



SMARTER APPLIANCES FOR SMART HOMES

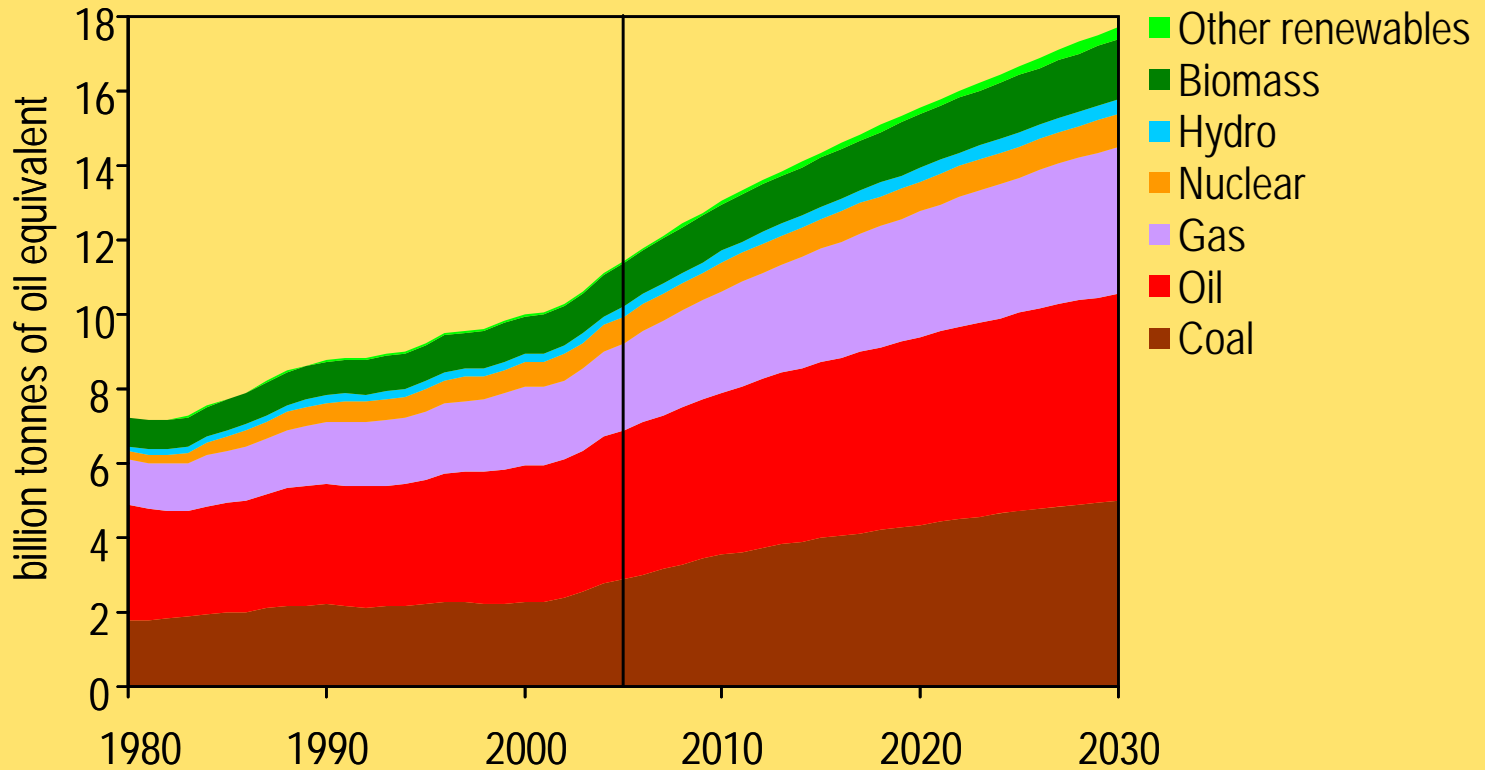
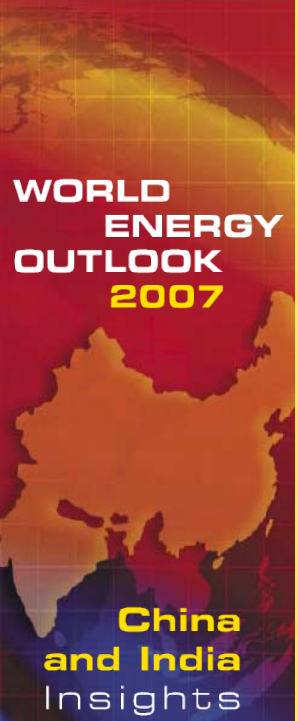
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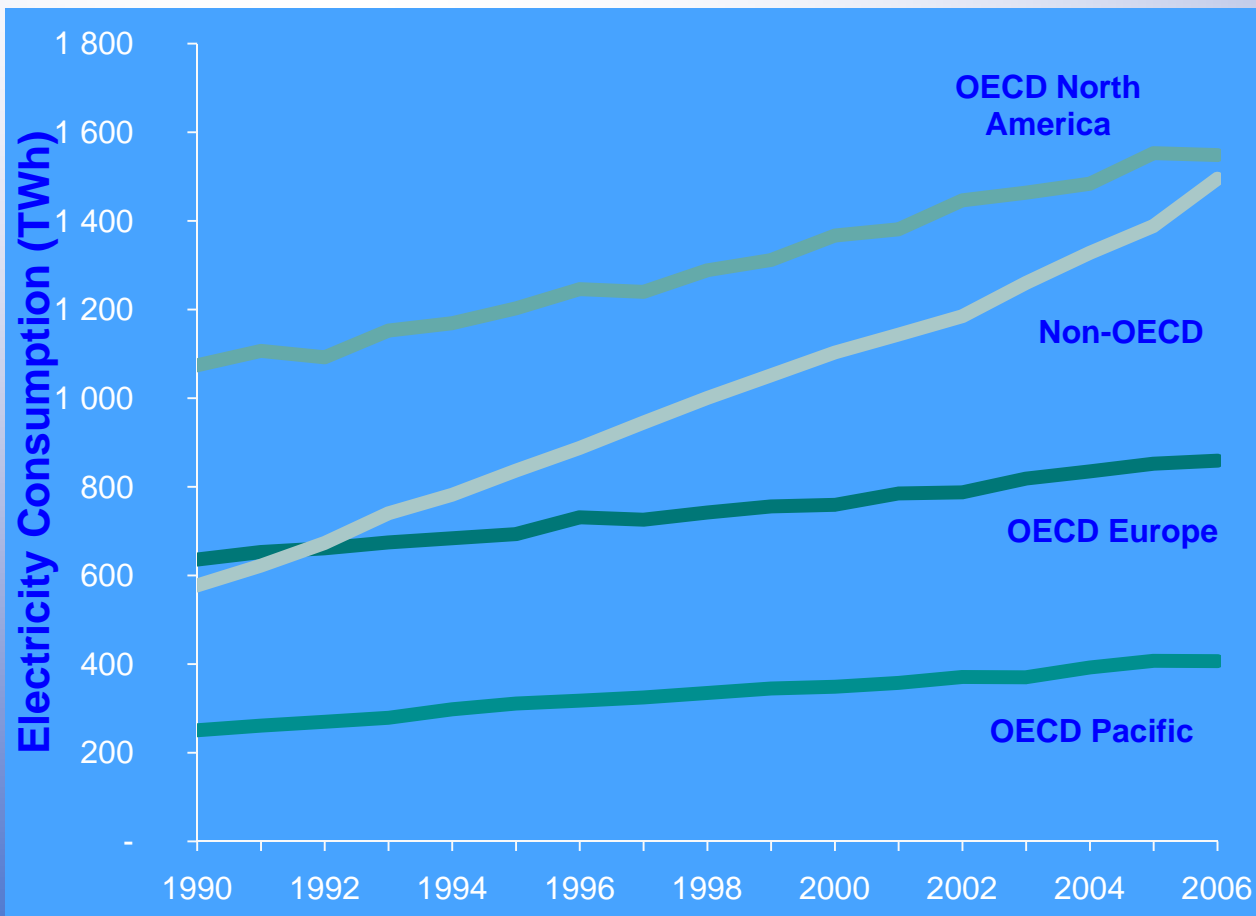
Reference Scenario: World Primary Energy Demand



Global demand grows by more than half over the next quarter of a century, with coal use rising most in absolute terms



Global Residential Electricity



- Non-OECD growth at twice the rate of OECD

- But, OECD still accounts for 75% of electricity consumption

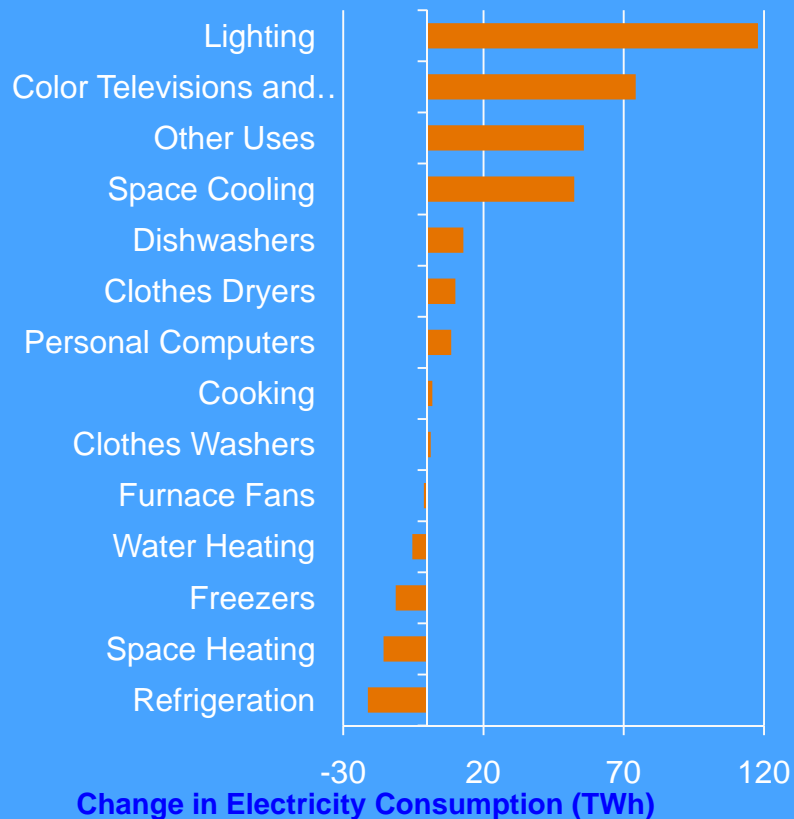
- High OECD growth rates: Turkey, Korea, Spain and Mexico

- Low growth rates: Denmark, Sweden, Norway, Czech Republic

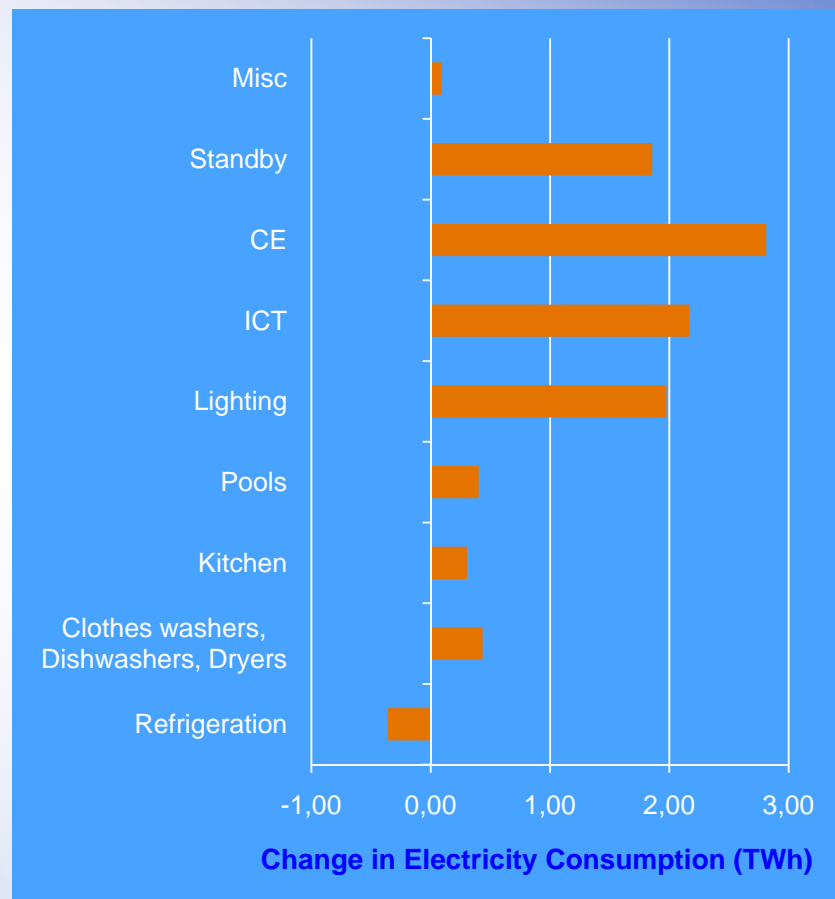
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What is driving growth in residential electricity?



United States, 1998-2008



Australia, 1998-2008

Sources: US EIA, Commonwealth of Australia

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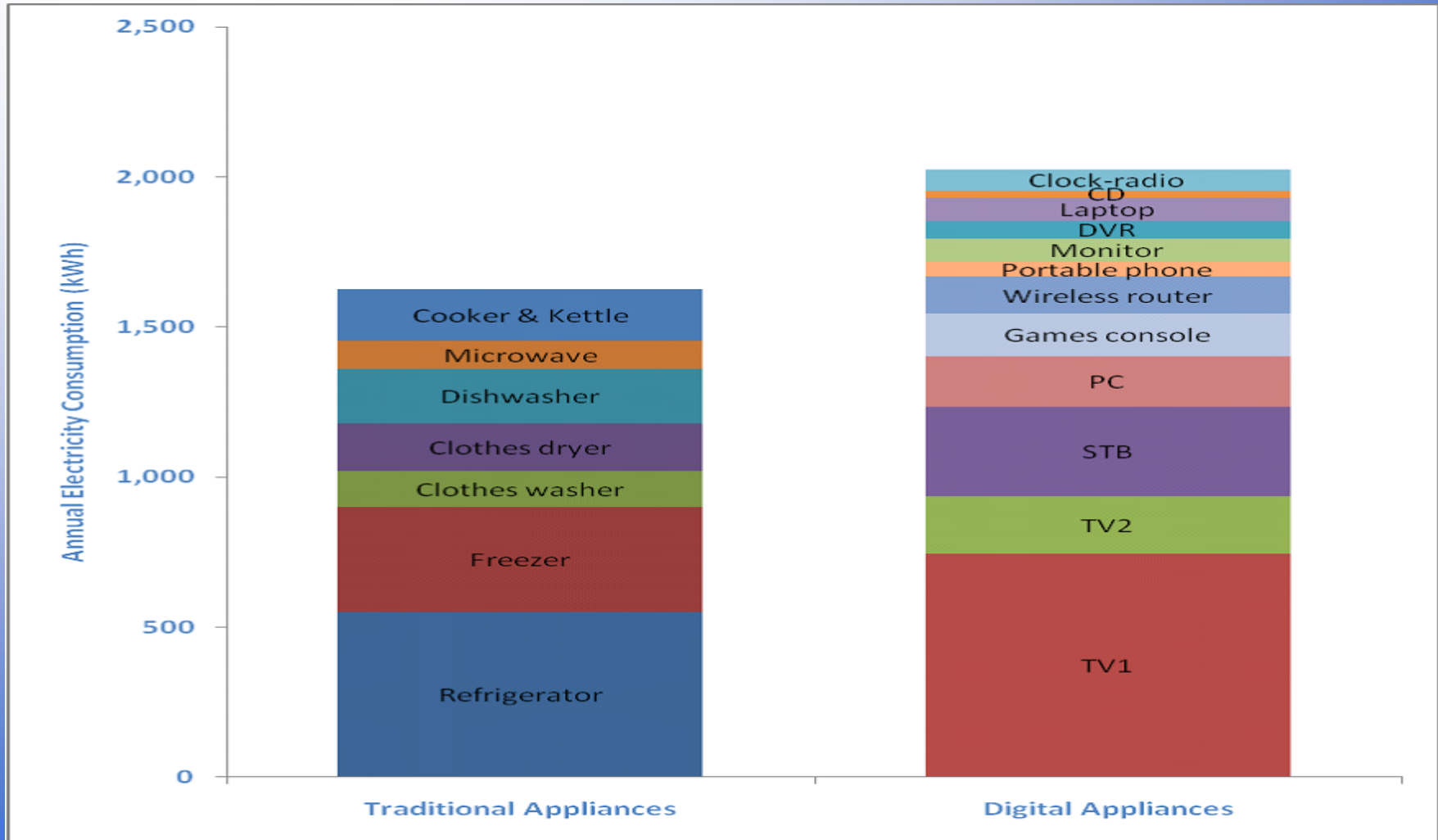


Special Attributes of Electronics

- Electronic appliances reach high ownership rates *more rapidly* than many traditional household appliances
- The *ceiling* for ownership levels of electronic appliances is not well understood
- New functionality *accelerates turnover* prior to the technical end of life
- Electronic goods shipped with advanced features enabled which have an *energy cost*
- However the average consumer may *not use* these capabilities



Typical Use of Electronics In OECD Households.



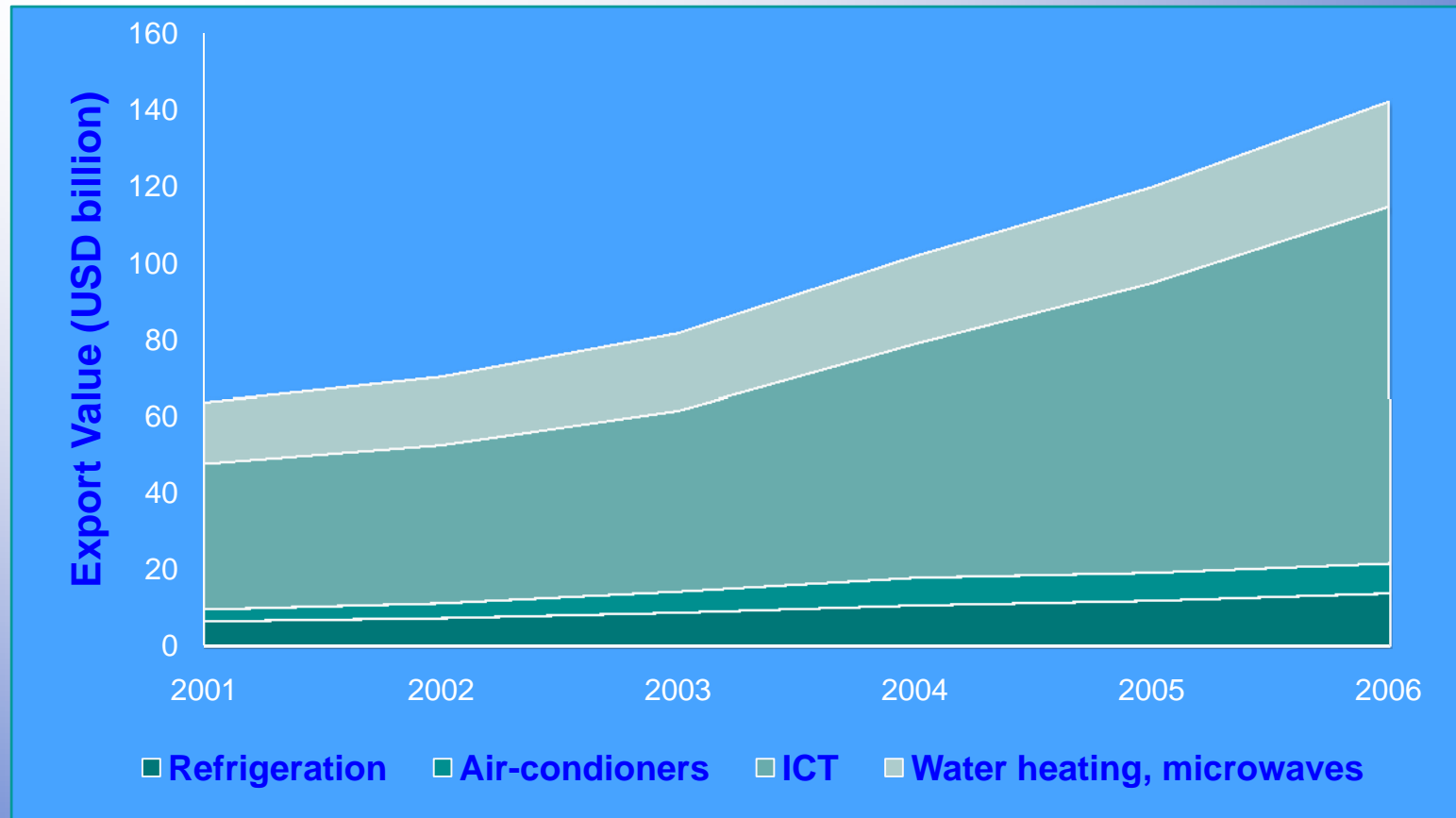


Overall Trends

- Similar picture for most major economies
- larger household appliances, such refrigerators, freezers and clothes washers, now contribute less
- lighting and air-conditioning - major increases in some regions
- ICT and CE equipment is rising very fast and now contributing a significant share of demand



International Trade



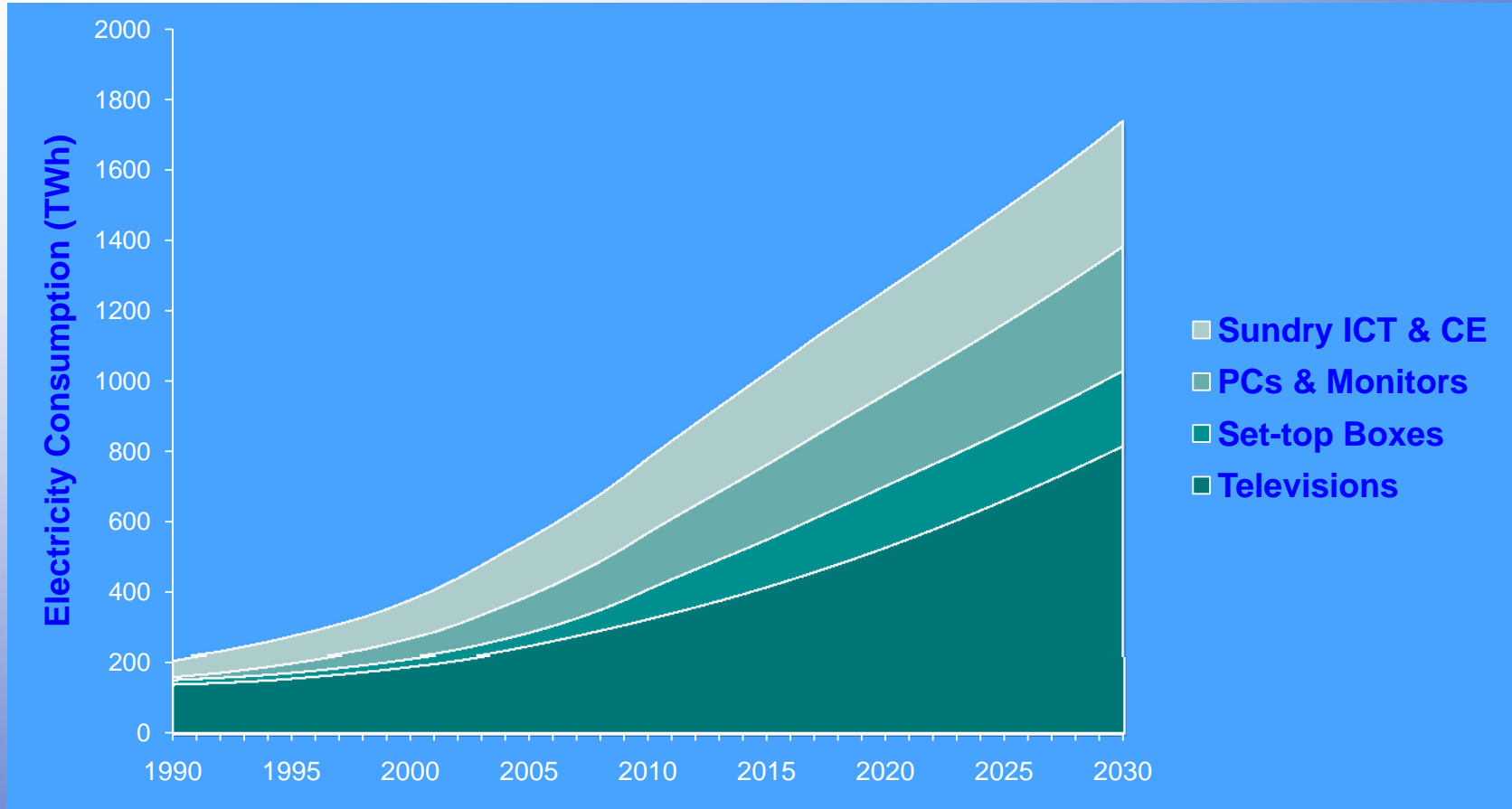
Trade in ICT and CE increased at 20% p.a. since 2001

Source: International Trade Center, Trade Map Database

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Looking forward

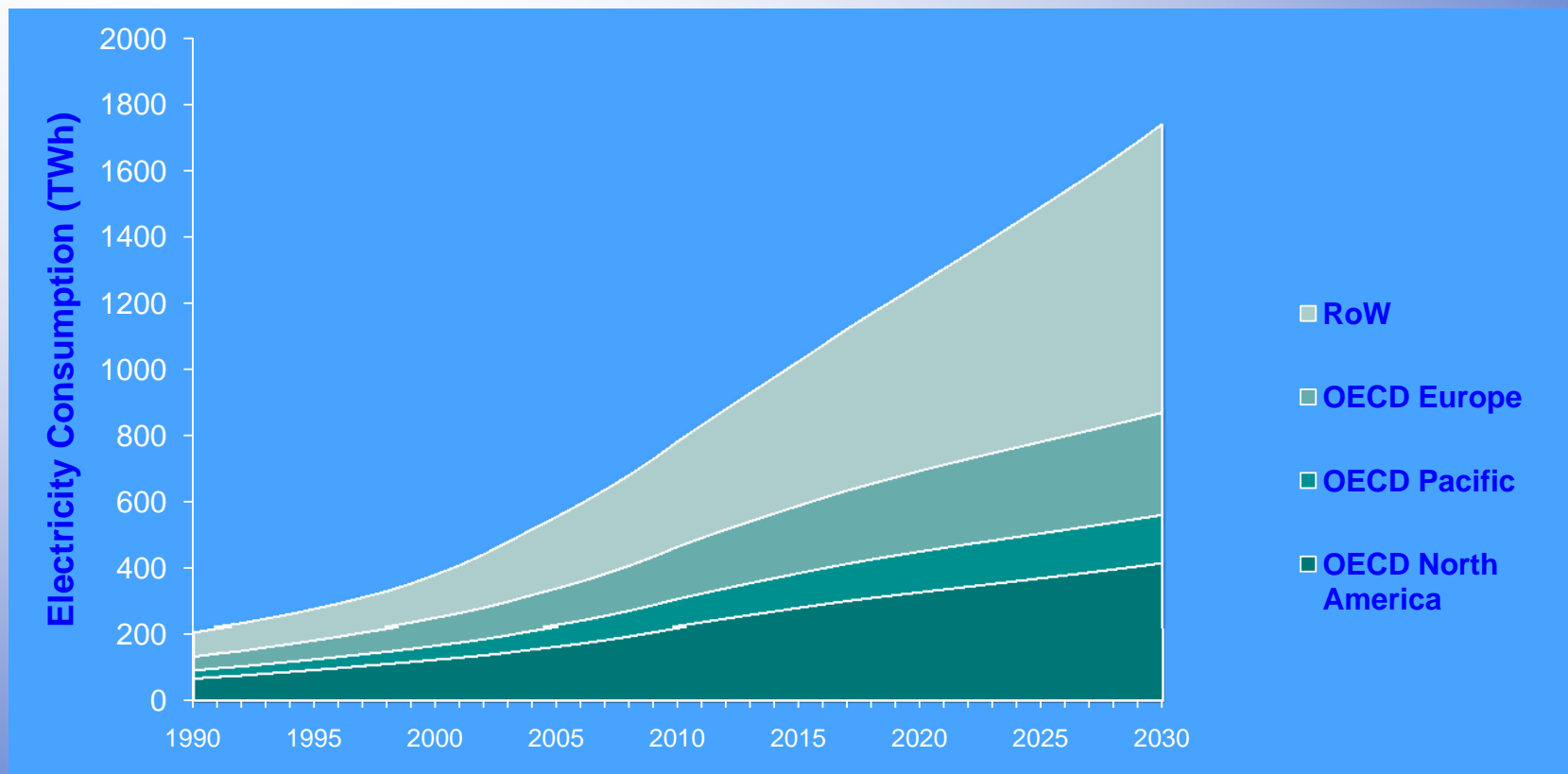


***Sector electricity consumption to increase by 250% by 2030
without further policy intervention***

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Estimated consumption by region



Up to 2015: growth in all regions
2015-2030: mainly driven by non-OECD

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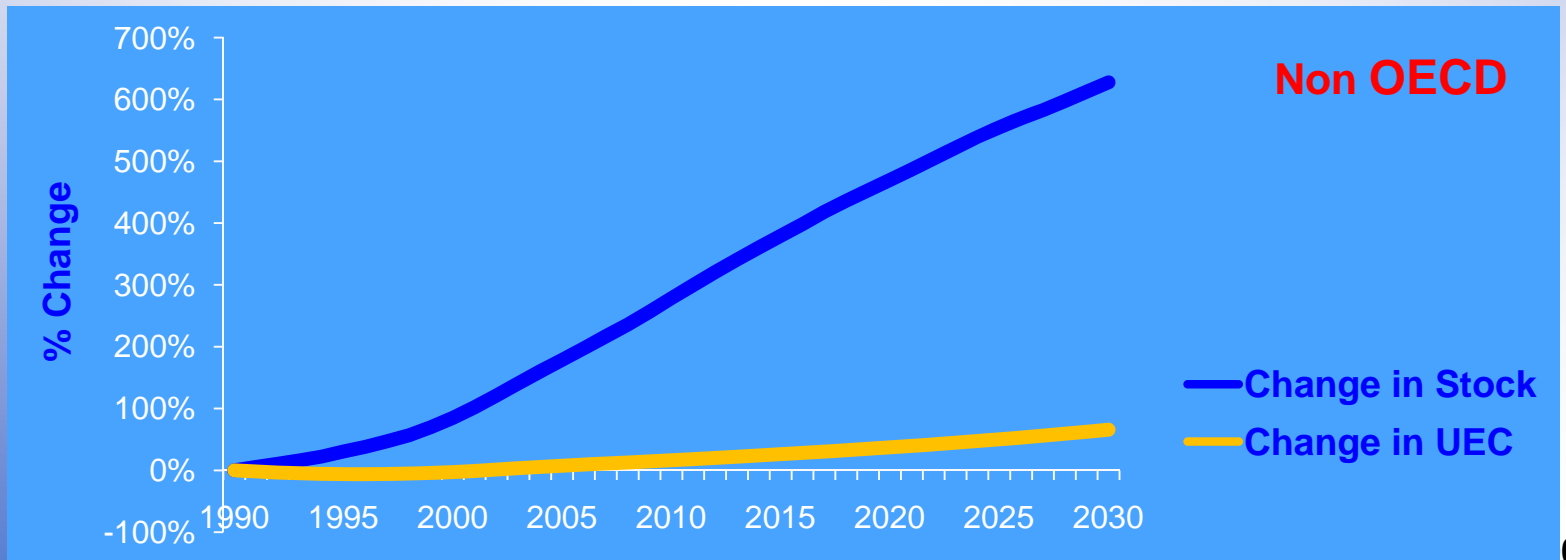
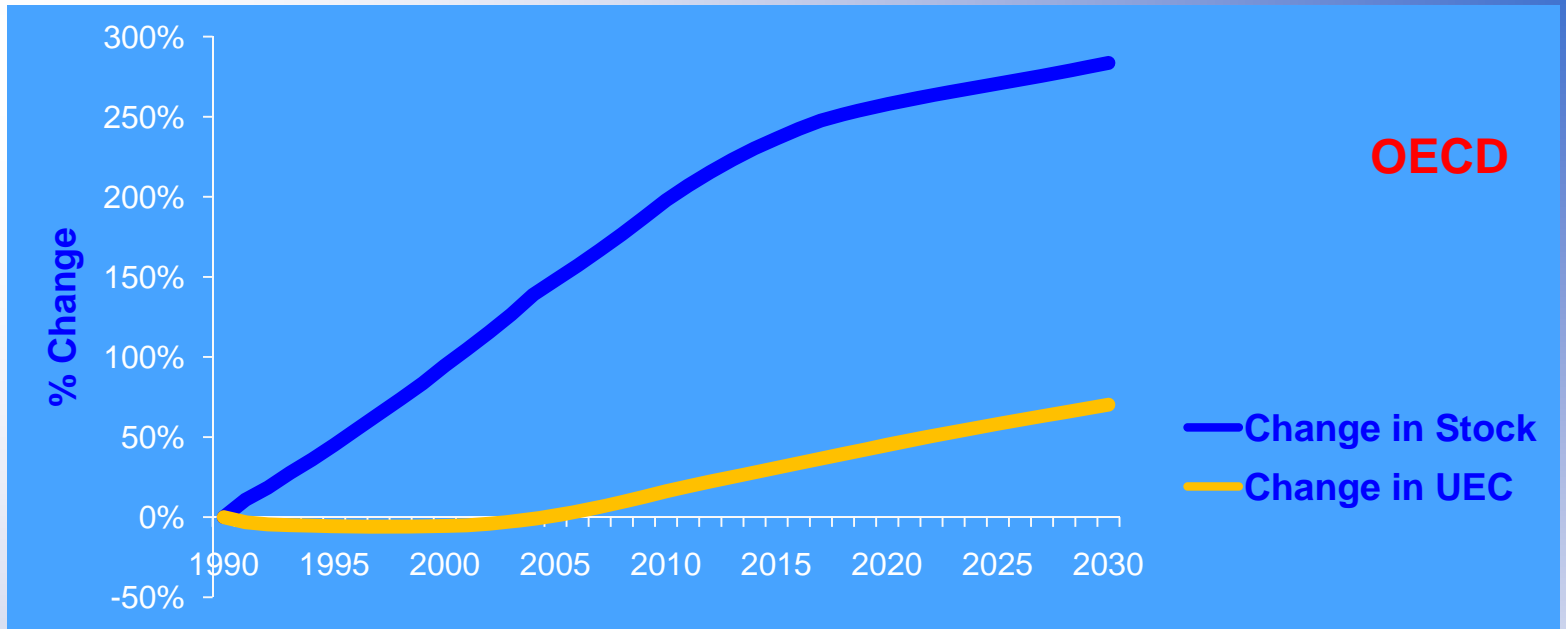


Drivers of growth

- **Stock:**
 - ◆ **Switch off analogue TV broadcast by 2015**
 - Leads to increased set-top boxes and digital TV
 - ◆ **Penetration of pay-TV services**
 - Basic services in many regions, high definition reception, greater access to specialised content
 - ◆ **Penetration of PCs and broadband access (esp. non-OECD)**
 - Users grown by 300% since 2000
- **Unit Energy Consumption**
 - ◆ **Functionality**
 - Recording, playing games, radio, communication/connected devices
 - ◆ **Growing usage**
 - Simultaneous activities e.g. watching TV, surfing web, etc



Drivers of growth





ICT and CE

- Electricity consumption grew by nearly 7% pa from 1990-2008
- Major cause of electricity growth in all regions
- In 2008:
 - ◆ 700 TWh of electricity each year
 - ◆ 100 GW of generating capacity
 - ◆ USD 80 billion in annual electricity bill
- Now accounts for nearly 15% of residential electricity use



Monitoring of End-Use Trends

- The growing influence of categories of appliances previously called 'miscellaneous' illustrates why countries need to be vigilant
- Changes in end-use can happen quickly, and expose governments to rising consumption & ghg emissions because of a lack of policy preparation
- ICT and CE equipment is a good, but not the only, example



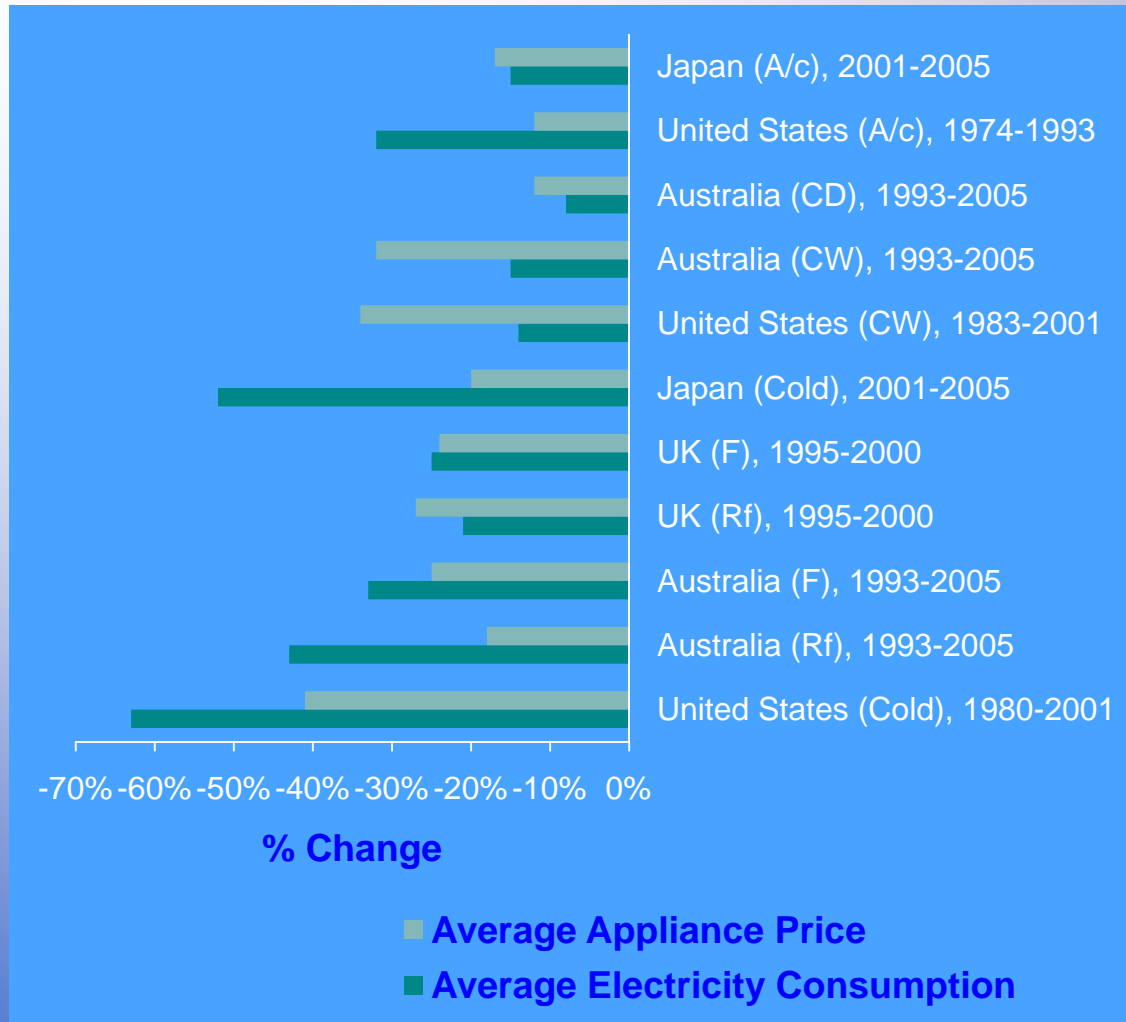
Barriers

- Focus on low first costs within highly competitive markets
- Poor consumer information on energy performance
- Energy saving opportunities spread over many devices
- Small benefits from individual items
- Long and complex supply chains
- Hidden costs and risks, e.g. potential for additional consumer confusion/complaints
- Failures due to principle agent issues in some market segments
- Most barriers will not be addressed by price signals, e.g. Carbon prices

Yet, where there are drivers for energy efficiency, industry has been highly innovative: see mobile devices

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Policy Impacts



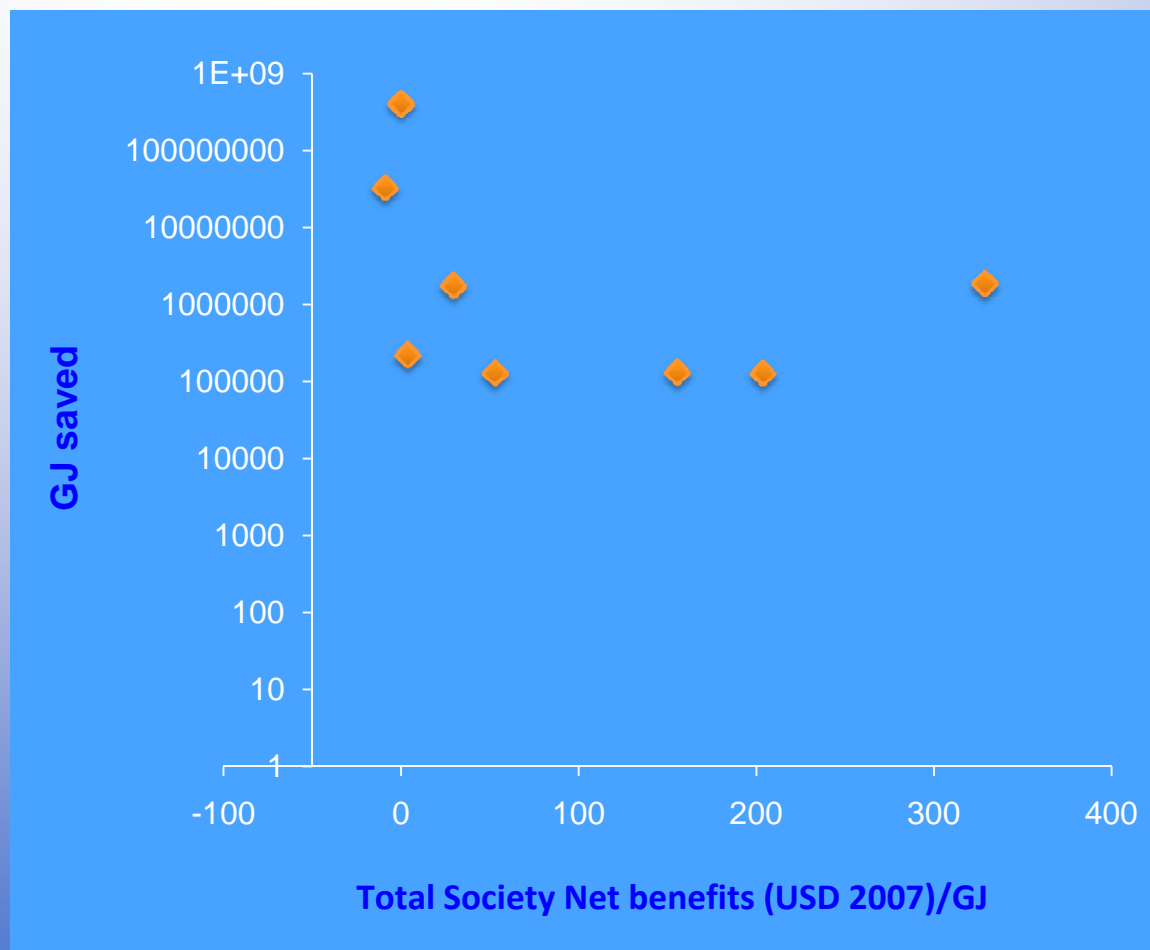
- Major appliances have been the primary target for policy measures over the past decade

- Significant improvements to efficiency

- At the same time, real prices have fallen

- Extremely cost-effective for consumers

Policy cost-effectiveness



- Global analysis of evaluated energy efficiency programmes
- Variation in types, target groups and size
- All competitive with the long-run costs of supply-side alternatives
- Much cheaper if carbon price assumed
- Needs more detailed evaluation to learn more



Country Reviews: overview

- Steady increase in ambition and capacity of national programmes
- Coverage increased, but still many gaps
- Programmes learning from one another – leading to more alignment
- Many programmes struggling with implementation issues: maintenance, compliance, enforcement, evaluations
- Resources not in line with policy ambitions or potential to deliver cost-effective savings

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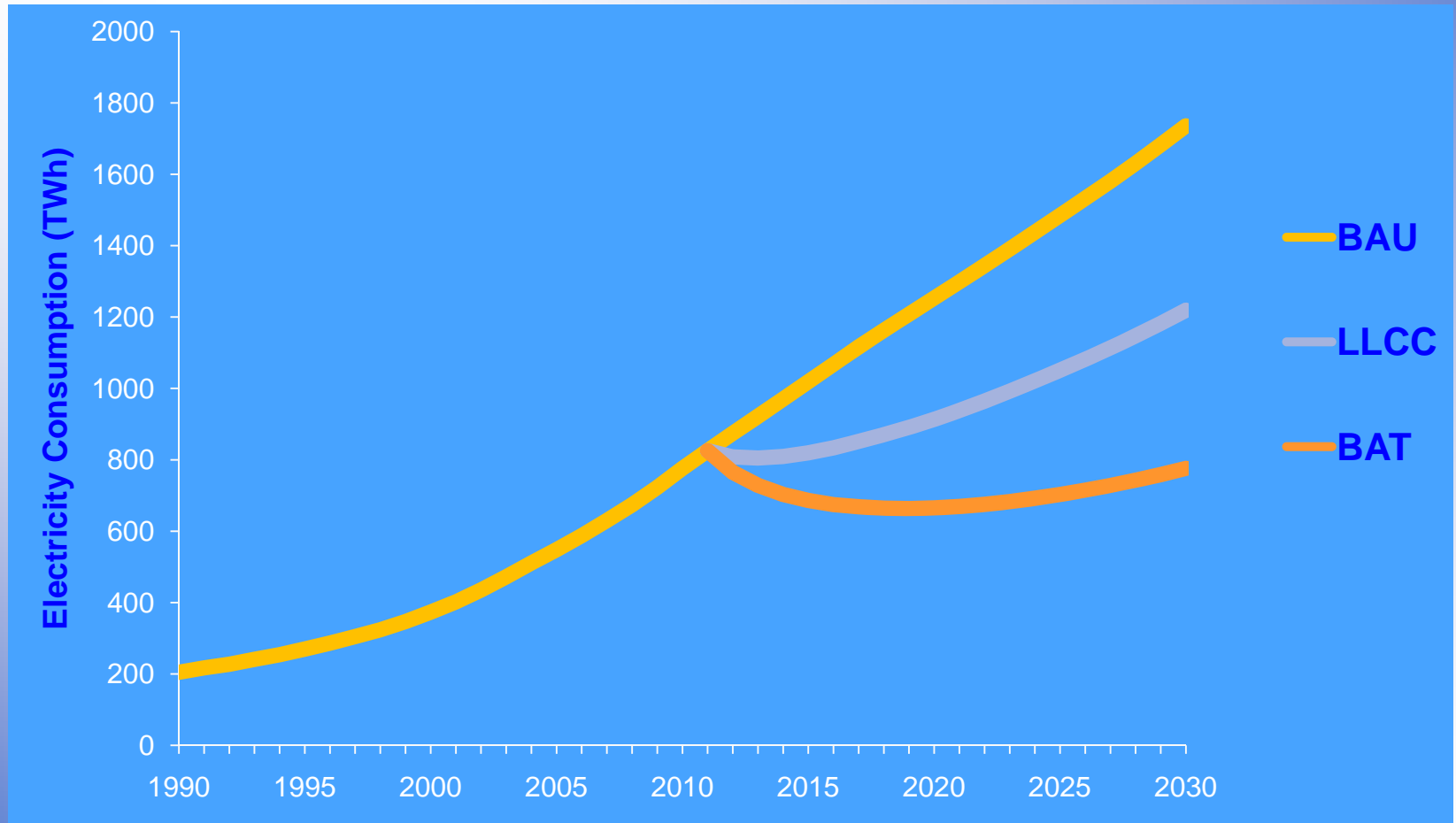


Best Available Technologies (BAT)

- BAT savings through current technologies
- BAT savings are extremely significant:
 - ◆ More than 50% of 2030 consumption
 - ◆ = 7% of the new electricity requirements between 2005 and 2030 (WEO)
 - ◆ Saving USD 130 billion in 2030 consumer energy bills
 - ◆ Avoids of 150 GW
 - ◆ Stabilises GHG emissions
- *Since costs are falling fast, BAT may be LLCC soon!*



Savings Potential



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Key messages on ICT and CE

- **BAU electricity likely to grow by 250% by 2030**
 - ◆ Helped by convergence of technologies and growth in mobile applications
 - ◆ Increased by new markets and growing demand from non-OECD
- **Could be even more if network devices keep products in high power modes to stay connected**

BUT

- **30% + savings available for no additional lifetime costs;**
- **50% + savings available using current technologies at small cost (may be zero with a cost of carbon)**
- **Additional savings through commercialisation of specific new technologies e.g. OLEDs**



How to Get There

- These savings will not occur without policy intervention
- Policies should encourage electronics to use their capacity to be smarter
 - ◆ To regulate their power requirements to the functions provided, i.e. only use what they need
 - ◆ Automated so not reliant upon behaviour of consumers
 - ◆ Applied across the broad spectrum of electronic
- Countries should develop forward plans, co-ordinated with other economies and industry
 - ◆ Specify long-term and interim targets
 - ◆ Identify policy measures to assist

The book identifies more than 30 detailed policies for ICT and CE equipment

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