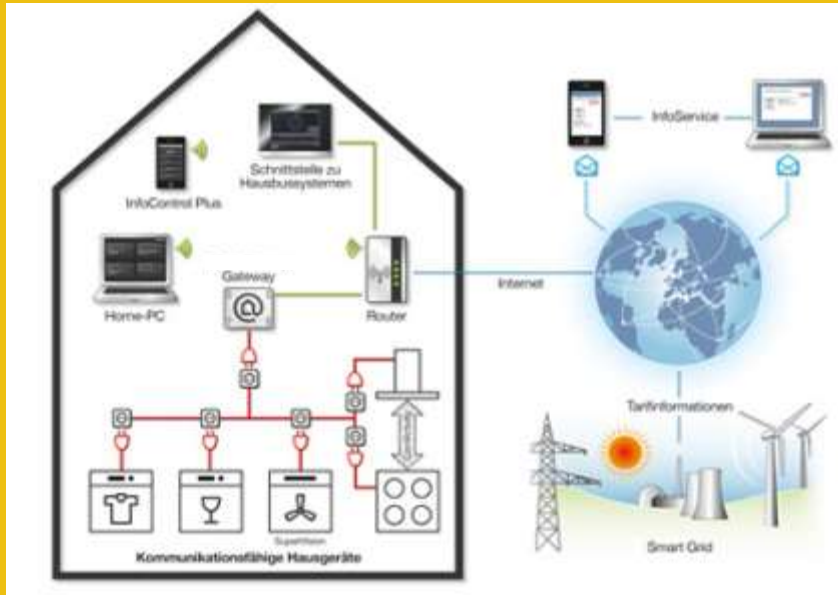


Appliance & Equipment Energy Policies for a Connected World

14 Nov 2016, Ottawa, Canada



4^E Electronic Devices & Networks Annex EDNA



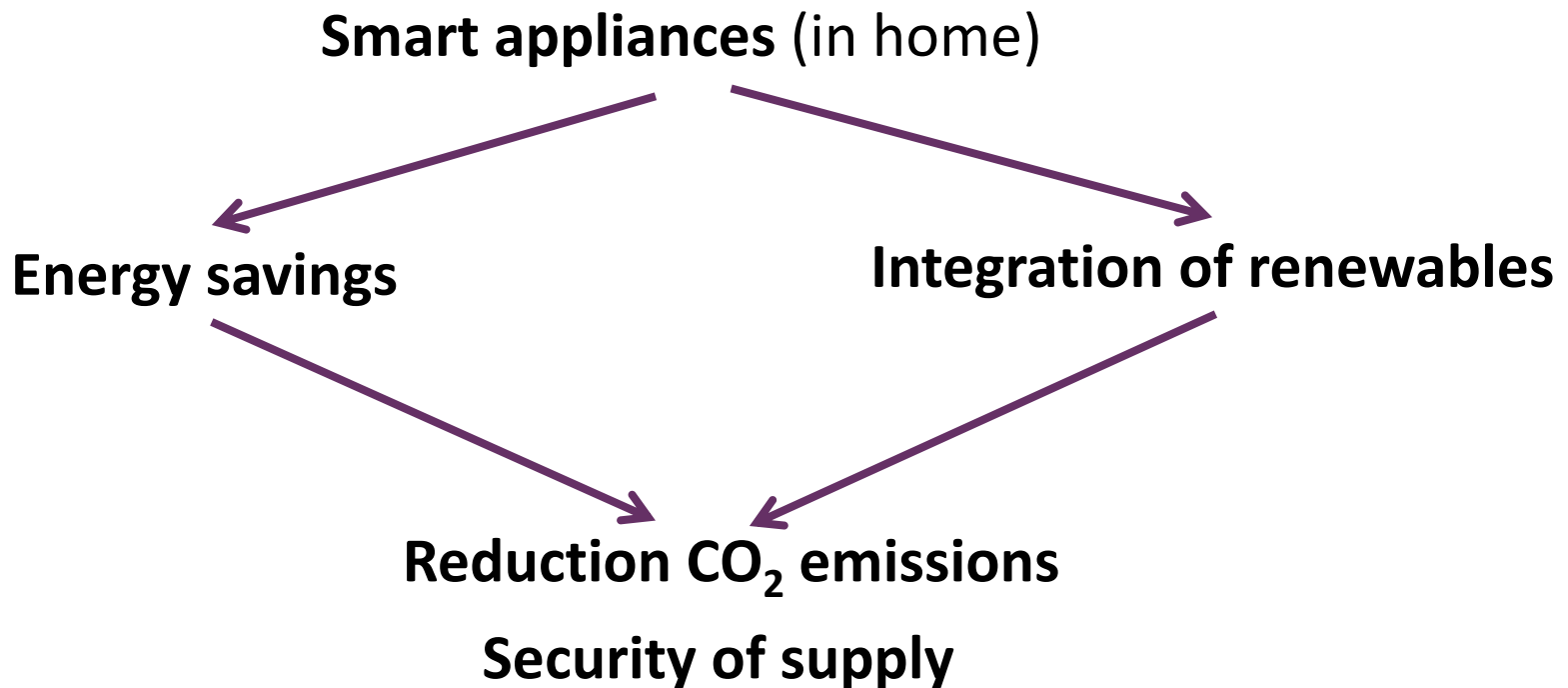
EU preparatory study for smart appliances

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Overview

- EU context for smart appliances
- Ecodesign Preparatory study on smart appliances
- Annex: relevant EU legislation

EU context for smart appliances



Smart appliances: drivers and barriers

| Drivers | Barriers |
|--|---|
| <ul style="list-style-type: none">• Integration of renewables• Almost all households are connected to the internet• Development of apps, cloud computing• Smart meters allow for variable energy tariffs • Additional functionality for consumers? | <ul style="list-style-type: none">• Lack of interoperability: plug and pray• Too much fuss• Privacy |

Ecodesign preparatory study Smart Appliances

- Smart appliances identified as priority in Ecodesign workplan 2012-2014.
- Goal of the study:
 - To analyse all technical, economic, environmental, market and societal aspects that are relevant for a broad market introduction of smart appliances.
- Scope:
 - Focus on Demand Reponse of household and commercial appliances
- Duration (24 months: October 2014 - September 2016)*:
 - Three stakeholder meetings: 10 March 2015, November 2015, April 2016
- More information: <http://www.eco-smartappliances.eu/>

* Phase 2 runs till October 2017; stakeholders asked to include electric vehicle charging points

Results for demand side flexibility

Calculated total benefits per appliance for optimal shifted flexible demand profile

| Value of benefits per enabled smart appliance per year | | 2014 | 2020 | 2030 |
|--|--|--------|-----------|-------------|
| Periodical appliances (Group 1) | Dishwashers | 0€ | 17,2€ | 7,5€ |
| | Washing machines | 0€ | 1,2€ | 6,4€ |
| | Tumble dryers | 0€ | 4,0€ | 10,5€ |
| Energy storing appliances (Group 2) | Refrigerators and freezers (residential) | 0€ | 0,2€ | 1,1€ |
| | Electric storage water heaters | 0€ | 1,2€ | 6,4€ |
| Residential heating and cooling (Group 3) | HVAC residential cooling (heat pump) | 0,8€ | 0,9€ | 11,2€ |
| | HVAC residential heat pump heating | 1,0€ | 1,2€ | 14,5€ |
| | HVAC residential Joule heating | 0€ | 1,9-15,0€ | 9,6 - 75,6€ |
| Tertiary heating and cooling (Group 3) | HVAC tertiary cooling | 14,7€ | 17,0€ | 208,1€ |
| | HVAC tertiary heat pump heating | 6,2€ | 7,3€ | 88,7€ |
| | HVAC tertiary Joule heating | 0€ | 1,8-14,4€ | 9,7 - 77,1€ |
| Commercial refrigeration (Group 2) | Tertiary cooling (heat pump) | 0€ | 1,5€ | 29,2€ |
| Residential energy storage systems (Group 0) | Home batteries | 212,6€ | 235,6€ | 2160,4€ |

3) Dishwashers

2) Tertiary cooling

1) Residential energy storage systems

Policy options for smart appliances

| | | DSF functionality available | |
|--------------------------|-----|--|--|
| | | <i>voluntary</i> | <i>mandatory</i> |
| DSF enabled when shipped | No | <i>Energy label*</i> (Household appliances) | <i>Ecodesign</i> (HVAC, commercial appliances) |
| | Yes | <i>Energy label*</i> | <i>Ecodesign</i> (Battery storage, EV chargers) |

- Voluntary availability for products with low (individual) savings
- Mandatory availability for products with large savings -> large volume -> lower cost
- Mandatory availability and enabled when shipped for products with largest savings and/or negative effects of not having DSF (enabled)

* Note that the EU energy label itself is mandatory.

Thank you for your attention!

Any questions?

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Relevant EU legislation

- **Ecodesign Directive (2009/125/EC) +**
- **Energy Labelling Directive (2010/30/EU):**
Environmental Impact of Products

- **Energy Efficiency Directive (2012/27/EU):**
i.a. promotion of and access to demand response programmes and time-differentiated pricing

- **Internal Energy Market Directives (2009/72 and 73/EC)**
Roll-out of smart meters