WASTE POLICY IN IRELAND: COMMENTS ON RADICAL PROPOSALS ON THE WAY FORWARD

A Submission to the Minister's Reopening of the Consultation on the Proposed Section 60 Policy Direction Capping Incineration of Municipal Waste and Other Matters and the Consultation New Draft Statement of Waste Policy by

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1. Introduction

We are pleased to respond to two waste policy consultations: first, the reopening of that on the proposed Section 60 Policy Direction on a proposed cap to incineration capacity as a proportion of municipal solid waste arisings ("MSW") and other matters ("the proposed Section 60 policy direction");¹ and, second, on the new *Draft Statement on Waste Policy* ("the Draft Waste Statement").² The proposals subject to consultation, together with a number of other recent waste management proposals,³ mark a radical departure in the direction of waste Policy in Ireland. This change is presaged in the opening paragraph of the Draft Waste Statement:

This draft policy statement for consultation outlined the key principles and actions which it is envisaged will inform Irish waste policy for the coming decade and beyond. Its core objective is to put sustainability at the core of Ireland's resource and waste management policy. It presents a paradigm shift in the approach to waste management in Ireland towards resource management with significant potential to add value and create jobs in the economy. Using all appropriate legislative and fiscal measures, our aim is to move away from the traditional landfill and mass burn incineration, towards higher levels of recycling and mechanical/biological treatment ["MBT"]. Solid recovered fuel produced through such treatment methods can be used to displace fossil fuels, thereby reducing greenhouse gas emissions and supporting Ireland's contribution to the global efforts to address the very

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¹ The consultation for this closed, after being extended, on 31 July 2009. None of the submissions to the consultation have appeared on the Department of the Environment, Heritage and Local Government's website nor has there been any official response to these submissions.

 $^{^2}$ This submission does not address third consultation with respect to draft regulations requiring the provision of food waste collections.

³ For example, the proposed consultation on waste facility levies. Under these proposals a volumetric levy is to be imposed on incinerators, up to a maximum of ≤ 120 per tonne, with annual increments of up to ≤ 50 per tonne. Further details were not specified. The consultation closed on 30 April 2010, but the actual schedule of levies has not been published.

significant and pressing challenge of climate change (DoEHLG, 2010, p. 3).

The proposed Section 60 policy direction is complementary to the Draft Waste Statement since it places a cap, which can be either national or regional, on the aggregate capacity of licensed incinerators as a proportion of MSW – initially 30% and then from 2015, 25%. Current waste management policy does not place limits on the capacity of incineration, nor does it favour MBT as the preferred method of MSW treatment.

Two reports by Eunomia underpin the proposals in the proposed Section 60 policy direction and the Draft Waste Statement. First, Eunomia (2009) conducted a Strategic Environmental Assessment ("SEA") of the proposals to cap incineration and increase recycling rates to 70% of MSW, consistent with the 30% cap on incineration. Gorecki, *et al* (2010, pp. 42-51) raised concerns, *inter alia*, over the SEA and the proposed Section 60 policy direction:⁴

- The SEA approach is seriously flawed because it only considered the benefits
 of moving from policy A to policy B and paid no attention to the associated
 costs. A Regulatory Impact Analysis, which addresses both costs and
 benefits and is a vital part of the government's Better Regulation agenda,
 would have been a more appropriate methodology to employ;
- The 70% recycling target is based on the assumption that Ireland can meet the highest recycling rate of an EU Member State for each material – from glass to textiles – but no policy is put forward as to how the target will be met (a point made by Eunomia) nor are the costs of reaching the target estimated; and,
- The 30% cap on incineration is arbitrary and is not justified by reference to any economic or environmental studies or reasoning.

The SEA conducted by Eunomia is the document subject to present consultation by the Department of the Environment, Heritage and Local Government ("DoEHLG"). It is unchanged from the document circulated as part of the previous consultation in summer 2009.

Second, subsequently an international consortium, led by Eunomia, conducted an international review of waste management policy for the DoEHLG (Eunomia *et al*,

⁴ It should be noted that although the Gorecki et al (2010) was released in 2010, the material relating to the proposed Section 60 policy direction was completed earlier and submitted to the DoEHLG as part of the summer 2009 consultation process. It was commissioned by Dublin City Council.

2009). The international review was designed to deliver a new waste management policy for Ireland. It contained twenty-four recommendations.⁵ These were wide ranging, touching on virtually all aspects of waste policy. Greater source separation by households was recommended. A series of targets were set for recycling and residual household waste. A levy structure based on pricing unpriced externalities (e.g. greenhouse gases, local disamenities such as odour, congestion and noise) was proposed for residual waste which would vary by disposal method (i.e. landfill, incineration, MBT) the income from which, it was recommended, should be used to finance priority areas under the aegis of the Environmental Fund. The collection of household waste should be the responsibility of local authorities that would decide the most appropriate collection method model, with a preference for competition for the market (i.e. competitive tendering). Finally, the ten regional waste management plans should be replaced by a single national waste plan, with ultimate responsibility resting with the Minister for the Environment, Heritage and Local Government.

All but one of the twenty-four recommendations made by the international review – that concerned with the setting waste levies based on externalities - are reflected in the Draft Waste Statement either receiving explicit endorsement or, somewhat more tentatively, reference is made to considering the proposed recommendation. Indeed in a small number of cases the recommendations have already been implemented, albeit in one case because of a European Court of Justice decision.⁶ For the remaining recommendations there is typically little or no discussion in the Draft Waste Statement surrounding the recommendation. For example, the recycling targets for construction and demolition ("C&D") in the Draft Waste Statement (DoEHLG, 2010, p. 20) are simply stated for 2010 (75%) to 2016 (90%) drawn directly from Eumonia *et al* (2009, p. 43). Hence in evaluating the merits of the proposals in the Draft Waste Statement recourse is, of necessity, made to the international review.

Gorecki *et al* (2010, pp. 52-104) review and comment on the international review, paying particular attention to the recommendations. In many instances the recommendations make good sense and should be supported. The principle that waste

⁵ Eunomia et al (2009) number their recommendations 1 to 24. However, there was an additional suggestion that is also clearly a recommendation bringing the number to 25 (*ibid.*, p. 62). However, for the purposes of this submission reference will only be made to the first twenty-four recommendations.

⁶ This concerned the VAT exemption of local authority household waste collection services which did not apply to private operators. See DoEHLG (2010, pp. 11-12).

levies should be set on the basis of externalities is firmly grounded an economic approach to waste management.⁷ A sensible corollary of waste levies is recognised by the international review when it argues that "it is not clear what is to be gained by Government stating a preference for one ... [waste disposal technology] if the levy comes into force."⁸ There is extensive evidence to support the recommendation that competition *for* the market in household waste collection will lead to lower costs than the current competition *in* the market arrangements.⁹ The idea of refundable compliance bonds to ensure compliance with C&D targets is a novel approach that merits serious consideration. The recognition that in applying producer responsibility, producers are to be responsible for full financial responsibility for delivering the services required to meet their obligations is likely to make this a much more effective policy instrument.

Nevertheless, there were a number of instances where difficulties concerning the recommendations in the international review were raised. Ambitious targets for waste per inhabitant - declining from 250 kg in 2011 to 150kg in 2020 - are set and Ireland is to reach these levels much faster than in comparator jurisdictions. There is, however, no explanation as to how this target would be met, raising questions as to the credibility of the target. Admittedly an enforcement mechanism is to be put in place to achieve these targets but it is vague and not clearly thought out. Local authorities with levels of waste per inhabitant above their allowance would pay a fine to those whose waste fell below their allowance, but with no apparent methodology put forward that would take into account exogenous factors which might account for differences in waste per inhabitant such as household size, rural vs. urban, and so on; and with no regard for appropriate incentives to individual households and firms. Although we welcome the principle of setting levies based on externalities, there are

⁷ There are however, differences as to the exactly how these externalities should be priced. For details see Gorecki et al (2010, pp. 77-83) and Gorecki & Lyons (2010, pp. 11-17). This is discussed further below.

⁸ This statement is not contained in the main body of the summary report of the international review, but in Annex 56, pp. 843-844.

⁹ There may be a concern that competitive tendering is inconsistent with the recent High Court Panda judgment which found that tendering breached competition law. However, the High Court judgment characterised tendering as a situation where the winner of the tender acts as an unconstrained monopolist and charge accordingly. However, under tendering as proposed here, the lowest priced bid would win the tender and charge that price not the monopoly price. Hence the High Court judgment is of limited, if any, relevance in this regard. For further discussion of the judgment see Andrews and Gorecki (2010).

serious grounds for disputing the estimates in the international review as being appropriate.

The recommendation concerning centralisation of waste planning to the DoEHLG away from the current regional waste management plans receives scant justification in the international review. The only text surrounding this recommendation is the rather elliptical statement that where it makes sense local authorities should be encouraged to work together. No reference is made to any of the 65 annexes or the international experience to justify or inform the recommendation, nor co-ordination mechanisms that fall short of the centralisation of waste policy *and* its implementation in the hands of central government. Gorecki *et al* (2010, p. 94) propose an alternative criteria for assigning responsibility by level of government, based on the principle of subsidiarity.

There is little point in this submission in repeating the conclusions and discussions in Gorecki *et al* $(2010)^{10}$ on the proposed Section 60 policy direction and the Draft Waste Statement. Nothing has happened in the intervening months to cause any revision of the views expressed. The above discussion gives a flavour of the concerns expressed with respect to these two sets of inter related proposals. For reasons set out in Gorecki *et al* (2010), we have grave concerns about the cost and feasibility of the Draft Waste Statement's aim to move away from landfill and incineration as waste disposal methods towards MBT and higher levels of recycling. Furthermore while the reliance on sustainability as the core objective sounds fine as a broad statement it would have been helpful if the Draft Waste Statement had put some flesh on the concept and how it might operationalised in an Irish waste setting.¹¹

In the remainder of this submission we address three issues. First, in Section 2, some comments about the consultation process, in terms of its costs and the delay in taking policy forward. Second, some further discussion of the one area where the Draft Waste Statement did *not* follow the recommendations of the international review, setting waste levies (Section 3). Building on the discussion of the previous

¹⁰ And the response to the comments received on that report, Gorecki & Lyons (2010).

¹¹ For example, the Draft Waste Statement could have drawn on the often cited definition contained in the Brundtland Report (1987, p. 43, emphasis in original): "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and, the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs."

two sections, the issue is raised of the degree to which policy making in the area of waste management is causing serious reputational damage to Ireland, with adverse consequences not only for waste (Section 4). A brief conclusion completes the submission (Section 5).

2. Consultation: Right Questions? Right Procedure? Right Timing? Right Resolution?

Consultation is an essential part of developing and implementing policy. Government departments and regulatory agencies do not possess all the relevant expertise and knowledge concerning a particular area. Frequently there will be unintended consequences of a proposal that may be difficult for such institutions to identify, measure and remedy.¹² People on the ground with practical experience or that look at policy proposals through a different lens, can make thus make an important contribution to the development of policy. However, to optimise such consultation processes requires that the policy proposals are sufficiently precise that sensible comments can be made and that the proposals should take into account comments received. Consultation processes are not, after all, costless. Resources are expended in preparing responses as well as in writing the policy documents for consultation. If those participating in the consultation come to the view that their comments and suggestions are not likely to be seriously considered then they may be reluctant to fully engage in policy formulation with adverse consequences for the quality of policy and ultimately the welfare of society.

In some instances the waste proposals are insufficiently precise. Earlier in 2010 the DoEHLG conducted a consultation exercise on waste facility levies, with submissions to be received on or by 30 April 2010.¹³ A draft outline of the relevant sections of a Bill concerning such levies was distributed and comments requested. While the Bill set a limit for the levy for incineration of ≤ 120 per tonne with annual increments of up to ≤ 50 per tonne, the DoEHLG did not specify what the initial level of the levy would be or what increments would obtain for incineration.¹⁴ The waste facility levy is also to be volumetric; in other words, it will depend on the size of waste facility, so that, for example, for the first 100,000 tonnes might pay ≤ 25 per

¹² For example when household waste charges were introduced there was an increase in backyard burning, which led to a near tripling in hospital admissions for one hospital of patients setting themselves on fire burning waste. For details see Levitt & Dubner (2009, p. 139).

¹³ See <u>http://www.environ.ie/en/Environment/Waste/WasteFacilityLevies/</u> for details of the consultation. Accessed 16 September 2010.

¹⁴ The Bill also referred to landfill, but the schedule of levies applying to landfill has already been announced so most comment was concerned with the Bill's impact on incineration.

tonne, the next \in 30 per tonne. However, a supporting paper setting out details and justification for the proposals was not published.

Instead reference is made to two studies. However, this was of limited usefulness. The international review's recommendation that waste facility levies should be based on externalities was not considered appropriate so that study can be disregarded for the purposes of the consultation exercise. The other study, APEnvEcon (2008)'s Regulatory Impact Analysis ("RIA"), which evaluated a range of landfill and incineration levies, does not provide any basis for the volumetric levy, while the maximum waste facility levy of \notin 120 per tonne in the Bill is well above those proposed (for landfill, cap of \notin 85 per tonne; for incineration, \notin 45 per tonne). Furthermore, the terms of reference for the RIA conducted by APEnvEcon are flawed in that the limit, without justification, the range of levies that can be considered by the RIA specifying that "the landfill levy will not be altered in such a way as to give a competitive advantage to incineration" (*ibid*, p. 9).

Submissions have already been made to the DoEHLG on both the proposed Section 60 policy direction and the basis for the Draft Waste Statement, the international review, prior to the current consultation exercise. In the case of the proposed Section 60 policy direction the original consultation deadline was extended in summer 2009 to facilitate completion of such submissions. Submissions were also made in relation to the international review, which was published in November 2009, not only by Gorecki *et al* (2010), but also by other organisations such as Irish Business and Employers Confederation ("IBEC"). However, none of these submissions are reflected in the two documents subject to the present consultation. It is not clear why this is the case: the original consultation for the proposed Section 60 policy direction closed in July 2009, while the international review was released in November 2009, leaving a year and six months, respectively, prior to the start of the current consultation.

The net effect of the various waste consultations is that policy development is slowed and that resources are needlessly consumed commenting on the same document more than once for no apparent reason. There is no apparent engagement or willingness to consider submissions made to the DoEHLG, and the proposals themselves are sometimes too vague to facilitate useful comment. It is not at all obvious such an approach to consultation is in accordance with the Better Regulation agenda.¹⁵

3. Waste Levies & Quantitative Limits or Caps

In Gorecki *et al* (2010) it is argued that waste levies should reflect unpriced externalities (e.g. greenhouse gases, contamination of groundwater, local disamenities) and, further, that quantitative limits or caps should not also imposed on particular forms of waste disposal such as incineration or MBT. This approach was justified on the grounds that these externalities were not at present taken into account by operators of waste facilities and that once the appropriate levy is set, then it should be up to suppliers of waste services combined with designers of Regional Waste Management Plans to select the best most appropriate mix of waste disposal methods, which is likely to vary by region depending on their demographic, spatial and economic characteristics. It was further argued that the levies should not be imposed on facilities such as cement plants already subject to IPPC licensing, since these emissions are already regulated. Double regulation is not normally considered to be best practice. Although not entirely in agreement, the international review's findings were consistent with the view that levies should reflect externalities and that caps are inappropriate.

The proposed Section 60 policy direction and the Draft Waste Statement are completely at variance with these proposals. Section 60 sets a proposed cap on incineration. Externality based pricing is to be addressed "in the broader context of air quality controls" (DoEHLG, 2010, p. 18) thus raising the possibility of double regulation. Waste levies are to be set in such a way for landfill that does not give incineration a competitive advantage. The waste levy structure has still to be finalised: for landfill it will rise to €75 per tome in 2012; for MBT zero per tonne until at least 2014 when it will be reviewed;¹⁶ and, for incineration no decision has yet been announced, despite the consultation exercise noted above, but it is likely to be volumetric. Compared with the externality based pricing advocated by Gorecki *et al* (2010), the landfill price is too high and the MBT is too low, while if there is a regional cap of 30% on the share of incineration in accounting for municipal waste, then the implied price for incinerators above the cap will be too high – in effect

¹⁵ The consultation guidelines are set out in Department of the Taoiseach (2005). Consultation is defined as "a structured public engagement which involves seeking, receiving, analysing and responding to feedback from stakeholders" (*ibid.*, p.3).

¹⁶ As set out in DoEHLG (2010, p. 18).

infinity since the plant would breach the cap and hence not be built and/or closed down.¹⁷

What drives the structure of waste levies and the cap in incineration is a clear policy preference for some forms of waste disposal – MBT – over others – landfill and incineration, particularly larger incinerators. However, the policy preference goes well beyond what would be justified on the basis of externalities. Furthermore, other proposed waste policies also appear to be aimed towards disadvantaging incineration, such as the banning of take-or-pay contracts,¹⁸ with the volumetric pricing for incineration resulting in both greater inefficiency and larger externalities.¹⁹ Thus there needs to be a clear articulation as to why there is a strong policy preference against incineration and in favour of MBT and why there is a need to employ so many policy instruments to achieve that objective. This is not just double, but triple regulation. As yet, this justification has not been forthcoming.²⁰

4. Policy Stability & Reputational Damage

Firms making investment in long-lived infrastructure value policy certainty, whether it is building waste facilities or some other area where government plays an important role in setting the economic and regulatory framework within which such decisions are made. Certainty means that firms can plan with a reasonable degree of assurance. This is important, especially for projects with a long-life span – measured in decades, rather than years – and with a substantial element of sunk or irrecoverable capital. Waste treatment facilities fall into this category in differing degrees. Various contractual devices have been introduced to minimise the risk in investing in such projects, such as put-or-pay contracts.²¹ If, however, there is policy uncertainty and/or these risk-reducing contractual arrangements cannot be utilised, then investors

¹⁷ Gorecki & Lyons (2010, Table 4, p. 1) present the levy schedule: landfill, \notin 44.50 to \notin 55.10; urban incineration, \notin 9.80- \notin 10.70; MBT, \notin 0.90 - \notin 1.50. Gecki et al (2010) demonstrate that a regional cap of 30% would mean that the proposed incinerator for the Dublin region at Poolbeg would exceed this threshold.

¹⁸ This is discussed further in Gorecki *et al* (2010).

¹⁹ Assuming that two small incinerators are built instead of one with the same capacity then the two smaller ones are likely to be less efficient than the larger incinerator, while to the extent that local disamenity effects – noise, congestion and smell – are related to the existence of an incinerator rather than its size, will mean that externalities will be higher with two small compared to one large incinerator.

 $^{^{20}}$ It is true that doubts have been raised as to whether sufficient waste will be available for the Poolbeg plant and that there may be competition concerns. However, Gorecki & Lyons (2010) cast doubt on the validity of the first issue, while the Competition Authority has largely dismissed the competition concerns that have been raised, although one issue is still under investigation. See Competition (2010) where the full text of the Authority's reasoning is set out.

²¹ The economics of such contracts is discussed in Gorecki *et al* (2010).

will either not invest in such projects or demand a higher rate of return reflecting the greater risk. In either case, the costs of providing waste facilities will increase and be borne by Irish society. This does not mean, of course, that policy cannot change provided that a well articulated case is made for such a change, based on new evidence or a change in circumstances; and provided that policy is changed following the applicable procedures (including meaningful consultation; see above). However, that may mean that some sort of payment may be necessary for stranded assets that are no longer required due to the policy change.

The burden of the previous two sections is that the proposed changes in waste policy are creating considerable added uncertainty. Consultations are held on vague proposals for waste levies, especially those relating to incineration, with little if any supporting documentation that provides a coherent rationale. Consultations are held on exactly the same document twice, a year apart, despite the extensive submissions the first time. A Draft Waste Statement is circulated for comment, but not reflecting or answering any of the comments or criticisms that were made on the report from which the recommendation in the Draft Waste Statement were taken, virtually verbatim, with no additional explanation. Any investor in landfill and MBT has reasonable certainty as to the scale of waste levies, but an investor in an incinerator has no sense as to what the levies it faces might be except that they are likely to be high and increase a substantial rate. Indeed, such an investor also faces uncertainty as to whether or not take or pay contracts will be abolished and a cap (regional or national) will be placed on incineration capacity.

This behaviour is likely to raise costs of investing in waste facilities in Ireland because of the increased uncertainty. Lest there be any doubt that increased uncertainty raises costs, one only has to observe events as this submission is being prepared. There is considerable doubt as to the final cost of Anglo-Irish Bank to the Irish taxpayer, with estimates varying between &25 and &35 billion. This uncertainty, together with other factors, is increasing the borrowing costs when Ireland goes to the international money markets to fund the budget deficit.

It could, of course, be argued that much of the uncertainty in the waste area is limited to only one form of waste disposal, incineration. However, this would be a misleading characterisation. Incinerators currently being built or in planning account for a substantial portion of the waste that it is anticipated to be disposed in the next 10 to 15 years.²² If the incinerators are not to be built then that is clearly a signal that alternative forms of waste disposal, primarily MBT, should be built. However, the investors in such plants cannot be certain that these incinerators will not be built and compete with them for the available waste. Given this uncertainty they are likely to demand a higher rate of return to compensate for this additional risk or perhaps not build as many MBT plants. Hence there may well not be enough alternative capacity built for Ireland to meet its landfill targets under the Landfill Directive for 2013 and 2016. As a result not only will Ireland likely have to pay fines for not meeting the Landfill Directive targets, but extensive recourse will have to be made to the most environmentally damaging form of waste disposal, landfill.

Furthermore the impact of the uncertainty created in the waste area is likely to have repercussions in other sectors of the economy where large infrastructure projects with a high component of sunk costs are being considered. After all these policies are part and parcel not only of the DoEHLG policy statements, but also embodied in the Programme for Government, which has the support of government as a whole. If one minister is seen to change policy in an arbitrary manner without regard for the appropriate procedures, then it is reasonable to expect that other ministers may act in the same way.

5. Conclusion

Waste policy development in Ireland is essentially on hold. In the past three years there have been a number of consultations, but, by and large, no definitive decisions by government. The development of waste policy in Ireland appears to have imposed costs with no discernable benefits in terms of policy development. It is a case study in how not to go about consultation. Instead of being driven by a desire to set and meet environmental goals in a cost-effective manner, the proposals are to a considerable extent based on a predetermined view that incineration, especially large incinerators, should be discouraged but with no coherent economic or environmental rationale as to why policy should have as its goal this technology-specific bias. It is not supported by the government's own international review.

Submissions received by the DoEHLG in this area have neither been published nor responded to, even where there has been ample opportunity and time to do so. There is no sign that this paralysis will come to an end shortly. The Draft

²² See Gorecki *et al* (2010) for details.

Waste Statement promises that there will be an RIA undertaken as part of "further significant consultation and engagement" (DoEHLG, 2010, p. 4). This is likely to defer any decisions until 2011 and beyond. The reputational damage to Ireland, which is likely to spread to sectors of the economy beyond waste, as well as the likely failure to reach landfill targets in 2013 and 2016, is something that should not be contemplated lightly. It is somewhat ironic that a Draft Waste Statement that talks about sustainability and moving away from landfill may well end producing a less sustainable policy and more extensive use of landfill than anticipated. It is one of those unintended consequences referred to above.

1 October 2010

REFERENCES

- AP ENVECON. 2008. Regulatory Impact Analysis on Proposed Legislation to Increase Levies on Plastic Shopping bags and Certain Waste Facilities. A Report Commissioned by the Department of the Environment, Heritage and Local Government. Dublin: AP EnvEcon.
- COMPETITION. 2010. "Full Text of Authority's Reasoning to waste firms about complaints." *Competition*. Vol. 17, Edition 2, pp. 41-44.
- DEPARTMENT OF THE ENVIRONMENT, HERITAGE & LOCAL GOVERNMENT (DoEHLG) 2010a. *Draft Statement of Waste Policy*. For Consultation. Dublin: the Department.
- DEPARTMENT OF THE TAOISEACH. 2005. *Reaching Out*. Guidelines for Consultation for Public Sector Bodies. Dublin: the Department.
- EUNOMIA RESEARCH & CONSULTING LTD. ("EUNOMIA"). 2009. Section 60 Policy Direction Capping Incineration of Municipal Waste and Other Matters. A Report Prepared for the Department of the Environment, Heritage and Local Government". Bristol: Eunomia.
- EUNOMIA RESEARCH & CONSULTING LTD, TOBIN CONSULTING ENGINEERS, OKO-INSTITUT, & ARCADIS ("EUNOMIA et al."). 2009. International Review of Waste Management Policy: Summary Report. Dublin: DoEHLG.
- GORECKI, P.K., J. ACHESON & S. LYONS. 2010. An Economic Approach to Municipal Waste Management Policy in Ireland. Dublin: Economic and Social Research Institute.
- GORECKI, P. K & S. LYONS. 2010. Further Issues in Municipal Waste Management Policy in Ireland: A Response to the Comments Received on An Economic Approach to Waste Management Policy in Ireland. Mimeo. Dublin: ESRI.
- LEVITT, S. D. & S. J. DUBNER. 2009. SuperFreakonomics. London. Allen Lane.
- WORLD COMMISSION ON ENVIRONMENT & DEVELOPMENT ("BRUNDTLAND REPORT") 1987. *Our Common Future*. Oxford: Oxford University Press.