



Agentschap NL
Ministerie van Economische Zaken

The future of appliance policy

**Towards zero-energy using
appliances**

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>> Als het gaat om duurzaamheid,
innovatie en internationaal



Question

If efficiency is not sufficient,
will sufficiency be sufficient?

Answer

It depends;
you will know more after this presentation.



Total yearly energy consumption of appliances

=

Total number of households

X

Number of appliances per household

X

Yearly energy consumption per appliance

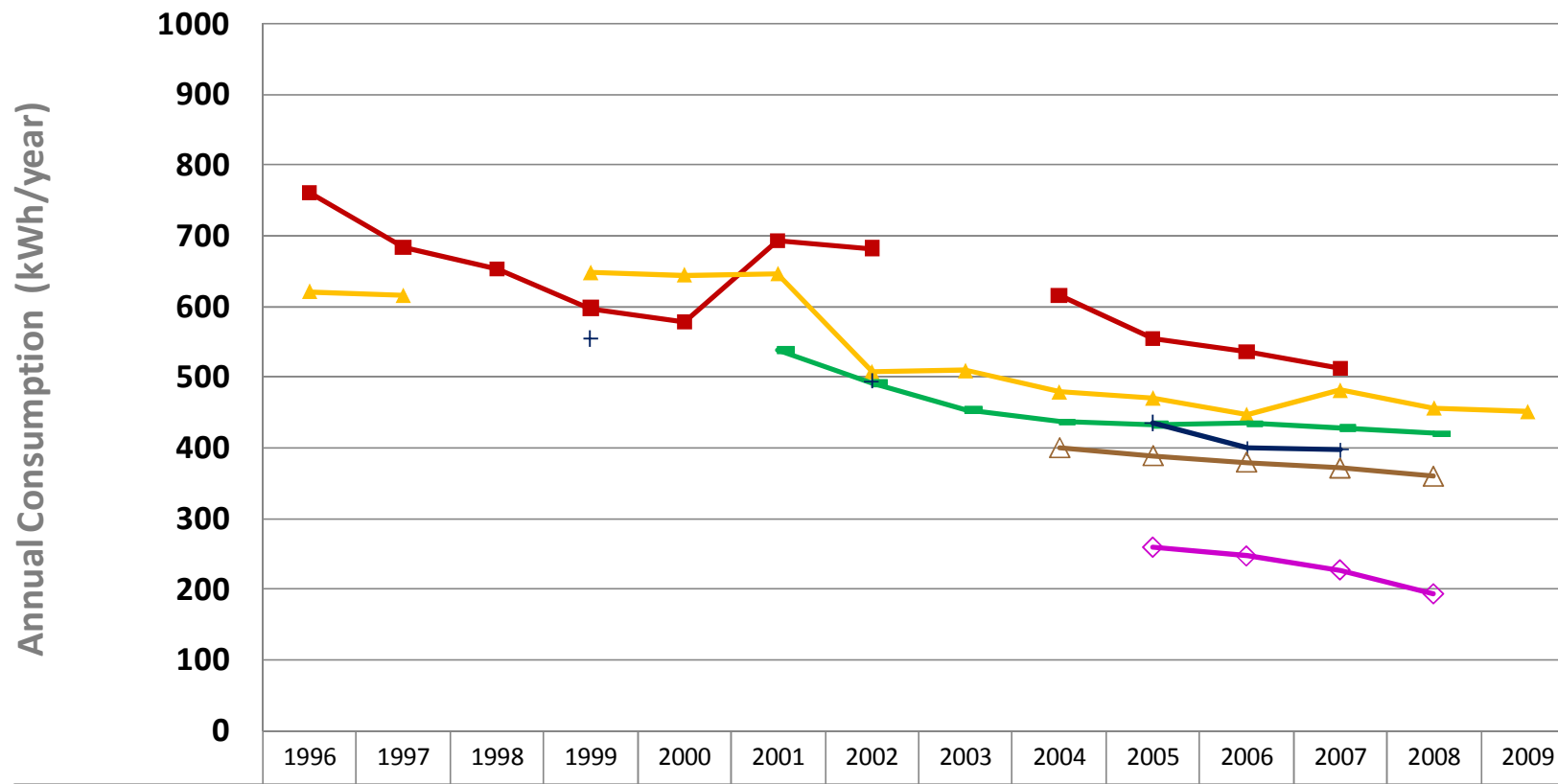
(power consumption x usage time per year, or
energy consumption per cycle x number of cycles per year)

Focus of current appliance policy



Efficiency improvements ...

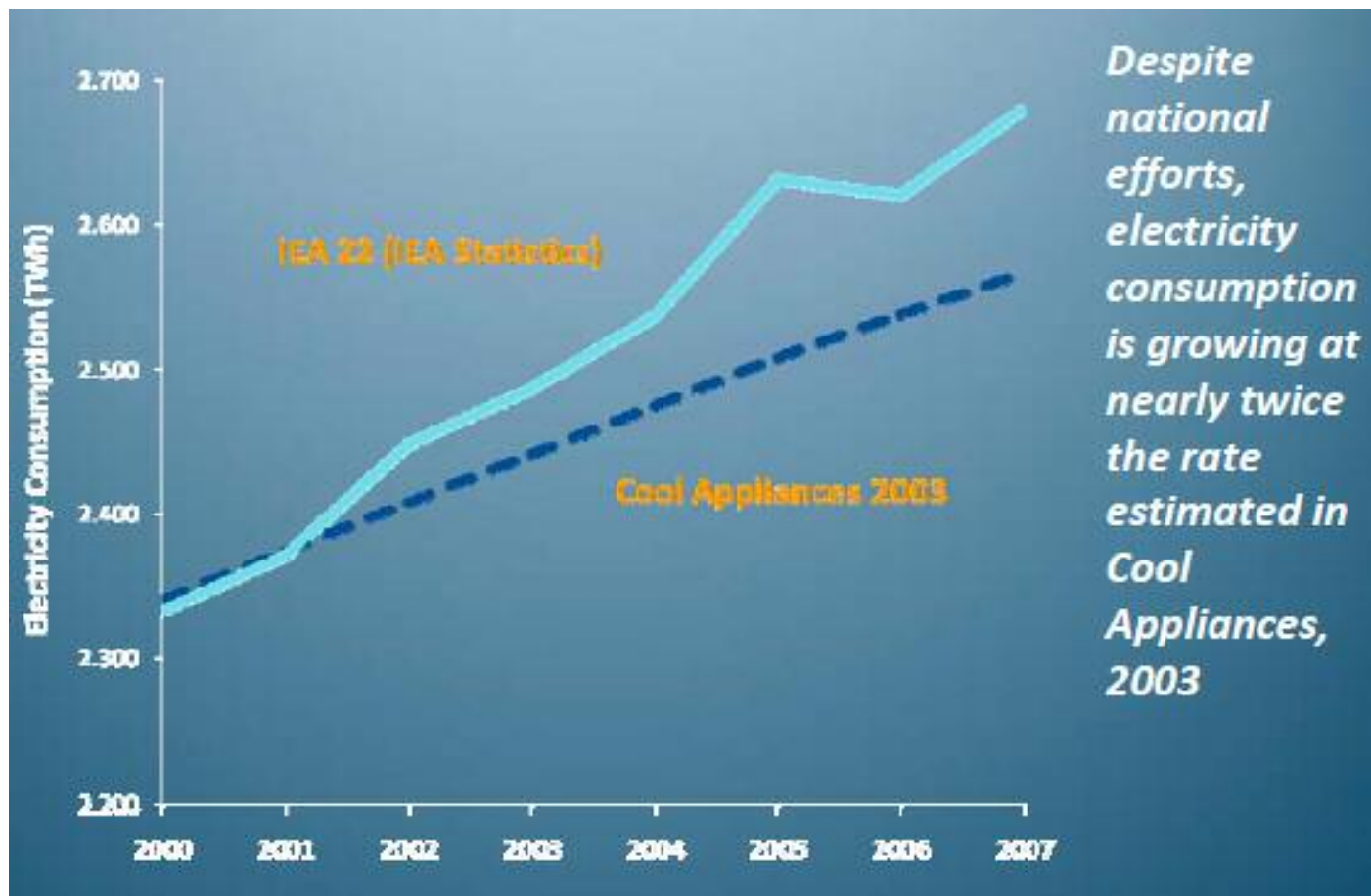
Normalized annual consumption of fridge freezers



Source: IEA 4E Mapping & Benchmarking, Cold Appliances (2010)



... are not sufficient



Source: Gadgets and Gigawatts, IEA 2009

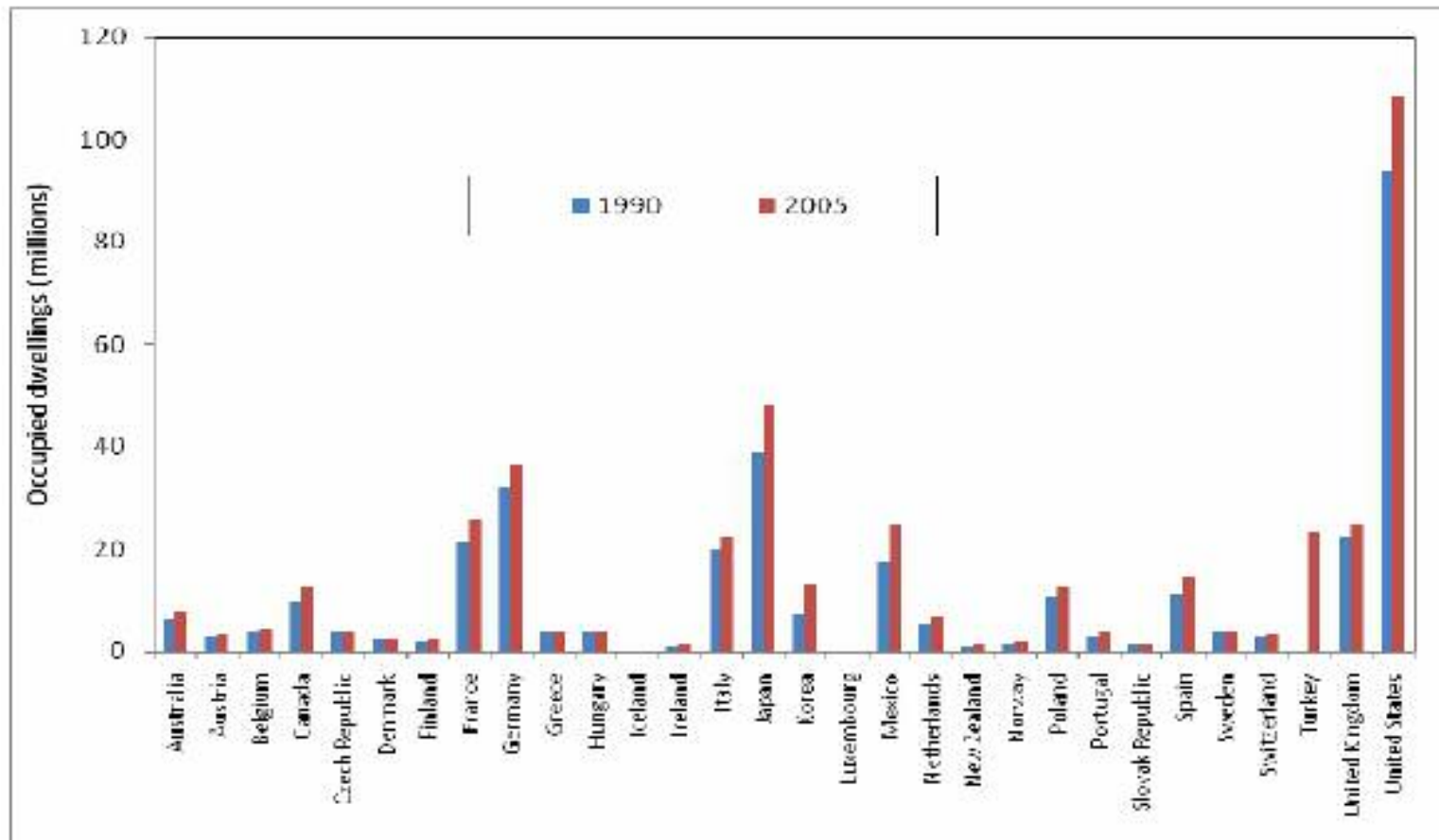


Efficiency is not sufficient

- Larger appliances, increased performance:
cold appliances, televisions, monitors
- Increasing time in power consuming modes:
 - always on,
 - network connections
 - parallel “usage” of appliances



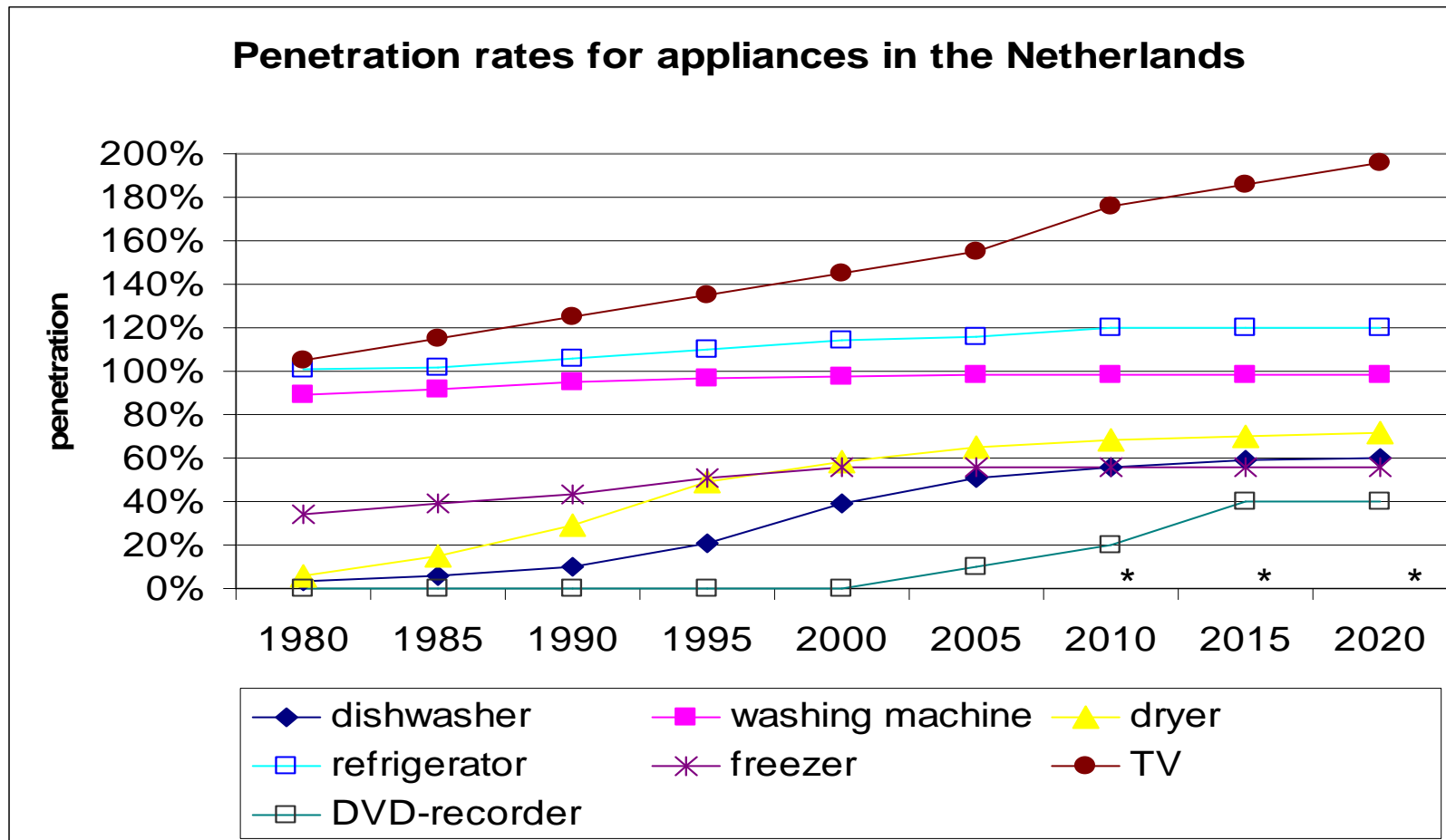
Sufficiency is not sufficient: example I



Source: OECD



Sufficiency is not sufficient: example II





Ways out:

- Sufficiency at total/household consumption level
- ZEAP: zero energy-using appliance policy (inspired by net zero energy buildings and carbon neutral transport)





What is a ZEAp?

ZEAp: Zero energy appliance

Appliance that on average has a zero energy consumption from the mains.

- No (in)direct connection to the mains (110-230 V, 50-60 Hz)
- Consumption from the mains equals production to the mains



Examples of ZEAPs

Examples of ZEAPs that already exist/are being developed:

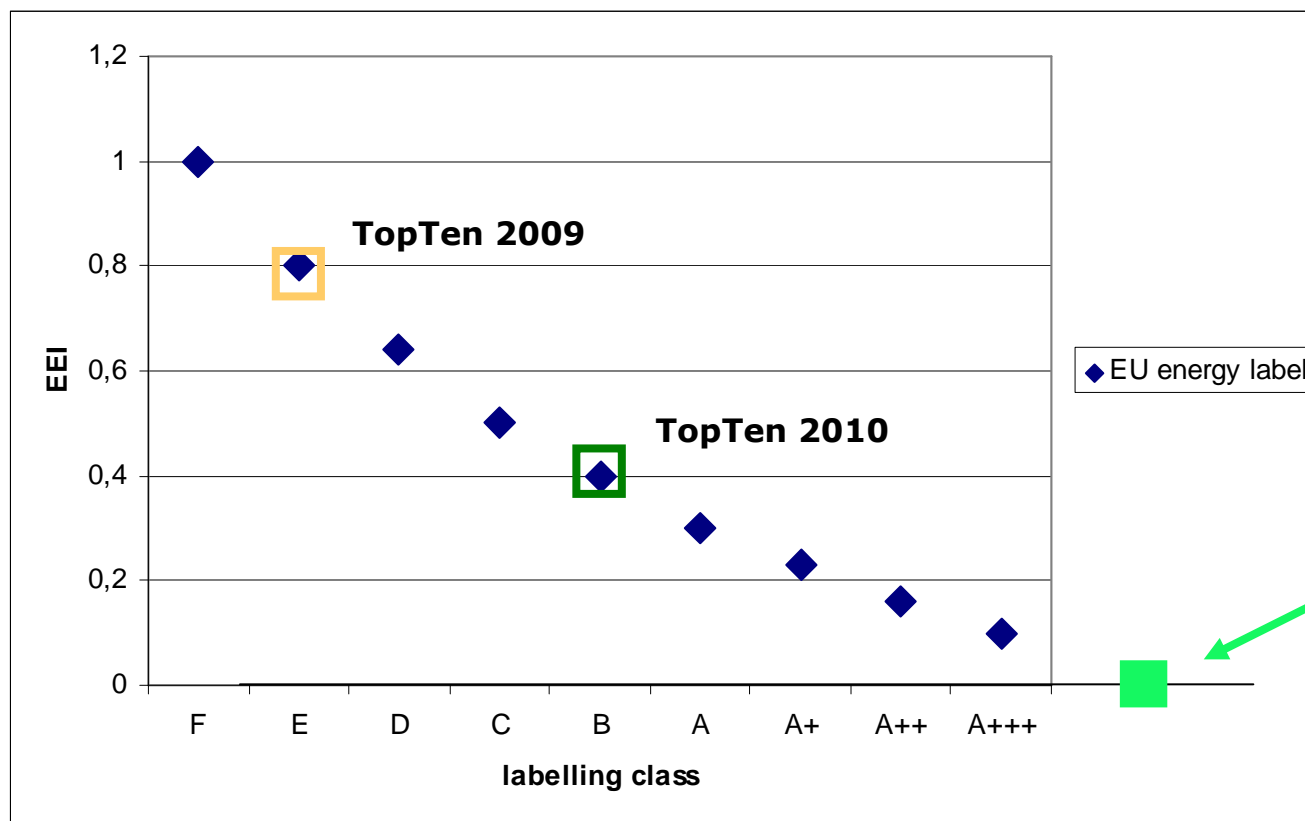
- Hand powered radios, watches and flashlights
- Mobile phones powered by solar, ambient/body heat



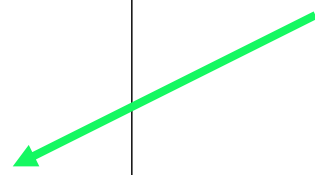


Towards ZEA: examples I

EC proposal labelling classes televisions



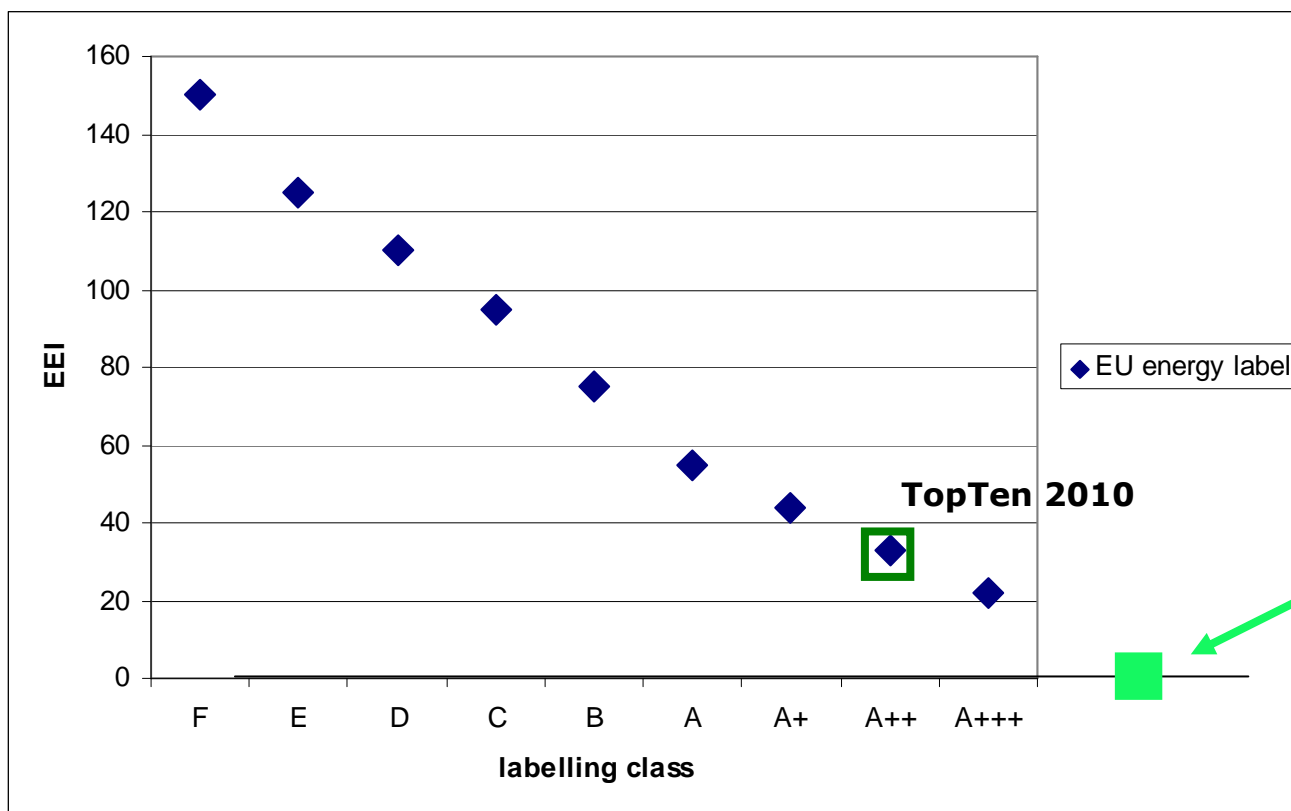
Zero energy consumption





Towards ZEA: examples II

EC proposal labelling classes cold appliances



Zero energy consumption



Towards ZEApS: guiding principles

Decrease energy consumption:

- Eliminate all unnecessary energy consumption
- Use extreme efficient components
- Implement power management

Increase energy production of the appliance:

- Use of ambient heat
- Solar input
- Mechanical power: opening of doors, human power

Very efficient storage:

- Storage of energy generated by the appliance for later use
- Use grid as storage: efficient exchange



Policies supporting ZEApS

1. Use the concept as an inspiring vision
2. Total life cycle costing:
Refrigerator with a retail price of € 275 and energy consumption of 200 kWh/year has a total cost of € 875*.
3. Energy label 2020: A class is reserved for ZEApS.
4. Policies supporting R&D towards ZEApS, efficient storage.

* Life time: 12 years, electricity price 0,25 €/kWh



Thank you for your attention