



Why do we need New Indicators?

Mark Ellis

**Energy Efficiency and Environment Division
International Energy Agency**

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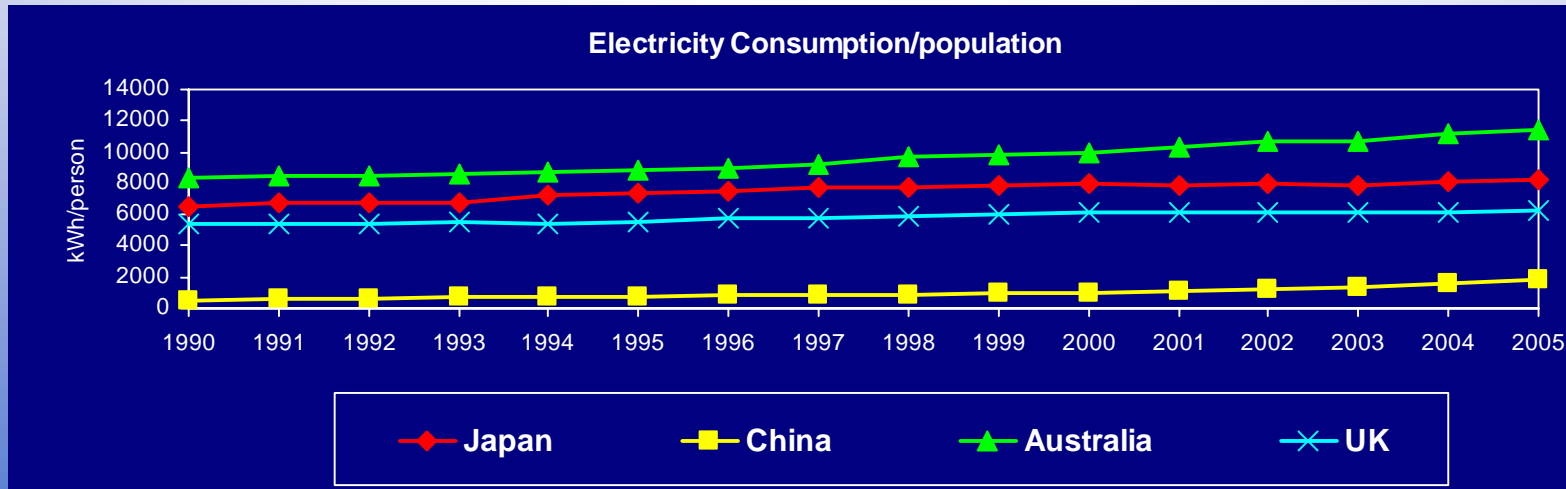
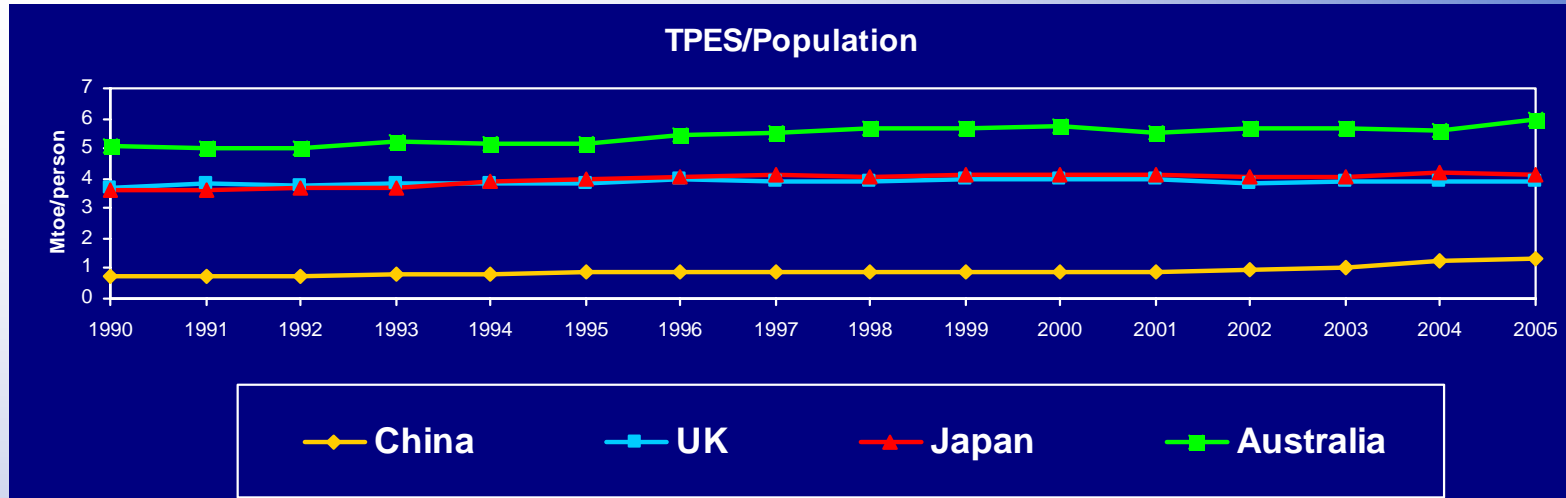


Indicators

- What do traditional indicators tell us?
 - ◆ Notional energy efficiency of economy
 - ◆ Fuel switching activities within sectors
 - ◆ Overall trends & some sector trends
 - ◆ Allow inter-country comparisons



Traditional Indicators





- What they don't tell us much about:
 - ◆ What is driving energy consumption
 - ◆ What impact policies are having
 - ◆ What is likely to happen in the future

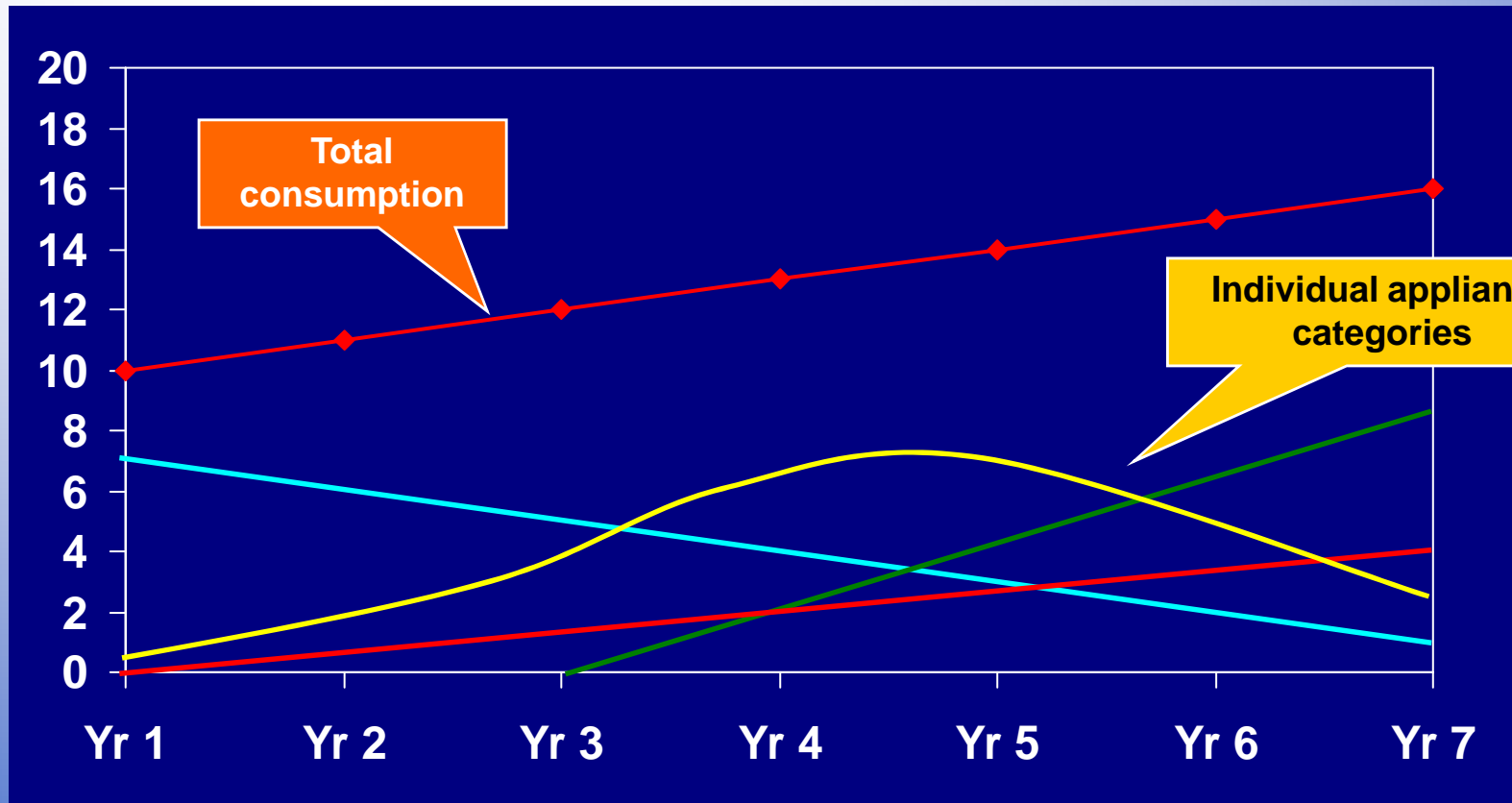


What drives energy consumption?

- **millions of buildings**
 - ◆ varying thermal performance
 - ◆ varying lighting requirements
- **millions of appliances in many categories**
 - ◆ many end-use applications
 - ◆ \approx 100 basic appliance categories
 - ◆ \approx tens or hundreds of models in each category
- **Many variables!**
 - ◆ *Ownership, penetration rates*
 - ◆ *Usage patterns*
 - ◆ *power consumption of different appliances/technologies*

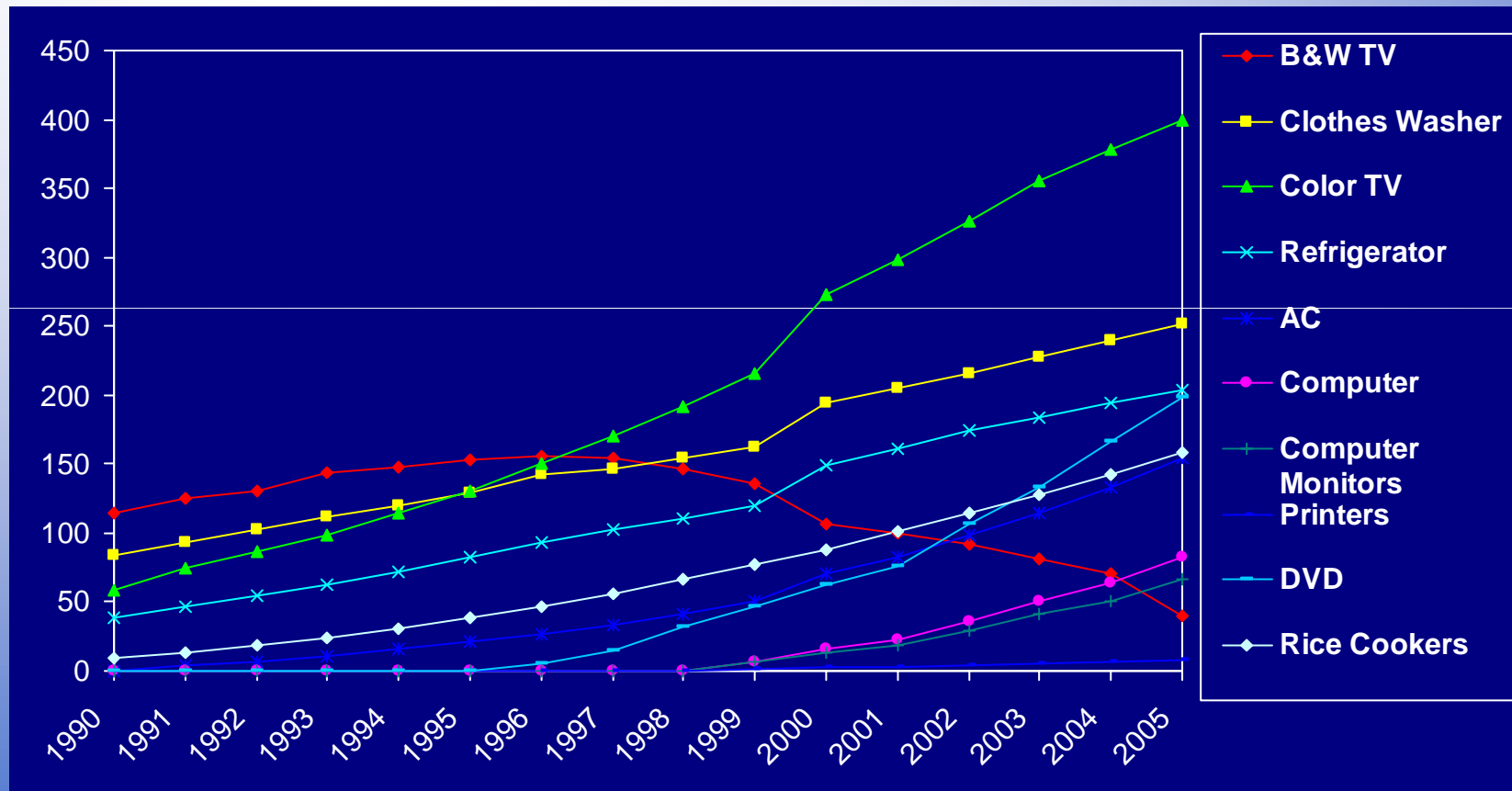


Aggregate data hides many fluctuations





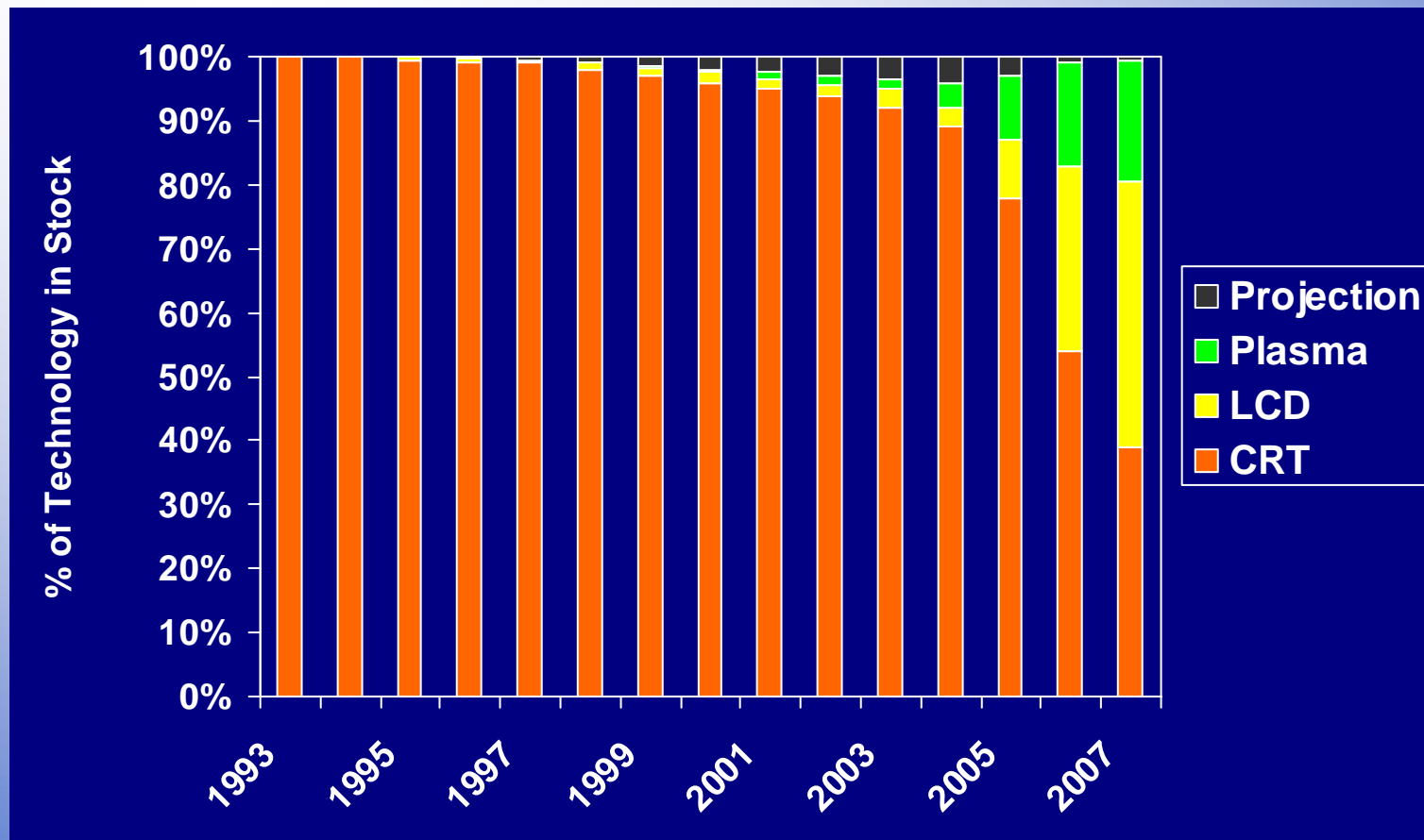
Fluctuations may be caused by ownership levels...



China

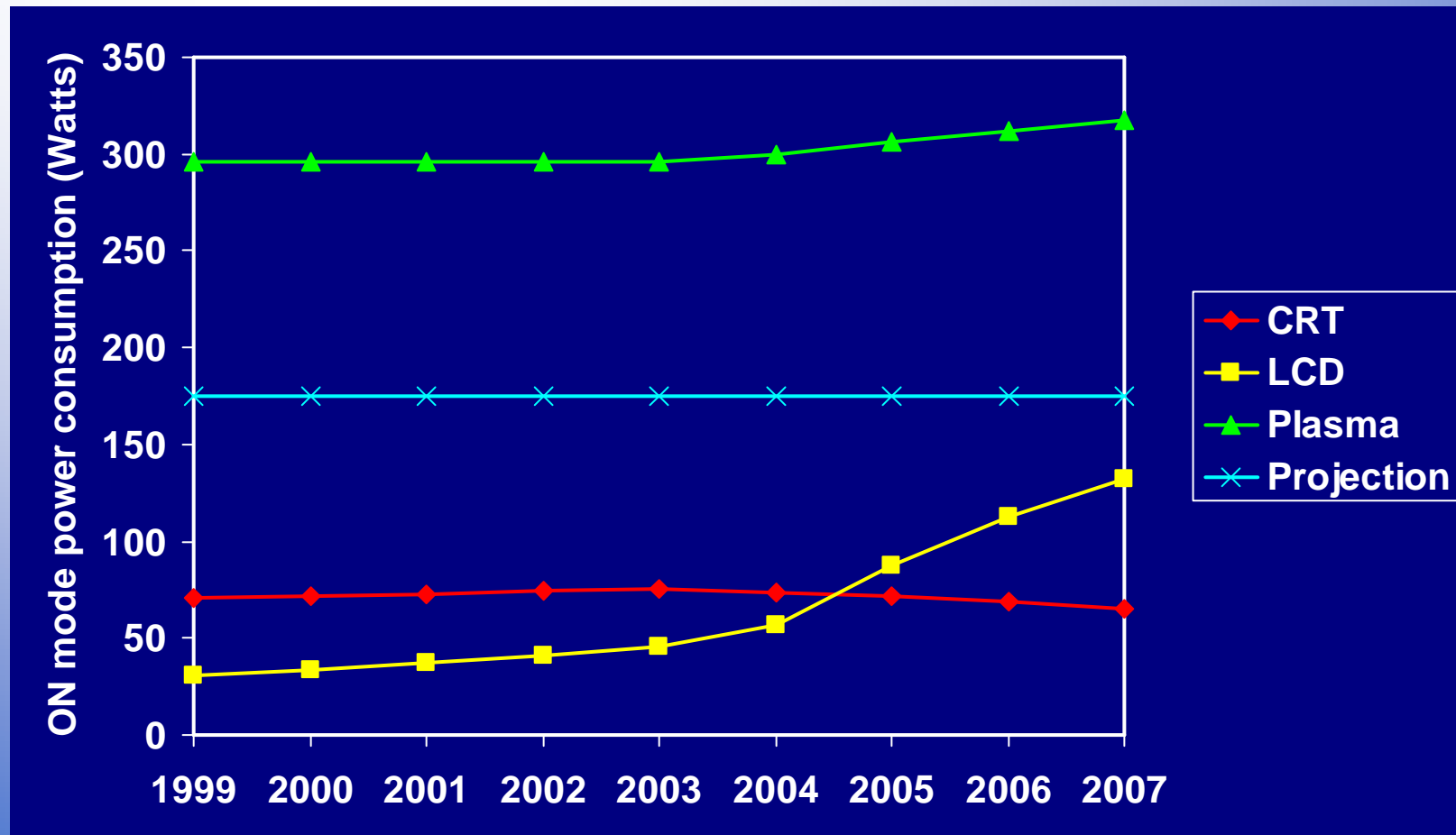


Changes in technology...





Changes in average energy consumption per appliance.....





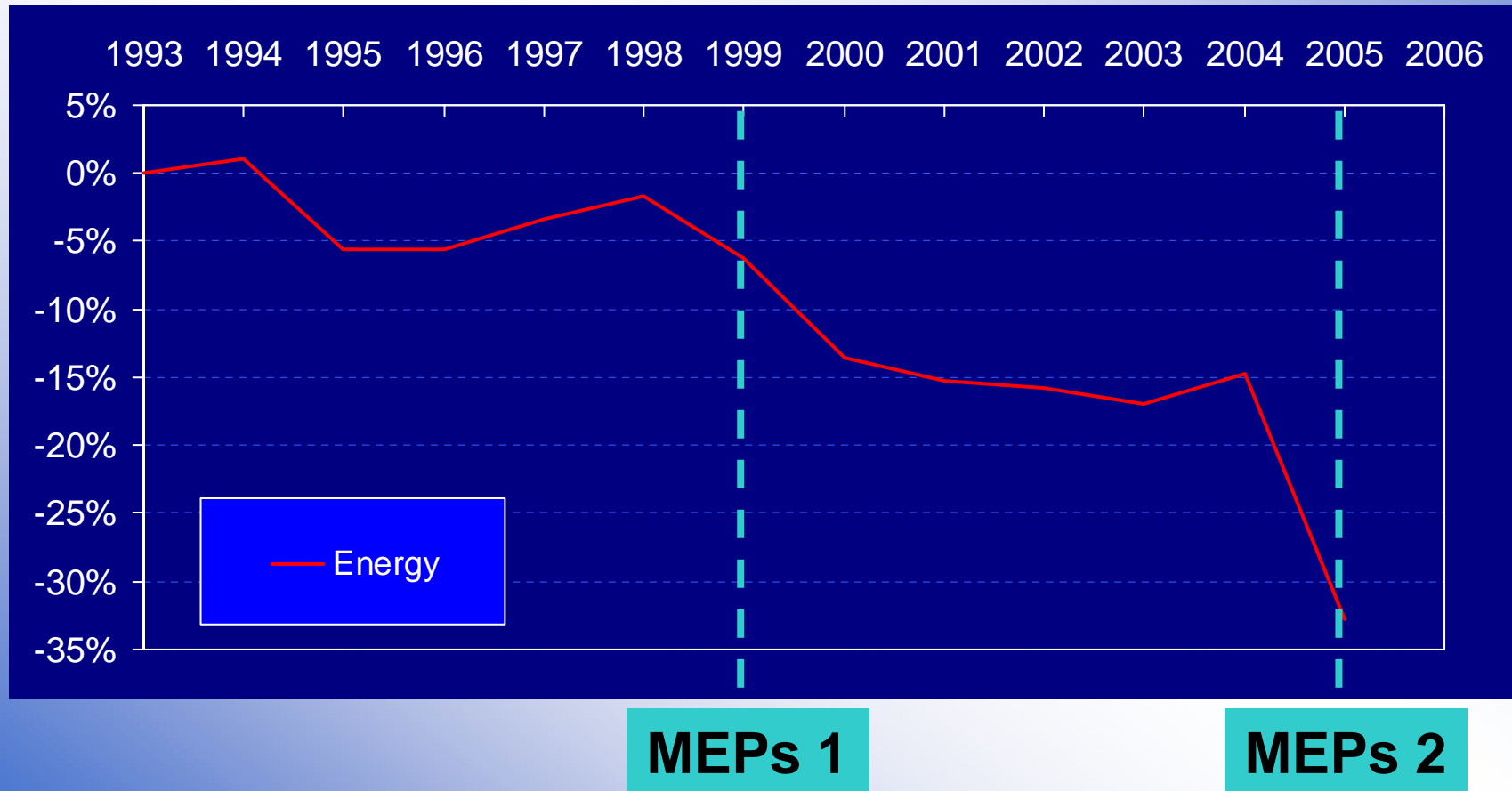
Aggregate data doesn't always show policy impacts

- Policies targeted at *individual* appliances
- Changes in policies typically influence *new* appliances
 - ◆ Takes time to flow through to stock & influence consumption
- May be hidden by growth in penetration rates, size, other attributes



Impact of regulations

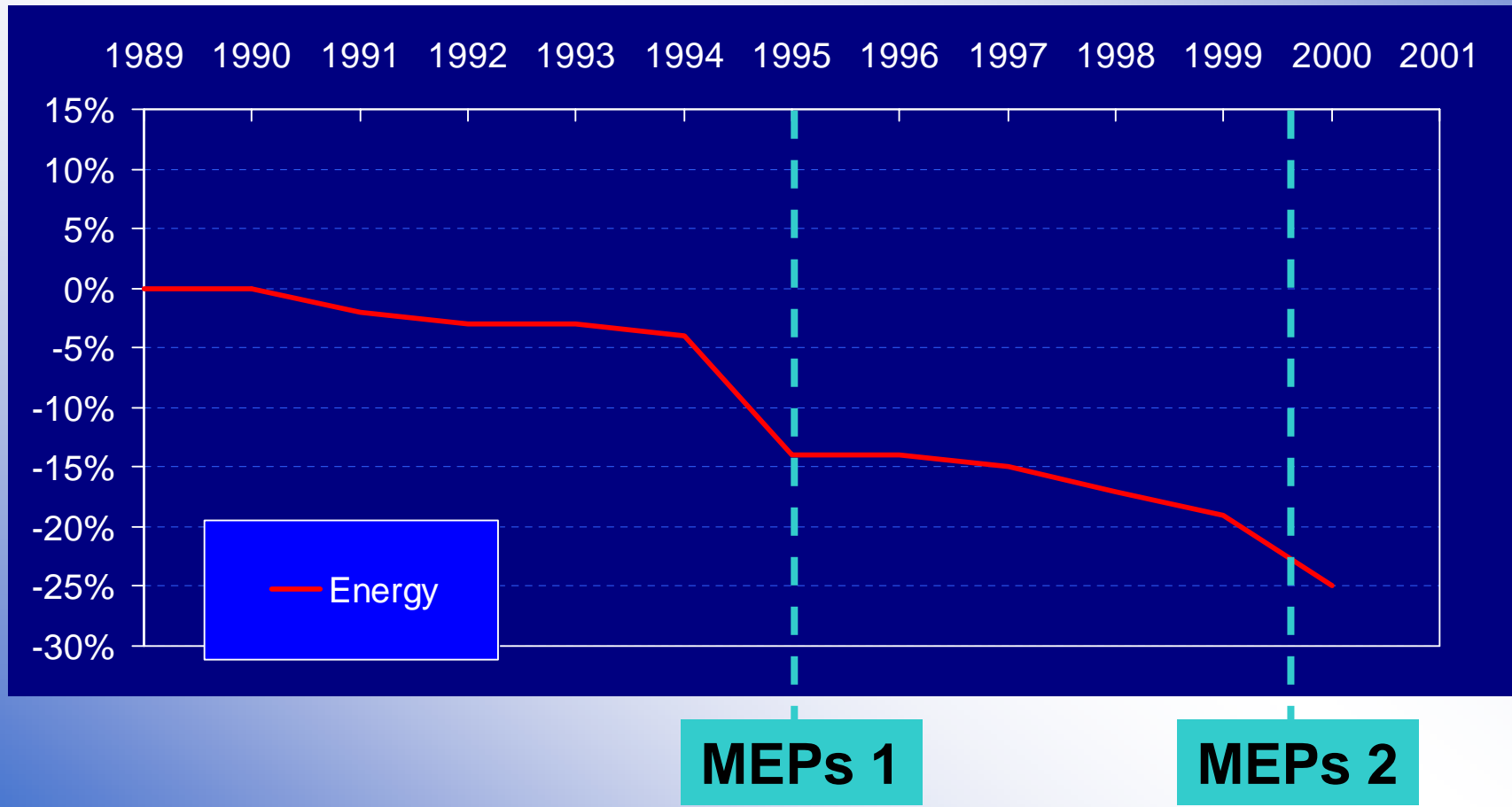
Australian freezers % change





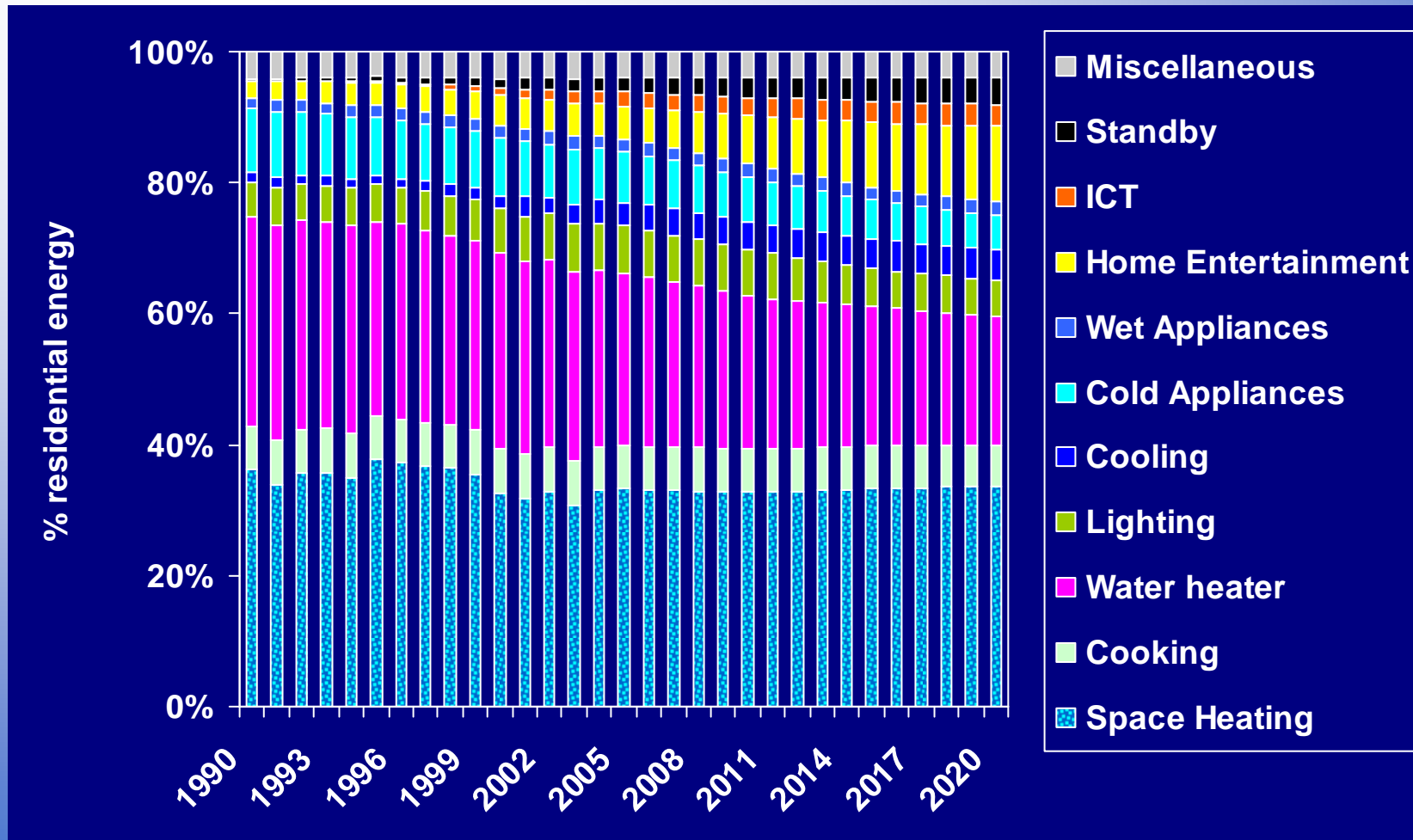
Impact of regulations

UK refrigerator-freezers % Change



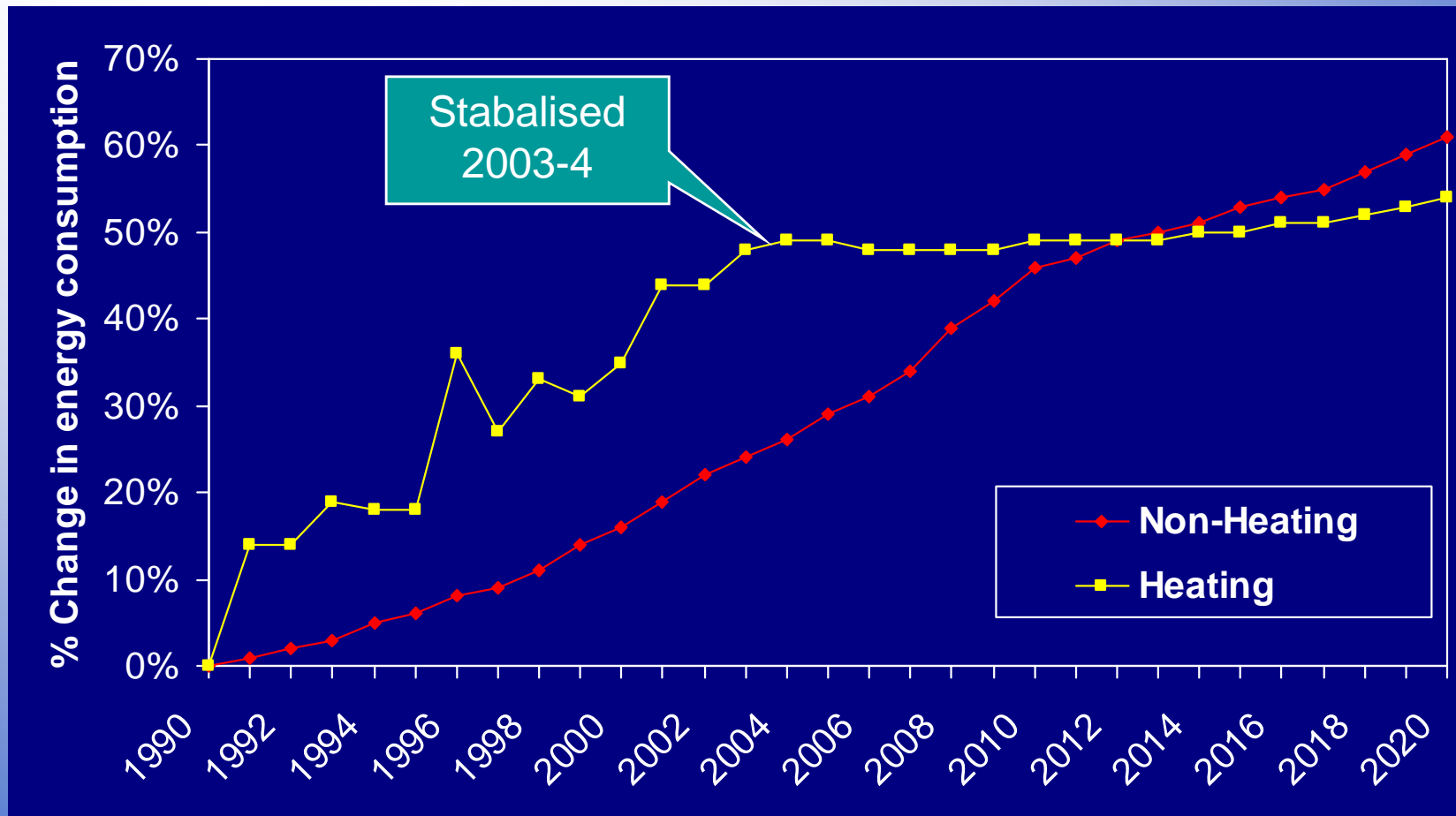


Why indicators for appliances?



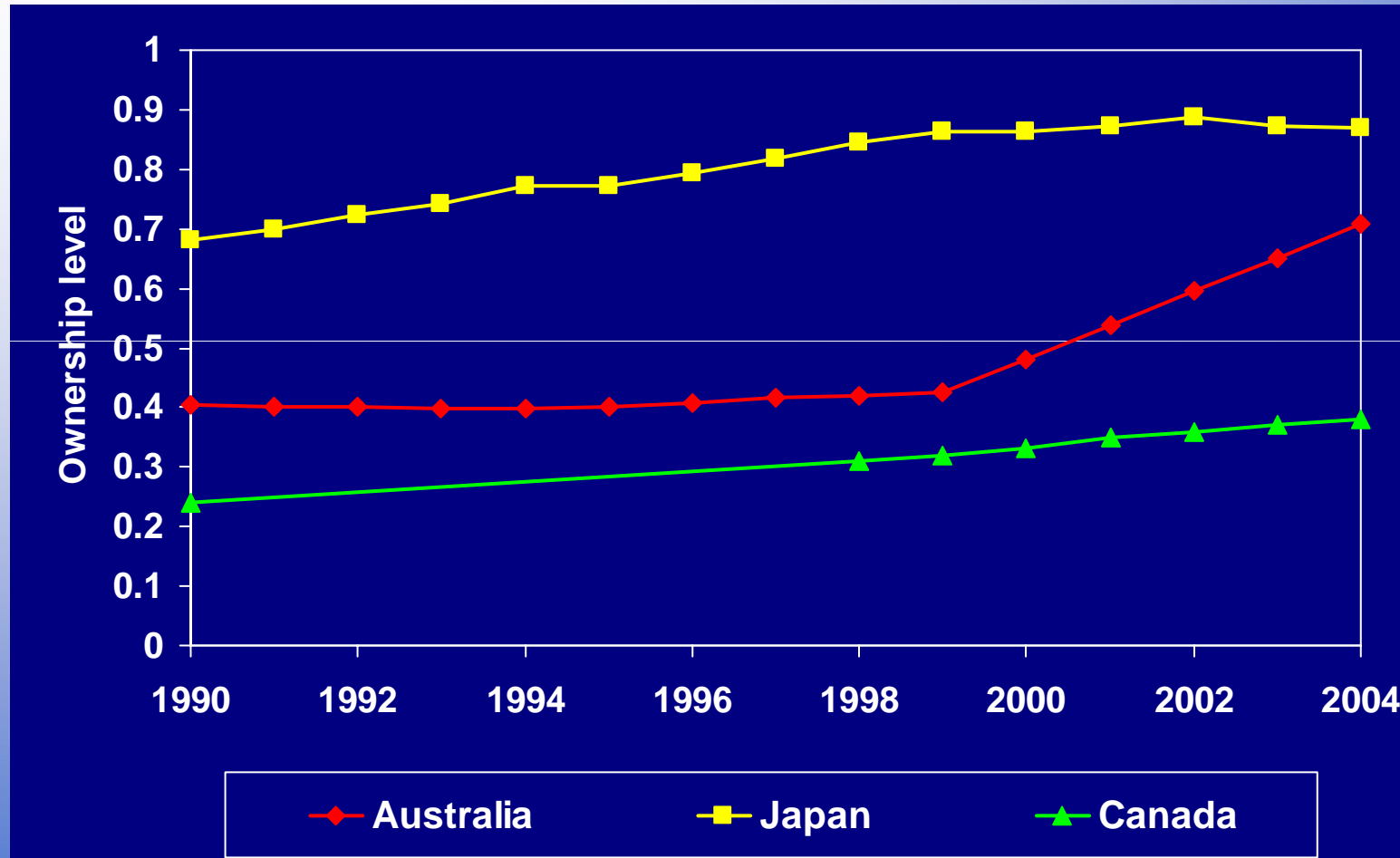


Why indicators for appliances?



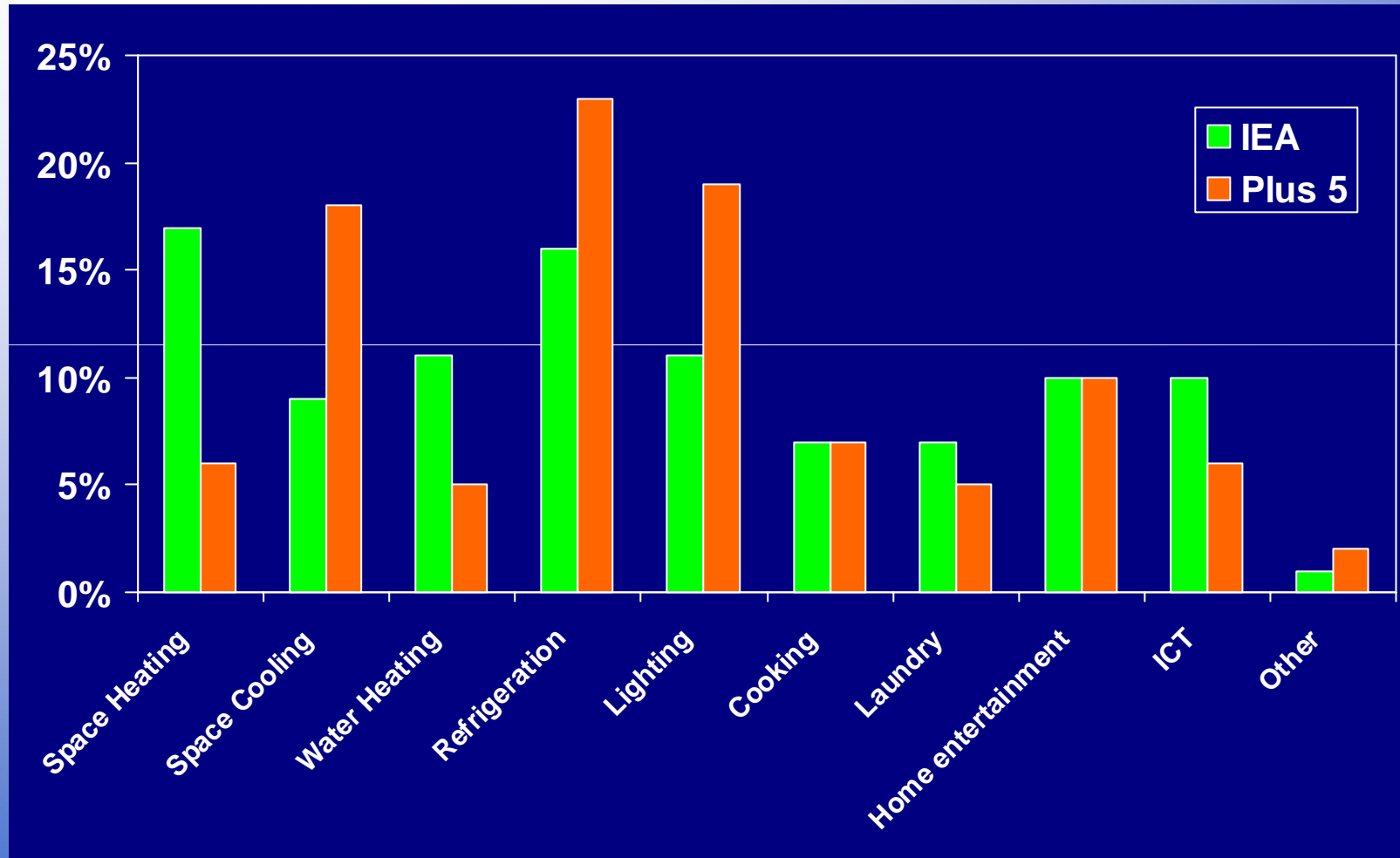


Growth in Air-conditioning





Distribution of electricity consumption





Appliance Categories

Category	Application
Buildings – fixed appliances	Space Cooling
	Water Heating
	Lighting
	Cooking
Appliances – mobile appliances	Cold Appliances
	Wet Appliances
	Home entertainment
	Information & communication technology (ICT)
	Miscellaneous



New Indicators

- To aid comparisons between countries:
 - ◆ *Wide adoption*
 - ◆ *Linked to data already or easily collected*
 - ◆ *Not nationally specific*
- Pick key appliances in each category?
- Select attributes related to consumption
 - ◆ *ownership or sales levels*
 - ◆ *technology type*
 - ◆ *size, volume*



Examples

Lighting	Sales by lamp type ▶ Average efficacy of new lamps Recommended illumination levels
Space Heating	Sales by type Av. New boiler efficiencies
Space Cooling	Ownership rates Sales by type
Cold Appliances Refrigerators	Sales Improvement in energy performance Internal volume
Wet Appliances	Sales Improvement in energy performance



Examples

Home entertainment	Televisions	Sales , tech type, screen size, usage
	DVD Recorders	Sales, tech type
	Games consoles	Sales, type
	Set-top boxes	Sales, type
Information & communication technology (ICT)	Desktop Computers	Sales, type, speed
	Laptops	Sales, type, speed
	Monitors	Sales, size
	Printers	Sales, type