Resource Efficiency in Priority Irish Business Sectors – Overall Factsheet

Preface

The Clean Technology Centre, Cork Institute of Technology, has prepared this Factsheet for the Environmental Protection Agency under the EPA Research programme.

This Factsheet summarises the findings of a desk study (Resource Efficiency in Priority Irish Business Sectors. 2014-RE-DS-5) whose purpose was to identify and examine the most important Irish manufacturing and service sectors with regard to environmental impact, economic importance and potential for improvement in relation to resource efficiency.

This factsheet accompanies the main report to the project and six other Factsheets, one for each of the priority sectors. These are available on www.epa.ie.

Scope and Methodology

The scope of this study was to focus on manufacturing and service sectors. Material consumption was of particular interest with energy, water and waste, as well as economic indicators, also considered.

The main element of the methodology was to identify, acquire and analyse all relevant data. However, it proved difficult to allocate material inputs and outputs to individual sectors in the Irish economy, due to the fact that data are primarily collected in financial terms (e.g. Central Statistics Office Census of Industrial Production) rather than tonnes of raw materials purchased. Data were examined from other sources such as EPA Annual Environmental Reports for individual licensed companies and national waste data from the National Waste Collection Permit Office. International indicators were also used in some cases to scale-up Irish data (using, for example In addition to the data review, the project team examined the research literature, from a wide variety of sources, discussed the subject with stakeholders and also utilised CTC experience and data acquired over many years from several sectors, in the field of research efficiency.

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Current Policies and Actions

A large body of work is currently under way in Europe to promote resource efficiency. The most significant of these initiatives are:

- Europe 2020: A strategy for smart, sustainable and inclusive growth (2010) [1]
- Roadmap to a Resource Efficient Europe (2011) [2]
- Communication for a European Industrial Renaissance (2014) [3]
- Circular Economy Action Plan (2015) [4]

In Ireland, the government has supported resource efficiency through the development and implementation of the EPA's National Waste Prevention Plan (NWPP). The NWPP, the first such national plan in Europe, has been running since 2004. In 2014 the EPA's Towards a Resource Efficient Ireland provided a strategy from EPA around the vision: 'Living Better, Using Less'. [5] It sets out priorities for preventing waste and unnecessary consumption of materials, energy and water. Several programmes have been targeted at specific sectors and topics under the NWPP including, Green Business, Green Healthcare, Green Hospitality, Local Authority Prevention Network, Stop Food Waste, and Smart Farming.

In addition to the EPA, other government bodies have targeted resource efficiency. Bord Bia is implementing its Origin Green scheme and Bord Iascaigh Mhara (BIM) has the Green Seafood Programme for fishermen and fish processors. Bord Bia is implementing its Origin Green scheme and Bord Iascaigh Mhara has the Green Seafood Programme for fishermen and fish processors. Other national agencies such as Sustainable Energy Agency of Ireland (SEAI), Enterprise Ireland (EI), and the Industrial Development Authority (IDA) are also supporting resource efficiency related programmes. Some of these take a sectoral approach, so that companies can learn from business peers and the issues that face same-sector businesses are often consistent. Other programmes are topic focused – for example SEAI supports are energy-related. In addition to assistance provided through these programmes, best practice guidance and other support materials for specific sectors have been produced by both SEAI and Enterprise Ireland.

Previous research by the Clean Technology Centre estimated that if Ireland were to achieve a 2% reduction in domestic material consumption per annum, while still maintaining GDP in line with growth predictions, this would yield savings of approximately €900 million in the first year and increased annual savings thereafter. It was reported in 2013 that by 2020 this could lead to a 25% improvement in resource efficiency, yielding a total saving of approximately €7 billion over that period. Growth rates since then have exceeded predictions, meaning that savings could be even larger.

Increasing resource efficiency should therefore be seen as key to securing growth and jobs for Ireland as well as reducing our carbon footprint, limiting the environmental impact of resource use and increasing our sustainability. In order to achieve this, it is important that the most resource intensive and economically significant sectors be identified. Once this has been achieved, targeted assistance should be provided to these sectors to ensure they are as resource efficient as possible. This will have significant environmental and economic benefits for Ireland in both the short and long term.

[1] http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%20 2020%20-%20EN%20version.pdf
[2] http://ec.europa.eu/environment/resource_efficiency/about/roadmap/index_en.htm
[3] https://ec.europa.eu/growth/industry/policy/renaissance_en
[4] http://ec.europa.eu/environment/circular-economy/index_en.htm
[5] http://www.epa.ie/pubs/reports/waste/prevention/towardsaresourceefficientireland.html
[6] http://www.bordbia.ie/industry/buyers/industryinfo/agri/pages/default.aspx

Priority Sectors

Resource Productivity, a measure of Resource Efficiency at the national level has increased in Ireland over the last ten years. This is primarily as a consequence of the global economic downturn in 2008 and the significant decrease in construction activity causing a substantial reduction in the extraction of non-metallic minerals. It is also important to note that other factors have also contributed. Most notable of these is the impact of the financial activities of a small number of multinational corporations in recent years on GDP (which is used in the calculation of resource productivity). However, irrespective of this, as its economy continues to grow, Ireland needs to aintain the trend of increased resource productivity, by increasing the efficiency of our material consumption.

Though the EU Raw Materials Initiative and the Circular Economy Package are evidence that policy is progressing in this field, material resource efficiency is an area that has been somewhat overshadowed by the global focus on energy, fossil fuel consumption and greenhouse gas emissions in the climate change debate.
While there is clearly a requirement for all manufacturing and service sectors in Ireland to strive for increased resource efficiency six priority sectors have been identified here as the most significant following evaluation of socio-economic and environmental factors. These sectors are:

- Food & Beverage
- Chemicals and Pharmaceuticals
- Non-Metallic Mineral Products
- Accommodation and Food Services
- Retail
- Construction

These sectors were chosen based, primarily, on available material flow and environmental data. However, there are a number of other factors that should be noted:

The food and beverages sector is very significant to the Irish economy in terms of employee numbers (53,000 in 2014), product sales (€22.3 billion in 2014) and also to the environment in resource consumption terms. The land area of Ireland is 6.9 million hectares, of which 4.5 million hectares is used for agriculture and a further 730,000 hectares for forestry.[6]

Construction and cement manufacture (non-metallic minerals) are resource intensive sectors. Both rely on extracted non-mineral resources: limestone and gypsum in the case of cement (4.5m tonnes of raw materials extracted in 2014), and sand, gravel and limestone in the construction sector (along with use of processed materials including cement, steel, wood, glass and asphalt).

The Irish pharmaceutical sector is the 7th largest exporter of pharmaceutical and medicinal products worldwide as well as being Ireland's largest producer of hazardous waste. Over 5 million tonnes of chemical and pharmaceutical products are manufactured here annually.

Accommodation and food services (hotels, guest houses, and restaurants serving both domestic and tourism), and retail are sectors that rely heavily on fast moving consumer goods (FMCG) including food and beverages. These products are very significant economically to both sectors (and are also of significant environmental impact). The retail sector is also involved in the sale of other goods such as white goods, electronic equipment, furniture, clothing, and footwear.

Conclusions and Recommendations

One of the main challenges encountered during this research project was the lack of available data in a useable form, for this type of analysis. Though data was available for most of the sectors and indicators originally identified, in most instances the data was incomplete, and as a result it was not possible to apply a uniform set of indicators across the board to all sectors. For example, different sets of indicators had to be applied in the examination of priority manufacturing and service sectors. Consequently, from the perspective of assessing and supporting resource efficiency on a continual basis, the following are a series of general recommendations for Ireland:

National Data

The CSO should continue to produce national MFAs and should be given resources to also attempt to produce sector-specific MFAs and resource efficiency metrics. Resource productivity using modified gross national income (GNI), in addition to the existing use of GDP, should be employed and compared with EU-wide data.

The Census of Industrial Production requires revision to include questions on quantity (as well as cost) of materials (water and energy) purchased for use. This information would be treated confidentially at the sub NACE two-digit Division level but aggregated on a sectoral level for resource efficiency determination.

Economic data in CSO 'supply and use' tables could be modelled to determine use and throughput of materials at the sectoral level. This method has been applied in other European countries.

Priority Sectors

All sectors, especially those prioritised herein, should be required to start tracking and producing/publishing resource efficiency metrics. This could be facilitated through existing programmes like Origin Green, through which companies are already tracking energy, water and waste per unit of production - these could be extended to include material efficiency metrics. The production of such metrics could be done at a company and sectoral levels. These data could be used in the preparation of sector specific plans with material use reduction and resource efficiency targets, using key metrics. The material intensity of the priority sectors requires a full material flow assessment in support of further detailed analysis and subsequent policy recommendations.

An extensive environmental input/output analysis based on real data should be carried out to determine the life-cycle impacts of resource consumption in the selected sectors. Assistance should be provided to specific sectors to improve material efficiency. This could be supported through existing programmes such as the National Waste Prevention Plan. Energy efficiency improvement has direct and indirect material consumption reduction impact. Increasing the share of renewables in electricity generation will result in a reduction in fossil fuel consumption (reducing DMC).

Capacity Building and Business Support

Three main approaches to capacity building and support are recommended:

General Approaches: Although resource efficiency is used to measure national performance, it is equally applicable at the business and sectoral levels. In a business context, resource efficiency is really about reducing environmental impact while also cutting costs through increasing yield and/or reducing waste. There are a number of general approaches to reduce material intensity and associated emissions at this level. These, and other sector specific recommendations are outlined in more detail in the factsheets and include:

- Material substitution/selection (embodied energy considerations)
- Increased recovery for reuse
- Low carbon electricity use
- Improve yield in manufacturing
- Dematerialisation (replacing products with services)
- Product light-weighting
- Avoidance or minimisation of use of critical materials

Technical support: Initial capacity building of resource efficiency expertise in governmental support agencies on understanding and using the tools and approaches outlined above. It is anticipated that these resource efficiency experts will then provide guidance and assistance in implementation of targeted sectoral improvement programmes to individual business enterprises.

Funding: (e.g. low-cost loans and/or grant aid) should be made available to companies, especially in the designated priority sectors, to implement resource efficiency improvement measures in their production processes. This would be similar to measures like the SEAI energy efficiency improvement programmes, but for resource efficiency and targeted at the individual priority sectors.

Sectoral Guidance Materials

As part of the data gathering for this research project, information on different aspects of resource efficiency was identified. This has been collated into a set of sector-specific factsheets which aim to inform sectors of the resource efficiency opportunities that have been identified for them.

The factsheets address opportunities for:

- potential improvement in materials management;
- water use reduction;
- energy efficiency;
- waste avoidance;

Relevant case studies have also been included. The factsheets support the main report of the study which is available from the Environmental Protection Agency or at www.epa.ie

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