Decomposition of Energy Demand in Ireland

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From the Directive …

- **EED annex 14 part 1**
- *'In sectors where energy consumption remains stable or is growing, MS shall analyse the reasons for it and attach their appraisal to the estimates'*

- **Guidance for NEEAP (EU 22/5/2013) P39 (A3 3)**
- *'In each case where energy consumption for a sector reported in table 4 above is stable or growing, please provide an analysis of the reasons for this trend'*

- *'The MS should provide a detailed analysis of reasons such as ineffectiveness of policies in the sector, high economic growth, population changes, structural changes, low fuel price etc.'*

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Ireland's response

For a comprehensive analysis of the key energy trends, sectoral indicators and related policy issues, please refer to the Energy in Ireland 2013 report from the SEAI[1].

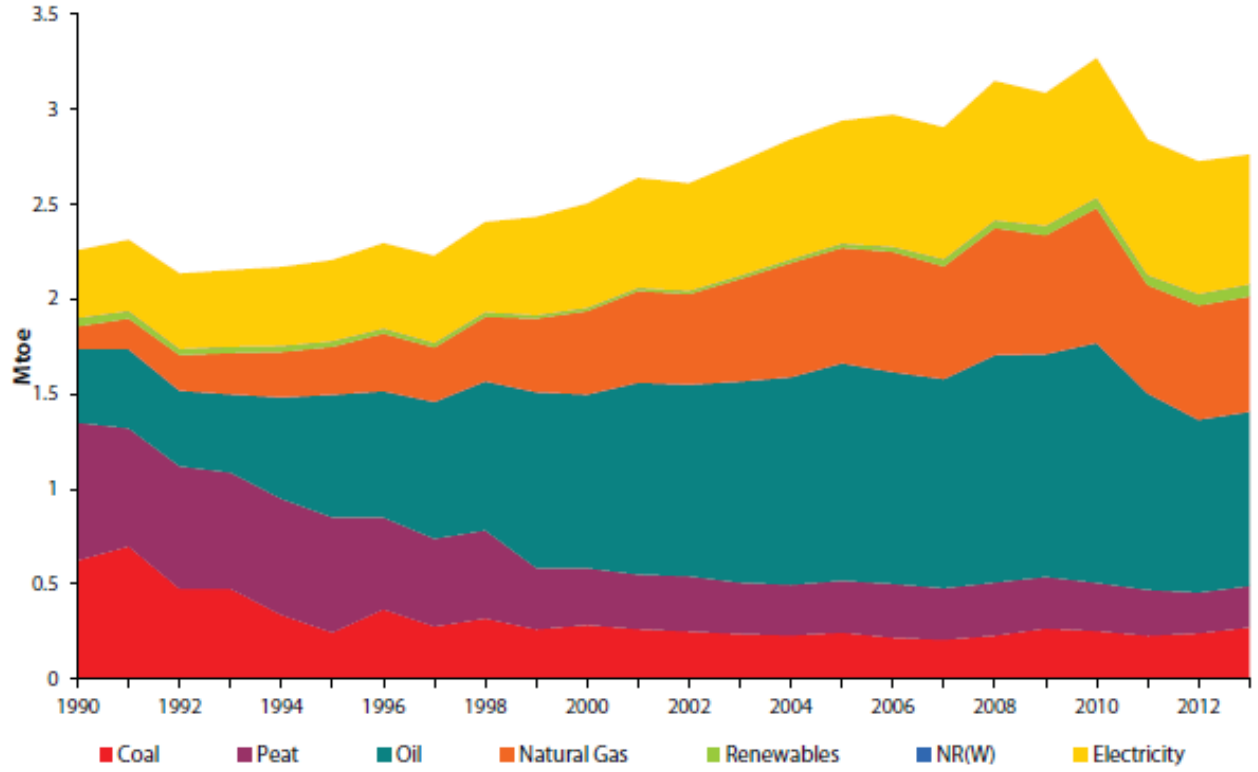
[1]http://www.seai.ie/Publications/Statistics_Publications/Energy_in_Ireland/Energy-in-Ireland-1990-2013-report.pdf

What's in it..

- Historic trends by sector, by fuel (primary and final), by mode (heat, transport, electricity)
- Stuff on energy intensities
- Key policy issues (e.g. GHG analysis, impact of renewables, prices, energy security)
- Sectoral indicators (lots of different analysis and data)
- Energy balance

Residential sector example…

Figure 65 *Residential Final Energy Use by Fuel*



- Split of fuels over time
- Discussion of drivers of change (e.g. household numbers, weather, preferences for energy forms
- Efficiency (regs, tech change)

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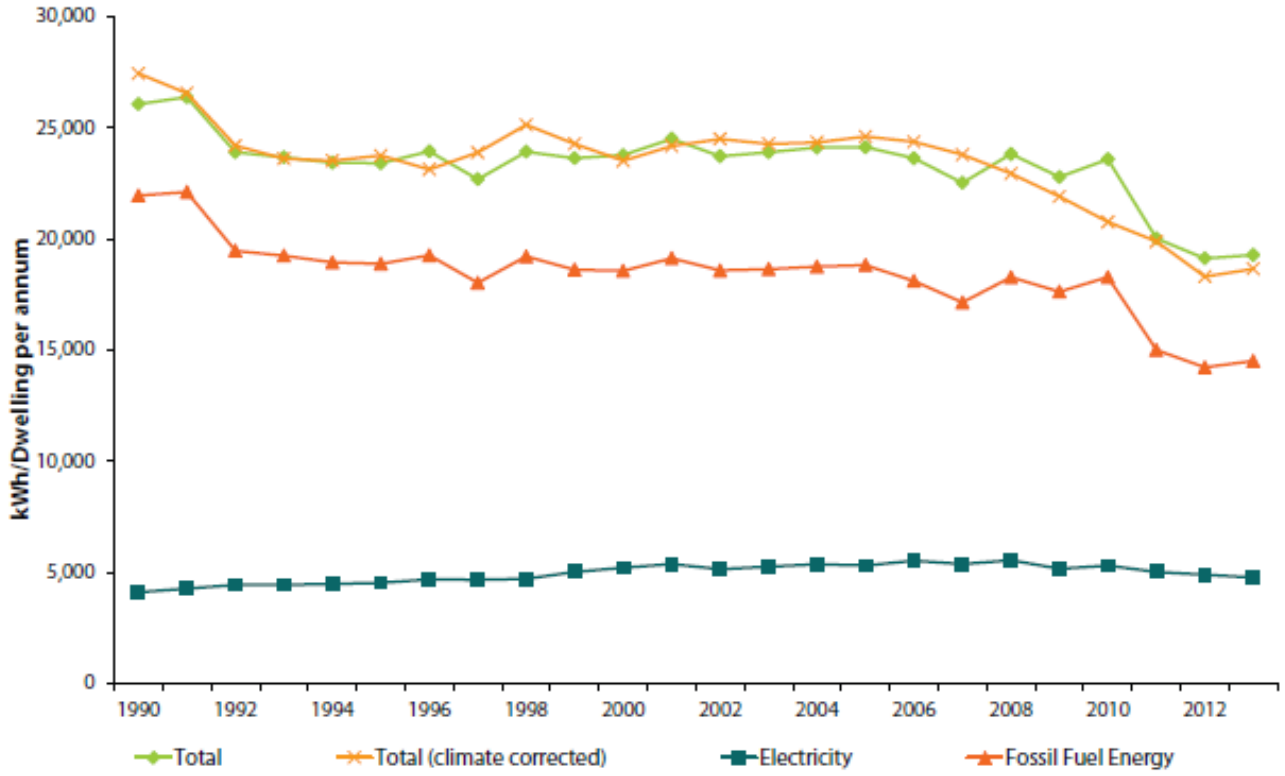
Per dwelling analysis

Figure 67 *Unit Consumption of Energy per Dwelling (permanently occupied)*



Source: Based on SEAI, CSO and Met Éireann data

- Split of fuels by dwelling
- Discussion about the influence of regs and policy.
- Results not yet disaggregated from other factors (economy, floor area change, dwelling type mix etc.)

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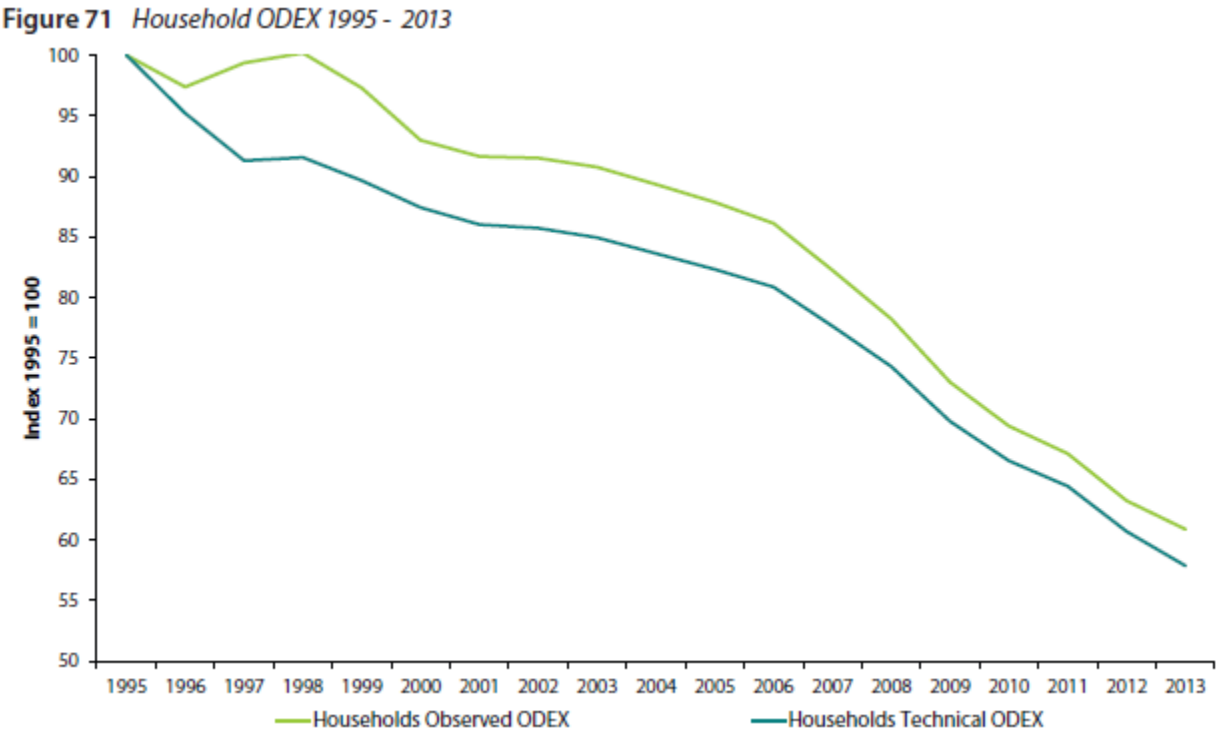
Odyssee Energy Efficiency Index (ODEX)



Not linked to specific measures or polices (TD) or particular influences

- The next layer.. beyond intensity
- Adjusted for economic, structural, technical, weather, behavioural effects
- A long time in development of the data.. **But we can confidently say efficiency is improving**

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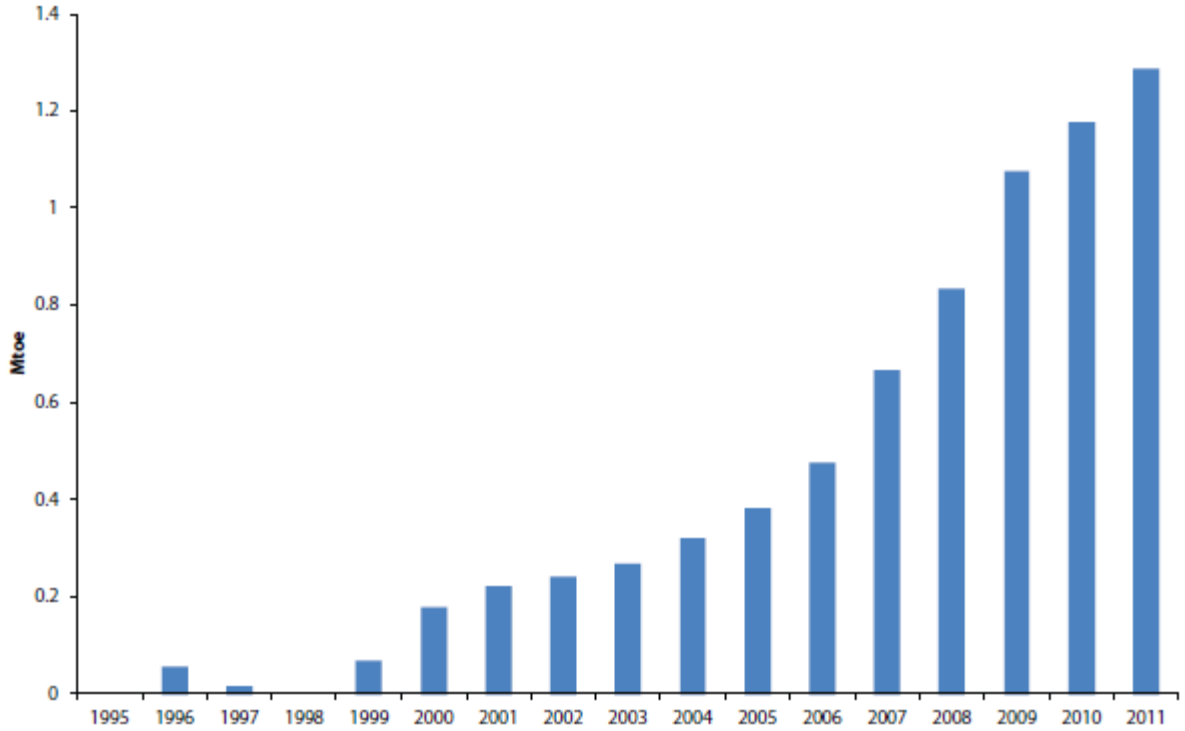
Savings quantified

gure 37 *Residential Energy Savings 1995 to 2011*



urce: SEAI

- Circa 1.3 Mtoe (15,120 GWh) to end 2011 (TD)
- Includes savings due to price effects, non-policy savings
- **Comparison with NEEAP (BU) estimate circa. 9,500 GWh**

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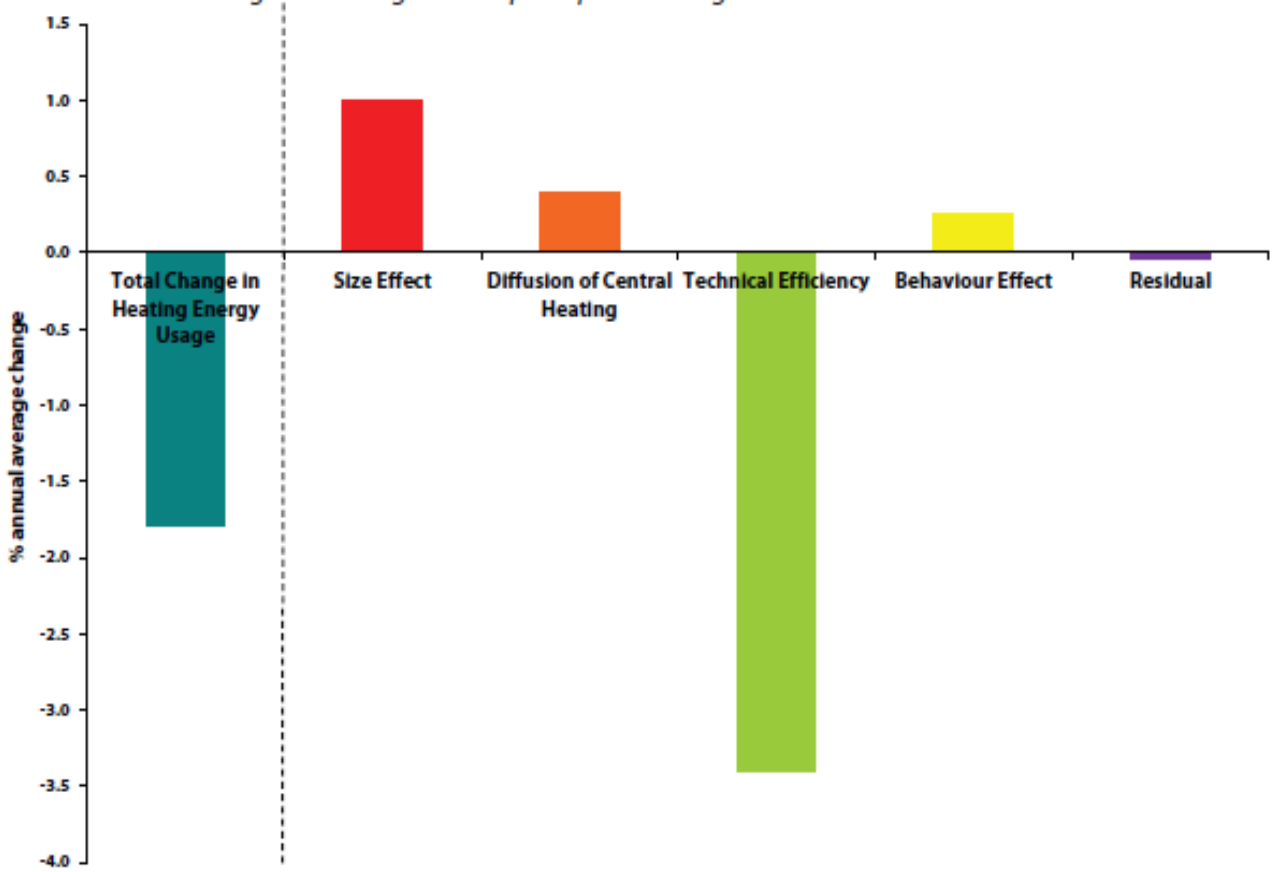
Disaggregation

Figure 38 *Drivers of Change in Heating Consumption per Dwelling 1995 to 2011*



Source: SEAI

- With decent data on space heating can disaggregate the drivers
- Impact of changes in size, diffusion of central heating, behavioural effects
- **The right data into spreadsheet, graph appears!**
- **(per dwelling)**

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Household	Climate	based on Heating Degree Days	Yes	No
Space Heating	Number of dwellings	% change in number of dwellings	Yes	No
	Size of homes	% change in m2 per dwelling	Yes	Yes
	Diffusion of Central heating (CH)	Based on share of dwellings with CH and a coefficient of CH accounting for the increased energy service demand of dwellings with CH	Yes	Yes
	Technical efficiency savings	Based on ODEX calculation combining unit consumption of space and water heating.	Yes	Yes
	Other	Remainder		Yes

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Household	Ownership	% change in number of electrical appliances	No	No
Electrical Appliances	Efficiency of appliances	Share of efficient appliances	No	No

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Transport	Activity	Change in passenger kilometers of cars	No	No
Cars	Technical efficiency savings	Change in efficiency of cars in l/100km	Yes	No
	Other	Remainder		No

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Transport	Activity	Change in total passenger kilometers of cars, trains, bus, trams	No	No
Passengers	Technical efficiency savings	Change in efficiency of cars, trains, bus, trams etc	No	No
	Modal Shift	Change in the share of passenger km of each mode	No	No

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Transport	Activity	Change in ton-km	Yes	No
Freight	Technical efficiency savings	Change in efficiency of HGV	No	No
	Modal Shift	Share of ton-km by mode	Yes	No

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Industry	Activity	Value added	Yes	No
	Structure	Share of GVA in different branches of Industry	Yes	No
	Efficiency	based on ODEX calculation of energy conumption per unit production at branch level	Yes	No
	Value of products	ratio of value added to physical production	Yes	No

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Decomposition Analysis for Ireland

Sector & Subsector	ODYSSEE Decomposition Variables	Details	Data available for Ireland?	Analysis currently carried out for Ireland?
Tertiary	Climate	Degree days	Yes	No
	Activity	Change in value added	Yes	No
	Efficiency	Change in energy use per employee	Yes	No
	Productivity	Value added per employee	Yes	No

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Decomposition Facility

- **Agree..**
  - This decomposition facility proposes a harmonised methodology to assess the relative impact on energy demand of the various explanatory factors which are sector dependent.
  - Good for Annex 14 annual report requirements

- **Consider**
  - Data needs and availability – takes time
  - Insights very useful for policy making
  - In the mean time, for the directive, rely on what data we have, and logic / discussion

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Do you want to talk about it?

Jim.

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