given policy, programme or activity.

Sustainable development is derived from people's capacities to exercise choice, and to access opportunities and resources, and use them for their livelihoods in ways that do not foreclose options for others to make their living, either now, or in the future. The viability of sustainable development depended on the full support and participation of the people it affects. As with all aspects of SDI construction, the choice of indicators, especially those reflecting human values, needs to emerge from a process that allows wide participation and achieves broad consensus and/or compromise. In this way, SDIs could therefore, be employed as social constructions through which policy issues may be identified and defined, policy targets set, and progress measured.

## **6.6 Specific recommendations**

- The revised NSDS should commit Ireland to providing the resources for the development and operationalisation of sub-national SDIs and make it mandatory for regional and local authorities to integrate the implementation and reporting of these SDIs into their environmental and socio-economic accounting mechanism.
- Since there is currently no framework for formulating and operationalising sub-national indicators in Ireland, the EUSDI set (Annex VIII) when disaggregated to relevant spatial levels should be adopted (in conjunction with some local initiatives enumerated in Section 2.5 of this paper) to create a basket of sub-national SDIs. This will facilitate integration at both national and international levels where appropriate, and provide a genuine starting position for formulating regional/local SDIs in Ireland.
- Specific local/regional indicators should be selected from this pool in a participatory process to best reflect local circumstances using criteria such as simplicity and feasibility, robustness and associated qualities, practicality, data availability, usefulness to policy makers, and as a communication tool. Surrogate or complementary SDIs may be formulated to further capture local/regional values and vision during the participatory process.
- Comhar SDC should be resourced to ensure the framework's success by taking an active role in engaging local/regional stakeholders. Comhar SDC is well placed to provide an independent assessment of the implementation of the NSDS through the regional and local level SDIs and should be resourced to do so as it can play a key role in communication and engagement of a wide range of stakeholders.
- It is important that data required for the development of a sub-national indicator set is resourced and coordinated properly and the appropriate structures put in place to support this. Comhar SDC, the Central Statistics Office, National

Statistics Board, EPA, SEI, ESRI and NESC should be resourced to carry out the development of appropriate national, regional and local SDIs. Comhar SDC should be resourced to take on a coordination role between data providers for operationalising sub-national SDIs.

## 7.0 Conclusions

Efforts within Ireland to create territorial indicators for local/regional sustainable development are still at a fairly early stage. This is mainly because many strategies, policies, and programmes are still treated at the sectoral rather than territorial level. The selection and application of sub-national SDIs in Ireland must be guided by the following:

- Indicators of sustainable development are needed to guide policies and decisions at all levels of society: village, town, city, county, state, region, nation, continent and world. The revised NSDS shall make firm provisions for the development of sub-national indicators.
- These indicators must represent most concerns of the region or local authority: an *ad hoc* collection of indicators that just seem relevant is not adequate. A more systematic approach must look at the interaction of systems and their environment. To this end, results from the few available local indicator initiatives should be reviewed and where possible utilised.
- The number of indicators should be as small as possible, but not smaller than necessary. That is, the indicator set must be comprehensive and compact, covering all relevant aspects and themes of the revised NSDS. A basket of local SDIs should be developed and consisting of the EU SDIs supplemented with other indicators from which each region/local authority in Ireland will select a set.
- A governance model, a framework, a process and criteria for selecting an adequate set of sub-national indicators of sustainable development are needed. The process of selecting an indicator set for a regional and local application must be participatory, to ensure that the set encompasses the visions and values of the community or region for which it is developed.
- The SDIs must be clearly defined, reproducible, unambiguous, understandable and practical. They must reflect the interests and views of different stakeholders. Through analysis of trends shown by these indicators, it must be possible to deduce the vitality and sustainability of current developments in a region or local authority, and to compare with alternative development paths.
- Collection of data required for the development of a sub-national indicator should be coordinated properly and the appropriate structures put in place to support this effort. Comhar SDC should be resourced to take on a coordination role between data providers namely the Central Statistics Office, National Statistics Board, EPA, SEI, ESRI and NESC for operationalising sub-national SDIs.

Depending on the policy question or issue that is being addressed, very different concepts, sizes, or configurations of territorial units are required to address the issue and to provide policy-relevant information. The question of spatial scale is absolutely crucial in the sub-national SDI process. Indicators that are only available at a national level are unlikely to have utility when applied to regional/local level, even when produced for a

sector apparently synonymous with sub-national locale. In reality, of course, the scale of the indicator used will be determined by data availability.

## **Annex I**

### **Quality of life Indicators for Galway City**

<b><u>Themes</u></b>	<b><u>Quality of life indicators examined</u></b>
<b>1. Transport</b>	Perceptions of traffic Perception of cycle lanes  Perception of bus service
<b>2. Size/Compactness Community Identity</b>  neighbourhood	Perception of sense of belonging in a  Satisfaction with neighbourhood as a place to live  Perception of city as a safe city Perception on improving crime control  Volunteerism and involvement in local groups  Trust in neighbours Trust in locally elected officials Feelings of empowerment
<b>3. Facilities</b>	Satisfaction with leisure facilities  Perceptions of accessibility of facilities Satisfaction with health services
<b>4. Planning and development</b>	Perception of building development  Derelict sites
<b>5. Environment</b>	Perceptions of green areas  Quality of green areas Recycling service  Litter Unpolluted physical environment

**5. Economy**

Perception of standard of living

Availability of affordable housing

Ease of employment attainment

**6. Social considerations**

Perceptions of integration

Problems with antisocial behaviour

Problems with abandoned cars

## **Annex II**

### **EPA Rural Environmental Indicators**

#### **Driving Force Indicators**

- Rural population
- Industrial production
- Gross value added per region
- Energy demand and economic growth
- Tourist numbers
- Fertiliser sales
- Livestock numbers

#### **Pressure Indicators**

- Eco-efficiency of electricity production
- Housing construction
- Commercial peat extraction
- Agricultural waste arising
- Greenhouse gas emissions
- Nitrogen oxides (NO<sub>x</sub>) emissions
- Sulphur dioxide (SO<sub>2</sub>) emissions

#### **State Indicators**

- River water quality
- Groundwater quality
- Phosphorus levels in soil
- Forest cover
- Tree species planted in forests

#### **Impact Indicators**

- Drinking water quality
- Carbon sequestration
- Fish kills
- Birds of conservation concern
- Impacts on coastal protected areas

#### **Response Indicators**

- Designation of protected areas
- Participation in the rural environmental protection scheme
- Climate change strategy
- Renewable energy
- Expenditure on environmental services

## Annex III

### Environmental Indicators for Ireland

<b>Part I: State of the Environment Indicators</b>	
<p><b>Air</b></p> <p>Air Quality – Black Smoke            Air Quality – Particulate Matter (PM10)            Air Quality – Sulphur Dioxide (SO2)            Air Quality – Nitrogen Oxides (NOX)            Air Quality – Ground Level Ozone (O3)            Air Emissions – Sulphur Dioxide (SO2)            Air Emissions – Nitrogen Oxides (NOX)            Air Emissions – Volatile Organic Compounds            Air Emissions – Ammonia (NH3)            Greenhouse Gas Emissions and Climate Change            Temperature            Precipitation</p>	<p><b>Water</b></p> <p>River Water Quality            Lake Water Quality            Estuarine and Coastal Water Quality            Bathing Water Quality            Groundwater Quality            Drinking Water Quality            Fish Kills            Urban Waste Water Treatment            Water Framework Directive and River Basin Management            Planning</p>
<p><b>Waste</b></p> <p>Generation and Management of Municipal Waste            Recovery Rates of Packaging Waste            Bring Banks and Civic Amenity Sites            Municipal Waste Infrastructure</p>	<p><b>Land Cover and Biodiversity</b></p> <p>Land Cover            Urbanisation            Protected Areas            Protected Species            Birds of Conservation Concern            Bird Species</p>
<b>Part II: Sectoral Environment Indicators</b>	
<p><b>Transport</b></p> <p>Vehicle Numbers            Freight Transport Demand            Air Emissions from Transport            Public Transport            Vehicle Emissions</p>	<p><b>Industry</b></p> <p>Industrial Production            Industrial Waste Generation and Management            Hazardous Waste            Industrial Energy Use            Licensing of Large Industries</p>
<p><b>Energy</b></p> <p>Total Primary Energy Requirement by Fuel Type            Total Final Energy Consumption by Sector            Renewable Energy Contribution to Gross Electricity            Consumption            Electricity Efficiency</p>	<p><b>Agriculture</b></p> <p>Agricultural Land Use            Livestock Numbers            Organic and Inorganic Nitrogen Fertiliser Application            Organic and Inorganic Phosphate Fertiliser Application            Greenhouse Gases from Agriculture            Organic Farming            The Rural Environment Protection Scheme</p>
<p><b>Forestry</b></p> <p>Forest Cover            Species Planted in Irish Forests</p>	<p><b>Fisheries</b></p> <p>Marine Fish Stocks            Irish Sea-Fish Landings            Aquaculture Production            Quality of Shellfish Waters</p>

## Annex IV

### ***SEI Data and Sectoral Indicators***

#### **A. Data**

##### **Energy Trends**

- Energy Supply
- Energy Use by Mode of Application
- Energy Balance
- Energy Demand
- Energy Intensities
- Energy Efficiency
- Electricity Generation
- Electricity Demand

##### **Energy Forecasts to 2020**

###### **Baseline Energy Forecasts**

- Primary Energy Supply Forecasts (Baseline)
- Final Energy Demand Forecasts (Baseline)

###### *White Paper Forecasts*

- Final Energy Demand Forecasts (White Paper)
- Renewable Energy Forecasts (White Paper)

##### **Key Policy Issues**

###### **Environmental Responsibility**

- Greenhouse Gas Emissions
- Transboundary Gas Emissions
- Renewable Energy
- CO<sub>2</sub> Displacement
- Combined Heat and Power

###### **Security of Supply**

- Cost Competitiveness
- Energy Prices in Industry
- Household Energy Prices
- Transport Energy Prices

#### **B. Sectoral Indicators**

##### **Industry**

- Industry Energy Intensity

##### **Transport**

- Transport Energy Demand by Mode
- Private Car Transport
- New CO<sub>2</sub> based Vehicle Registration and Road Tax Bands
- Fuel Efficiency of new cars in Ireland

- Transport Sector Energy Efficiency
- Private Car Average Annual Mileage

### **Residential**

- Unit Consumption of the Residential Sector
- Residential Sector Energy Efficiency
- Commercial and Public Services / Tertiary
- Energy Intensity of the Services Sector

## **Annex V**

### **HSE Key Performance Indicators**

#### **Primary Care**

- Number of Primary Care Teams (PCTs)
- Number of Primary Care Teams in development
- Total number of patients / clients with a care plan

#### **Orthodontics**

- Total number of patients receiving treatment during reporting period
- Total number of patients with completed treatments during reporting period
- Average waiting time for:
  1. Orthodontic assessment (Category A: Category B:)
  2. Orthodontic treatment (Category A: Category B:)

#### **GP Out of Hours**

- Number of contacts with GP out of hours

#### **Primary Care Teams**

- Number and % of Public Health Nurse (PHN) who are assigned to PCTs

#### **Child Health**

- Number and % of new born babies visited by a PHN within 48 hours of hospital discharge
- The percentage uptake of 7-9 month developmental screening by 10 months

#### **Immunisations**

- Number and percentage of children 12 months of age who have received three doses of vaccine against Diphtheria (D3), Pertussis (P3), Tetanus (T3), Haemophilus influenza type b (Hib3), Polio (Polio3), Meningococcal group C (MenC3).
- Number and percentage of children 24 months of age who have received three doses of vaccine against Diphtheria (D3), Pertussis (P3), Tetanus (T3), Haemophilus influenza type b (Hib3), Polio (Polio3), Meningococcal group C (MenC3).
- Number and percentage of children who have received the Measles, Mumps, Rubella (MMR) vaccine at 24 months

#### **Community (Demand Led) Schemes**

- Number of GP Visit Cards issued
- Number persons covered by Medical Cards

#### **Long Term Illness**

- Number of claims
  - a) drugs
  - b) non drugs
- Number of items
  - a) drugs
  - b) non drugs

#### **Drug Payment Scheme**

- Number of claims
  - a) drugs
  - b) non drugs
- Number of items
  - a) drugs
  - b) non drugs

## **GMS**

- Number of prescriptions
- Number of items
  - a) Drugs
  - b) Non drugs
- Number of claims – special items of service
- Number of claims – special type consultations

## **HiTech**

- Number of claims

## **DTSS**

- Number treatments (above the line)
- Number treatments (below the line)

## **Community Ophthalmic Scheme**

- Number of treatments
  - Adult
  - Children

## **Domiciliary Care Allowance**

- Number of persons in receipt of DCA

## **Medical Cards**

- % of Medical Cards issued within 15 working days of application
- Mean time between date of application and issuing of Medical Card

## **GP Visit Cards**

- % of GP Visit Cards issued within 15 working days of application
- Mean time between date of application and issuing of GP Visit Card

## **Children and Families**

### **Family Support Services**

- Total number of referrals to Family Welfare Conferences
- Total number Family Welfare Conferences convened
- Number of Springboard family referrals
- Number of Teen Parent Support Programme active cases

### **Residential and Foster Care**

- Total number of children in care
  - i. Number and % of children in residential care
  - ii. Number and % of children in Foster Care
  - iii. Number and % of children in Foster care with relative
  - iv. Number and % of children in other care placements / at home under care order

### **Care Planning**

- Number and % of children in care who currently have a written care plan as defined by Child Care Regulations 1995.
  - i. Residential care
  - ii. Foster care
  - iii. Foster care with relatives
  - iv. Other care placement
- Number and % of children who came into care during the reporting period who had a care plan drawn up prior to placement
- Number and % of children in care who have an allocated social worker 88% 88%
  - i. Residential care

- ii. Foster care
- iii. Foster care with relatives
- iv. Other care placement

## **Pre-School**

- Number and % of notified current operational pre-school centres where an Annual Inspection took place
- Number of pre-school Advisory Visits that took place during the year

## **Child Abuse**

- Number of notifications made of child abuse or neglect
- Number and % of assessments conducted following notifications
- Number and % of children on waiting lists for assessments following notification of child abuse or neglect
- Average time spent on waiting list for assessment following notification of child abuse or neglect

## **Inter Country Adoption**

- % ICA assessments completed during the year (Oct to September)
- Performance Activity

## **Mental Health**

### **Admissions**

- Total number of admissions to acute inpatient units (adults and children)
- Number of readmissions as a % of total admissions
- Total number of involuntary admissions

## **Child & Adolescent Mental Health (CAMH)**

- Number of Child & Adolescent Mental Health Teams (as outlined in a Vision for Change)
- Number of new child / adolescent referrals received by Mental Health Services
- Total number of child / adolescent patients seen by a member of the CAMH teams (new and existing)
- Total number of new child / adolescent referrals assessed

## **Acute Units**

- Number of inpatient places per 100,000 population
- First admission rates to acute units (that is, first ever admission), per 100,000 population
  - i. Annual rate
  - ii. Quarterly rate
- Inpatient readmission rates to acute units per 100,000 population
  - i. Annual rate
  - ii. Quarterly rate
- Rate of involuntary admissions per 100,000 population (Quarterly rate)
- Median length of stay in inpatient facilities

## **Children & Adolescent Waiting List**

- Waiting times for assessment and treatment by CAMH Teams
- Overall number on waiting list; Number and % seen (<3months; 3-6months; 6-9 months; 9-12months, >12moths)
- % of new versus existing child / adolescent patients seen by a member of the CAMH team
- Number of repeat deliberate self harm presentations at Emergency Dept (ED)

## **Disability Services**

### **Day Services**

- Number of persons with intellectual disability and autism in sheltered work services
- Number of sheltered work places provided for people with intellectual disability and autism.
- Number of sheltered work places provided for people with physical and/or sensory disability

- Number of persons with physical and /or sensory disability in sheltered work services Number of persons (all disabilities) in Rehabilitative Training (RT)
- Number of persons with intellectual disability and autism in Other Day Services (excluding RT and Sheltered work)
- Number of persons with a physical and / or sensory disability in Other Day Services (excluding RT)

## **Residential & Respite Services**

- Number of residential places for persons with an intellectual disability & autism
- Number of persons who benefit from such places
- Number residential places for persons with a physical and / or sensory disability
- Number of persons who benefit from such places
- Number respite places for persons with intellectual disability and autism (estimated)
- Number of persons who benefit from such places
  
- Number of respite places for persons with a physical and/ or sensory disability
- Total number of persons who benefit from such places
- Number of hours of Personal Assistance /Home support
- Number of persons with a physical and / or sensory disability benefiting from Home Support / PA hours

## **Inappropriate Settings**

- Number of persons with an intellectual disability inappropriately placed in Mental Health settings/ Other inappropriate placements, transferred to more appropriate settings.

## **Disability Services**

- a) The number of requests for assessments received
- b) The number of assessments commenced as provided for in the regulations.
- c) The number of assessments commenced within the timelines as provided for in the regulations
- d) The number of assessments completed as provided for in the regulations
- e) The number of assessment completed within the timelines as provided for in the regulations
- f) The number of service statements completed.
- g) The number of service statements completed within the timelines as provided for in the regulations

## **Older People**

- Total Home Help Hours provided
- Total number in receipt of home help service
- Persons in receipt of home care packages (HCPs)
- Number of HCPs (equivalents)
- Number of cash grant packages
- Total number of new HCP clients
- Total number of day care places
- Number benefiting from day care places
- Total number of clients in receipt of meals on wheels
- Total number in receipt of subvention (monthly average)
- Total number in receipt of enhanced subvention (monthly average)
- Number and % of people in long-term residential care availing of the Fair Deal broken down by public, private and voluntary facilities
- Number and proportion of those who qualify for ancillary state support who chose to avail of the deferred charge
- Number of statutory inspections of nursing homes carried out (1st and 2nd inspections amalgamated)
- Number of public, private and voluntary beds
- Total number of clients in HSE funded sheltered housing
- Number and % of the population aged 75 years and over in residential care continuing care settings, i.e. HSE Area and other residential continuing care settings, including private and voluntary, as a percentage of the total population aged 75 years and over

- % uptake of influenza vaccine among the GMS population aged over 65 years

## Palliative Care

### Specialist Palliative Care

- Number patients treated in specialist inpatient units
- Number patients in receipt of domiciliary based specialist palliative care
- Number patients in receipt of intermediate palliative care in community hospitals
- Number patients in receipt of day care
- Number specialist palliative care beds per 100,000 population

## Social Inclusion

- Average number clients in methadone treatment (Total)
  - a) Average number of clients in methadone treatment per Area
  - b) Average number of clients in methadone treatment - Prisons
  - c) Average number of clients in methadone treatment – Drug Treatment Centre Board

Key
- The number and % of substance misusers for whom treatment as deemed appropriate has commenced
  1. Within one calendar month of assessment
  2. Later than one calendar month
- The number of substance misusers under 18 years of age for whom treatment as deemed appropriate was commenced within:
  1. Within one calendar month
  2. Later than one calendar month

## Homeless Services

- Number and % of acute providers, including voluntary, hospitals / acute mental health units / psychiatric hospitals operating a formal discharge policy for homeless people.
- Number and % of LHO's operating a formal Leaving and Aftercare Support Service for young people leaving care

## Acute

### Outpatients

- a) number of outpatient attendances
- b) number of outpatient attendances (new)
- c) number of outpatient attendances (return)
- d) number of new DNAs
- e) number of return DNAs

## Births

- number of births
- number and % delivered by Caesarean Section

## Emergency Department

- a) number of emergency presentations
- b) number of ED attendances
- c) number of emergency admissions

## Elective Non Elective and Public / Private Discharges

- Number of patients discharged in reporting quarter:
  - i. Inpatient
  - ii. Elective
  - iii. Non Elective
  - iv. Day Case
- Percentage of Public Patients discharged in current quarter:
  - i. Inpatient
  - ii. Elective
  - iii. Non Elective
  - iv. Day Case

**Public / Private:**

- Public as a % of all patients
- Elective as a % of all patients
- Public as a % of all inpatient activity based on casemix weighting (as per consultant contract measuring system)
- Public as a % of all day case activity based on casemix weighting (as per consultant contract measuring system)

**Acute**

- Average Length of Stay (ALOS): overall ALOS for all inpatient discharges and deaths

**Bed Days Used**

- Number of bed days used for all inpatient discharges and deaths

**Occupancy Rates**

- % occupancy rate for all inpatient discharges and deaths

**Day Cases**

- % of day case surgeries as a % of day case plus inpatients for a specified basket of procedures (General surgery, ENT, Ophthalmology)

**Public Inpatient and Day Case (Discharge and Waiting Lists)**

- Number of Public, Adult, Elective Inpatient and Day Case Discharges.
- Number of Public, Child, Elective Inpatient and Day Case Discharges.
- Number of adults waiting for both Inpatient and Day Case treatment (Public Waiting List Only):
  - i. over 3 months
  - ii. over 6 months
  - iii. over 12 months
- Number of children waiting for both Public Inpatient and Day Case treatment at end of quarter (Public Waiting List Only):
  - i. over 3 months
  - ii. over 6 months

**Waiting Time from GP Referral**

- Median waiting time from GP referral to attendance at outpatients
- Median waiting time from GP referral to admission to hospital

**Emergency Department Turnaround Times**

- Average time from registration to discharge from ED for: i) all patients ii) patients who require admission iii) patients who are not admitted and are discharged
  - i. approx 4 hours
  - ii. approx 7 hours
  - iii. approx 3 hours
  - iv. approx 4 hours
  - v. approx 6 hours
  - vi. approx 3 hours
- % of patients treated and discharged or admitted within 6 hours of registration New measure for 2009 100%

**Day of Surgery**

- Overall % of elective inpatient procedures conducted on day of admission

**Appropriate Use of Beds**

- % of inappropriate admissions
- Number of patients inappropriately placed on day of care

## Ambulance

- Total number of Ambulance Transfers
  - i. emergency
  - ii. urgent
  - iii. non -urgent
  - iv. community
- Number and % of emergency ambulance calls responded to within pre-determined time bands.
  - i. <8 minutes
  - ii. <14 minutes
  - iii. <19 minutes
  - iv. <26 minutes

## National Cancer Control Programme

- Symptomatic Breast Cancer Services
- Number and % of cases compliant with HIQA standard of 2 weeks for urgent referrals New measure for 09 95%
- Number and % of women seen, who were waiting longer than 12 weeks for access to symptomatic service
- Number and % of newly diagnosed breast cancers discussed
- Number and % of patients with a primary diagnosis of breast cancer who have procedures carried out in one of the 8 designated cancer centres out of the total patients with a primary diagnosis of breast cancer who have procedures carried out

### Lung / Colo-rectal / Prostate Cancers:

- Median waiting time from referral by GP to definitive diagnosis
- Median waiting time from definitive diagnosis to treatment
- To commence collection when diagnostics proposed in NSP are in place

### Breast / Colon / Rectal / Prostate Cancers:

- Number of centres providing services for each site specific cancer:
  - i. Breast
- Lung:
  - i. Diagnostics
  - ii. Surgery
- Prostate:
  - i. Diagnostics
  - ii. Surgery
- Colon
- Rectal

## Developmental Screening

- Number of boys 0 - 4 years (inclusive) undergoing orchidopexy (ICD-10 AM 37803- 01, 37803-00) as a percentage of all boys aged 0 - 14years (inclusive) undergoing orchidopexy

## Smoking

- % of population smoking by gender and by age

## Safety and Quality

- MRSA bacteraemia notification rate per 1,000 bed days used

## Environmental Health

- Number of inspections and / or programmes to ensure compliance with Public Health Tobacco Acts:
  - i) smoke-free workplaces (inspections)
  - ii) sales to minors and test purchase (programmes)
- Number of inspections of food premises

- Number and % of capital projects (with a capital cost of €2m or greater) successfully delivered and operational:
  - a) Within projected capital costs
  - b) Within projected revenue costs
  - c) Within projected WTE requirement
  - d) Within projected time lines

### **Abbreviations**

ALOS	Average Length of Stay
CAMHT	Child & Adolescence Mental Health Team
DCA	Domiciliary Care Allowance
DLS	Demand Led Schemes
DNA	Did Not Attend
DoH&C	Department of Health and Children
ED	Emergency Department
ENT	Ear Nose and Throat
GP	General Practitioner
GMS	General Medical Services
HCP	Health Care Package
HIQA	Health Information Quality Authority
HSE	Health Service Executive
LHO	Local Health Office
MMR	Measles, Mumps, Rubella vaccine
MRSA	Methicillin-resistant Staphylococcus aureus
NCR	National Cancer Registry
NSP	National Service Plan
OPD	Outpatient Department
PCT	Primary Care Team
RT	Rehabilitative Training

## Annex VI

### Headline, Core and Complementary Set of SDIs for Managing Biosolids at Regional / Local Level in Ireland

#### Headline Indicators

- Total annual biosolids production (tDS)
- Annual biosolids production (tDS) by treatment processes
- Actual population equivalent (p.e) to the design p.e. served by wastewater treatment plants (wwtps)
- Quantity of biosolids recycled annually
- Quantity of biosolids sent to landfills annually

#### Core Indicators

- Register of contractors involved in biosolids management
- Quantity of biosolids recycled through various routes annually
- Phosphorus and nitrogen recycling
- Annual quantity of biosolids not meeting stipulated quality standards
- Access to sewerage
- Information packs
- Soil quality where biosolids are applied

#### Complementary Indicators

- Comparative cost of biosolids production processes per tonne of dry matter
- Catchments river/lake quality
- Crop production
- Enforcement notices
- Stakeholder surveys
- Training
- Quantity of treated wastewater versus total quantity of wastewater generated per annum
- Research funding
- Estimated nutrient value of biosolids sent to landfills
- Public complaints

## Annex VII

### UK Regional SD Indicators

<b>Priority area: Sustainable consumption and production (including indicators for Climate change and energy)</b>	<b>Priority area: Protecting our natural resources and enhancing the environment</b>
<ul style="list-style-type: none"> <li>▪ Greenhouse gas emissions</li> <li>▪ CO<sub>2</sub> emissions by end user</li> <li>▪ Water resource use</li> <li>▪ Domestic water consumption</li> <li>▪ Waste</li> <li>▪ Household waste</li> </ul>	<ul style="list-style-type: none"> <li>▪ Bird populations</li> <li>▪ Land use</li> <li>▪ Land recycling</li> <li>▪ Dwelling density</li> <li>▪ Emissions of air pollutants</li> <li>▪ River quality</li> <li>▪ Water stress</li> </ul>
<b>Priority area: Creating sustainable communities and a fairer world</b>	<b>Other contextual indicators</b>
<ul style="list-style-type: none"> <li>▪ Active community participation</li> <li>▪ Recorded Crime   British Crime Survey</li> <li>▪ Fear of crime</li> <li>▪ Employment</li> <li>▪ Workless households</li> <li>▪ Economically inactive</li> <li>▪ Childhood poverty</li> <li>▪ Young adults</li> <li>▪ Pensioner poverty</li> <li>▪ Education</li> <li>▪ Health inequality</li> <li>▪ Healthy life expectancy</li> <li>▪ Mortality rates</li> <li>▪ Smoking</li> <li>▪ Childhood obesity</li> <li>▪ Mobility</li> <li>▪ Getting to school</li> <li>▪ Accessibility</li> <li>▪ Road accidents</li> <li>▪ Environmental equality</li> <li>▪ Air quality and health</li> <li>▪ Housing conditions</li> <li>▪ Households living in fuel poverty</li> <li>▪ Homelessness</li> <li>▪ Local environment quality</li> <li>▪ Satisfaction in local area</li> <li>▪ UK International assistance</li> <li>▪ Wellbeing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Economic output</li> <li>▪ Productivity</li> <li>▪ Investment</li> <li>▪ Demography</li> <li>▪ Households and dwellings</li> </ul>

**Annex VIII**  
**Regional/Local Availability of Data for EU SDI set**  
**Theme 1 – Economic Development**

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Growth rate of GDP per capita	Y	Y
Investment	2	Total investment by institutional sector	Y	N
	3	Real GDP growth rate	Y	Y
	3	GDP per capita in PPS	Y	Y
	3	Regional breakdown of GDP per capita	Y	Y
	3	Total consumption expenditure	Forecast since 2001	N
	3	Net national income	Y	N/A
	3	Inflation rate	Y	Y
	3	Total net saving by institutional sector	N	N
Competitiveness	2	Labour productivity per hour worked	Y	Y
	2	Real effective exchange rate	Y	N/A
	3	Unit labour cost growth, for total and industry	Y	N/A
	3	Life long learning: total	Y	Y
	3	Turnover from innovation by economic sector	N	N
	3	Gross domestic R&D expenditure	Estimated and provisional data	N/A
	3	Total public expenditure on education	Y	Y
Employment	2	Total employment rate	Y	Y
	3	Total employment growth	Y	
	3	Total employment rate by gender & by highest level of educational attained	Y	Y
	3	Total unemployment rate by gender, age group & by highest level of educational attained	Y	Y
	3	Regional breakdown of employment rate	Y	Y

### Theme 2 – Poverty and Social Exclusion

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Total at-risk-of-poverty rate after social transfers	Y	Y
Monetary poverty	2	Total at-persistent-risk-of-poverty rate	Y	Y
	3	At-risk-of-poverty rate after social transfers by gender, age group, highest level of education attained and by household type	Not by education	Y
	3	Relative at-risk-of-poverty gap	Y	Y
	3	Inequality of income distribution (Income quintile share ratio)	Y	Y
	3	<i>Poverty Mobility</i>	N	
Access to labour markets	2	Total long-term unemployment rate	Y	Y
	3	Gender pay gap in unadjusted form	Provisional data since 2003	N
	3	Total very long-term unemployment rate	Y	Y
	3	People aged 0-59 living in jobless households, by age group	Y	Y
	3	At-risk-of-poverty rate after social transfers by most frequent activity	Y	Y
Other aspects of social exclusion	2	Early school leavers: total	Y	Y
	3	Persons with low educational attainment by age group	Y	Y
	3	<i>Adequacy of housing conditions</i>	N	N

### Theme 3 – Ageing Society

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Current and projected old age dependency ratio	Y	Y
Pensions Adequacy	2	<i>Projected theoretical replacement rate</i>	N	N
	2	Relative mean income ratio	For 2001 only	N
	3	At-risk-of-poverty rate after social transfers for persons aged 65 years and over	Y	Y
Demographic change	2	Life expectancy at age 65 by gender	Y	Y

	3	Total fertility rate	Y	Y
	3	Net inwards migration by age group	Total only	N
Public finance stability	2	General government debt	Y	N
	3	Current and <i>projected</i> public pensions expenditure	Current only	N
	3	Total employment rate by age group	Y	Y
	3	Average exit age from the labour market by gender	Y	Y
	3	Current and <i>projected</i> public expenditure on care for the elderly	Current only	N

#### Theme 4 – Public Health

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Healthy life years at birth by gender	Estimated from 2002	Y
Human health protection and lifestyles	2	Percentage of overweight people	Y	Y
	2	Resistance to antibiotics	Y	Y
	3	Healthy life years at age 65 by gender	Estimated from 2002	N
	3	Health care expenditure	Y	Y
	3	Cancer incidence rate by gender and type	Y	Y
	3	Suicide death rate by gender and age group	Y	Y
	3	Percentage of present smokers by gender and age group	Y	Y
	3	<i>Work with high levels of job stress</i>	N	N
	3	Total serious accidents at work	Data not compatible from 1998-2002	N
Food safety and quality	2	<i>Deaths due to infectious food-borne diseases</i>	N	N
	2	Salmonellosis incidence rate	Y	Y
	3	<i>Dioxins and PCBs in food and feed</i>	N	N
	3	<i>Heavy metals in fish and shellfish</i>	N	N
	3	<i>Pesticides residues in food</i>	N	N
Chemicals management	2	<i>Index of apparent consumption of chemicals by toxicity class</i>	N	N
	2	Index of production of chemicals by toxicity class	N – could calculate from	N

			ProdCom	
	3	<i>Population exposure to air pollution by particulate matters</i>	Y	Y
	3	<i>Population exposure to air pollution by ozone</i>	N	N
	3	Proportion of population living in households considering that they suffer from noise and from pollution	Up to 2000	N
	3	<i>Monetary damage of air pollution</i>	N	N

### Theme 5 –Climate change and energy

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Total Greenhouse Gas Emissions	Y	N
	2	GHG emissions by sector	Y	N
	3	CO <sub>2</sub> intensity of energy consumption	Y	Y
	3	CO <sub>2</sub> removed by sinks	Y	Y
	1	Gross inland energy consumption by fuel	Y (SEI)	Y
	2	Energy intensity of the economy	Y	N
	2	Final energy consumption by sector	Y	N
	2	Gross electricity generation by fuel used in power stations	N	N
	3	Share of electricity from renewable energy to gross electricity generation by source	Y	N
	3	Combined heat and power generation	Y	N
	3	Energy intensity of manufacturing industry	N	N
	3	Consumption of biofuels	N	N
	3	<i>External costs of energy use</i>	N	N
	3	Energy tax revenue	N	N
	3	High-level radioactive waste and spent nuclear fuel awaiting permanent disposal	Y	N

### Theme 6 – Production and Consumption Patterns

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	<i>Total Material Consumption</i>	N	N
	1	Domestic material consumption	To 2001	N
Eco-efficiency	2	Emissions of aggregated acidifying substances and ozone precursors by sector	N	N
	2	<i>Generation of waste by all economic activities</i>	N	N

		<i>and by households</i>		
	2	Municipal waste collected	Y	Y
	3	Components of DMC	N	N
	3	DMC by material	N	N
	3	Municipal waste treatment by type of treatment method	Y	Y
	3	<i>Generation of hazardous waste by economic activity</i>	Y	N
Consumption patterns	2	Electricity consumption per dwelling	Y	Y
	2	<i>Green public procurement</i>	N	
	3	Household number and size	Y	Y
	3	Meat consumption per capita	Y	Y
	3	<i>Share of consumption of products with an EU or national eco-label</i>	N	N
Agriculture	2	Share of area under agri-environmental support	Y	Y
	2	Livestock density index	Y	Y
	3	Nitrogen surplus	Y	
	3	Share of area occupied by organic farming	Y	Y
	3	<i>Use of selected pesticides</i>	N	N
Corporate responsibility	3	<i>Share of production from enterprises with a sustainable management system</i>	N	N
	3	Enterprises with an environmental management system	Y	Y
	3	<i>Ethical financing</i>	N	N
	3	Eco-label awards by country and product group	Y	N

### Theme 7 – Management of Natural Resources

Sub theme	Level	Indicator	<i>Ireland data</i>	<b>Data at Local &amp; Regional level in Ireland</b>
	1	<i>Biodiversity Index</i>	N	N
	1	Population trends of farmland birds	Y	Y
	1	Fish catches from stocks outside safe biological limits	N	N
	2	<i>Sufficiency of member states proposals for protected sites under the Habitats Directive</i>	N	N
	3	<i>Change in status of threatened and/or protected species</i>	N	N
	2	<i>Trends of spawning biomass of protected fish stocks</i>	N	N

	3	<i>Effective fishing capacity and quotas by specific fisheries</i>	N	N
	3	Size of fishing fleet	Y	Y
	3	<i>Share of structural support to fisheries allocated to promote environmentally-friendly practises</i>	N	N
	2	Groundwater abstraction	N	N
	3	Population connected to waste water treatment services	Patchy data	Y
	3	<i>Emissions of organic matters as biochemical oxygen demand to rivers</i>	N	N
	3	<i>Index of toxic chemical risk to the aquatic environment</i>	N	N
	2	<i>Land use changes by category</i>	N	N
	2	Built up areas	Y	Y
	2	<i>Exceedance of critical loads of acidifying substances and nitrogen in environmentally sensitive areas</i>	N	N
	3	<i>Share of total land area at risk of soil erosion</i>	N	N
	3	<i>Share of total land area at risk of soil contamination</i>	N	N
	3	Forest trees damaged by defoliation	Y	Y
	3	<b>Fragmentation of habitats due to transportation</b>	N	N

### Theme 8 – Transport

Sub theme	Level	<i>Indicator</i>	Ireland data	Data at Local & Regional level in Ireland
	1	<i>Vehicle-km index</i>	N	N
	1	Total energy consumption of transport	Y	N/A
Transport growth	2	Car share of inland passenger transport	Estimated only	N
	2	Road share of inland freight transport	Y	N/A
	3	Modal split of passenger transport	Y	Y
	3	Modal split of freight transport	Y	Y
	3	Volume of freight transport	Y	Y
	3	Energy consumption by transport mode	Y	N
	3	<i>Access to public transport</i>	N	N
	2	<i>External costs of transport activities</i>	N	N
	3	<i>Freight transport prices by mode</i>	N	N
	3	<i>Investment of transport infrastructure by mode</i>	N	N

Social & environmental impact of transport	2	Emissions of air pollutants from transport activities	Ozone only	N
	2	GHG emissions from transport activities	Y	N
	3	People killed in road accidents <i>by road group</i>	To 2002	N
	3	Emissions of NOx from road vehicles	Y	N

### Theme 9 – Good Governance

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Level of citizens confidence in EU institutions	n/a	N
Policy coherence	2	<i>Proportion of environmentally harmful subsidies</i>	N	N
	2	Number of infringement cases by policy area	By country	N
	2	<i>Administrative costs imposed by legislation</i>	N	N
	3	<i>Share of major proposals with impact assessment</i>	N	N
	3	Transposition of community law by policy area	n/a	N
Public participation	2	Voter turnout in national Parliamentary elections	Y	Y
	2	<i>Responses to EU internet public consultations</i>	n/a	N
	3	Voter turnout in EU Parliamentary elections	Y	Y
	3	E-government on-line availability	Y	Y
	3	Total E-government usage by individuals	Y	Y

### Theme 10 – Global Partnership

Sub theme	Level	Indicator	Ireland data	Data at Local & Regional level in Ireland
	1	Official development assistance	Y	N
Globalisation of trade	2	EU imports from developing countries, total and agricultural products	n/a	N
	2	Sales of selected fair-trade labelled products	n/a	N
	3	Total EU imports from developing countries by income group	n/a	N/A
	3	Total EU imports from developing countries by product group	n/a	N/A

Financing for SD	2	Bilateral ODA by category	n/a	N/A
	3	Total EU financing for development by type	n/a	N/A
	3	ODA and FDI to developing countries by income group and geographical area	n/a	N/A
	3	Share of untied ODA in total bilateral ODA commitments	Y	N/A
	3	ODA per capita in EU-15 donors and recipient countries	Y	N/A
Resource management	2	EU imports of materials from developing countries by group of products	n/a	N/A
	3	<i>Contribution to the Clean Development Mechanism</i>	N	N/A
	3	CO <sub>2</sub> emissions per capita in the EU and developing countries	n/a	N/A

Y – Yes      N – Not Available      N/A – Not Applicable

*\*Adapted from Cathy Maguire & Robin Curry (2007), "Counting What Counts: A Review of Sustainable Development Indicators for Ireland"*