REMODECE
5. Project meeting
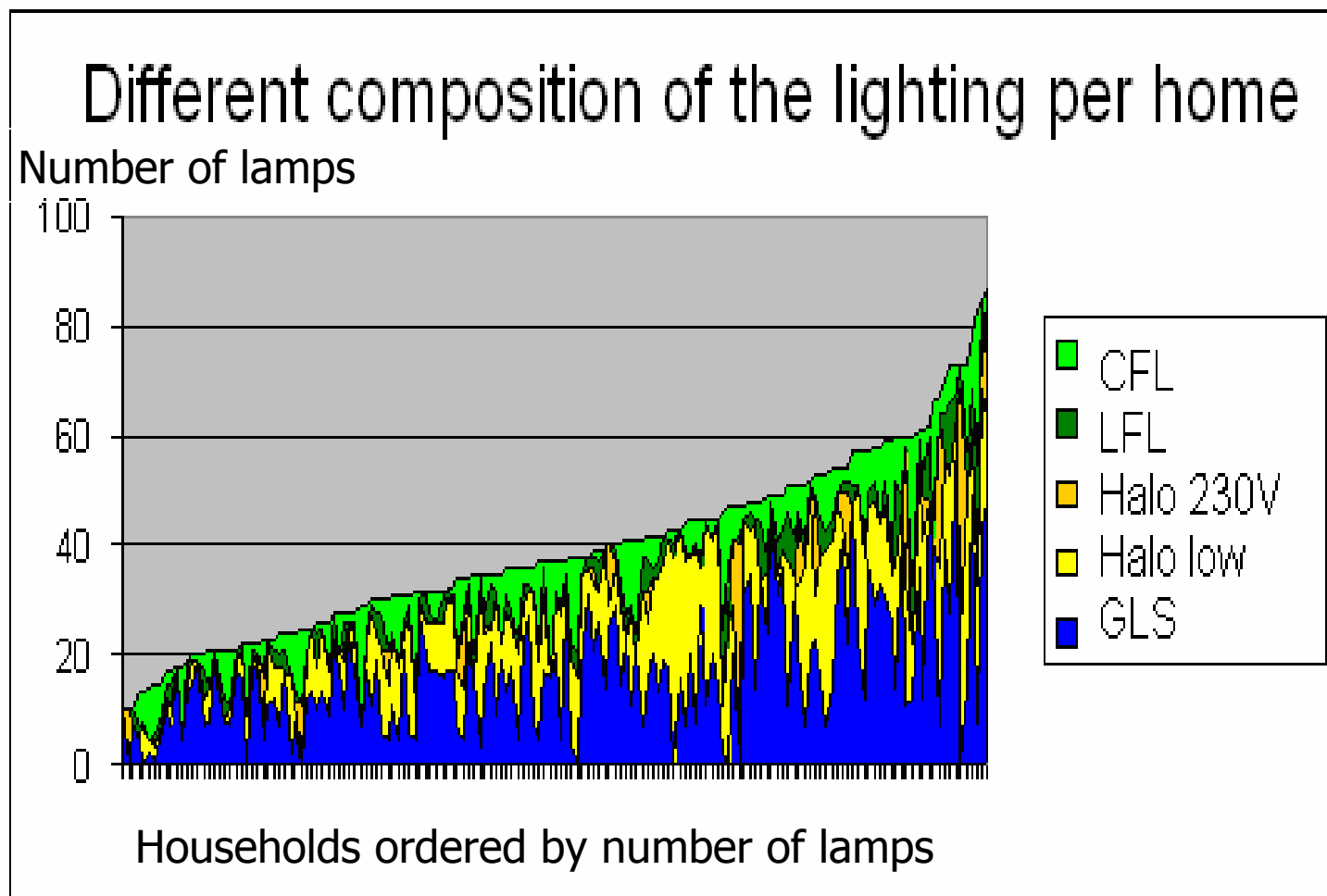
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Milan meeting 6-7. March 2008

WP 3 Examples of analysis

Appliances and energy labeling

WP 3 Examples of analysis

Different composition of the lighting per home

Number of lamps

Households ordered by number of lamps
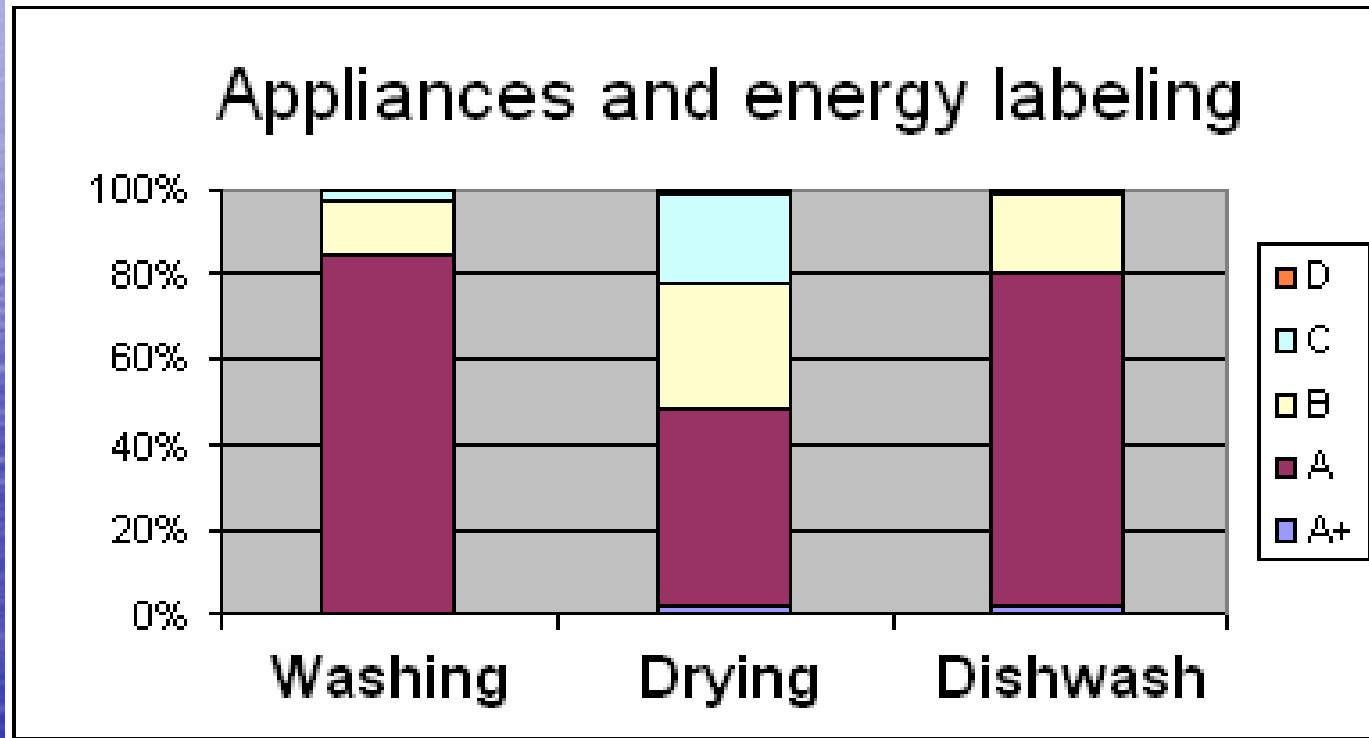
Legend:
- CFL
- LFL
- Halo 230V
- Halo low
- GLS

WP3 Conclusions

Compared to national statistics (building types, % electric heating and average consumption) and data in Danish tool Elmodel Domestic, the Remodece sample is good and representative in most aspects.

The best options for electricity saving seems to be:

- Fill/pack the washing machine every time
- Use more cloths drying outside instead of tumble dryer
- Use always a lid when you cook
- Switch of modems + router along with the computer
- Make attention to buy of Energy Star computer
- Promote multiple sockets to disconnect all appliances
- Promote energy saving lamps and stop the rapid market transformation from GLS to halogen lamps

Report D8 - Purpose

- The campaign concept of end-uses in focus
    - "old" countries
    - "new" EU-countries.
- Developed ID system to handle all measurements
- Prepared guidelines for preparation of measurements, installation, data retrieval, quality control and repair of data. This include standby measurement.
- Campaign – selection of customers, buildings …
- Campaign content – End uses measured.
- Campaign lessons learned.
- Equipment used for measurements.

Selection of 100 customers

- BE: Customers that wanted an energy audit
- BU: Customers giving access and at home
- CR: Customers expressing interest in the survey
- DK: Customers with ADSL reflected to advertisement
- FR: Radio/news/email advertisement – home exhibition
- GE: Househoulds with TV and computer equipment
- GR: Personal contacts
- HU: Snow ball sampling starting with little advertisement
- IT: Own contacts and housing cooperatives
- NO: Selection by statistical bureau
- PT: EDP remote meter reading customers in all regions
- RO: Selected among 623 survey customers

Building type and measurement

Country	Building type for participants	Equipment	Measurement period	Mea-sured	Remai-ning
Belgium	Primary single family houses and a few flats	Enertech CE meters	2 weeks	45	55
Bulgaria	86 flats and 14 single or double family houses	SEM 16, Hobo Light	2 weeks	100	0
Czech Republic	More than 2/3 multi-family houses in locality of Prague	Enertech	2 weeks	115	0
Denmark	Primary single family house and a few flats	Innovus Sparometer NZR 230	2-6 weeks	4	96
France	90 single family houses and 11 flats	Enertech SEM10 Nanovip Plus	31-97 days with average 44 days	101	0
Germany	Mainly multi-occupancy buildings and some single family houses	Enertech	2 weeks	71	29
Greece	Single family houses and multi-occupancy buildings	Enertech	2 weeks	62	38
Hungary	53 +16 pilot multi-occupancy buildings and 26 +2 pilot single or twin family houses	Enertech Sparometer in pilot	Ave. 20 days (min. 15 days) 1 week in pilot	79 +18 pilots	3 (13)
Italy	40 flats, single family or semi detached houses	Enertech	15-80 days	40	60
Norway	80, primary multi-occupancy buildings and then single family houses	Power Detective	2 weeks	80	20
Portugal	Single family houses and flats	Enertech	2 weeks	73	27
Romania	Single family houses and flats	Chauvin Arnoux CA 8334	2 weeks	75	25

End-use Recording Status

	Bel-gium	Bul-garia	Csech Repub.	Den-mark	Fran-ce	Ger-many	Gree-ce	Hunga-ry	Italy	Nor-way	Portu-gal	Roma-nia
Washing machine	1 +40	91	93	1	-	33	1	74+14	35	33	12	60
Tumble dryer	1+28	5	2	2	-	12	-	2	-	12	-	-
TV	33+24	101	77	9	98	77	62	64+11	33	77	69	75
DVD and/or VHS	16	10	2	5	99	35	60	25	22+10	35	46	-
Large TV / Home cinema	1	5	2	-	39 lcd 33 pla 5 proj	3	25	1	10	3	19	-
CD+ stereo +cassette	15+11	9	4	8	85	58	40	27+10	28	58	29	-
Radio + Cass player	-	11	-	-	-	-	-	-	-	-	-	-
TV + Audio + Video	-	47	-	-	-	-	-	+4	-	-	-	-
Pc/laptop	36+21	12	43	3	84	76	-	46+13	32	76	48	-
Peripherals to pc	-	0	2	-	81	49	-	30+10	29	49	46	-
Pc +peripherals	-	61	-	-	-	-	55	-	-	-	-	-
Refrigerator	0+45	89	100	2	-	28	1	69+9	32	28	14	75
Freezer	0+28	10	6	3	-	20	-	19+4	10	20	2	20
Refrig. + freezer	-	1	-	-	-	-	-	8	-	-	-	-
No of lamp/home or total number of lamps	10	1293	5	32	-	10	6-10	70+18	7-15	10	72	-
Dishwashers	0+28	6	-	-	-	-	-	10+3	-	-	12	-
Cooker/Cooker+oven	-	-	32	-	-	-	-	12	-	-	-	-
Microwave oven	0+12	2	-	-	-	-	-	58+12	-	-	-	-
Elec. kitchen boiler	0+16	-	-	-	-	-	-	16+2	-	-	-	-
Espresso machine or coffee machine	-	-	-	-	50	-	-	18+5	-	-	-	-
Toaster	-	2	-	-	-	-	-	16+1	-	-	-	-
Kitchen equipment	-	-	-	-	-	46	-	-	-	46	-	-
Phones	-	-	-	-	-	27	-	8+5	-	27	-	-
Alarms/clock	-	-	-	-	-	7	-	6+3	-	7	-	-
Central vacuum cleaner	-	-	-	-	6	-	-	8+2	-	-	-	-
Others	-	-	4	1		25	-	47+10	-	25	11	-
Elec. Water heater	0+5	-	-	-	-	-	-	+4	-	-	-	-
Air Condition, recording period	-	-	-	-	Avera ge 121 days	-	17,2 weeks	3,21 days	60 days	-	4,2 weeks	-
Circulation pump	-	-	-	-	-	-	-	5	-	-	-	-
Elec. heating, Rec. Period	-	-	-	-	-	-	-	+5	-	-	3,2 weeks	-
Total consumption	0+52	100	105	4	92	71	2	30	40	71	17	75

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Lessons Learned

- BE: Takes a lot of ressources, quality control important
- BU: Large interest for results, data handling takes time
- CR: 55-65% of consump. covered, lamp meter damage
- DK: Large delay due to development of new equipment
- FR: hard to find customers with the appliances
- GE: Lack of equipment => often cluster metering
- GR: Lack of equipment delayed the campaign
- HU: Equipment problems: fit to socket, failures. Important
- IT: Hard to meter built-in appliances, eqiupment problems
- NO: Sending equipment takes time, Customers can install
- PT: Takes a lot of ressources, installation control important
- RO: Lack of equipment => not possible to record all

General Problems Meet

- Difficult to find households with the requested appliances (especially large TV screens)
- Technical problem to monitor the total consumption from the electrical meter
- Dataloggers unconnected (pulled out) by utility staff during the monitoring campaign
- Very sensitive lampmeters (Enertech)that do not work always.
- Had often to make cluster monitoring instead of seperate end-use monitoring due to lack of equipment.
- First verion of new equipment had problem with radio contact between the home central and the metering units due to a software problem.
- In case the customers turn smart dimmers off with the switch instead of the remote control delivery of monitoing data may stop in case the units are far away from the control unit and thus have to perform chain communication (no problem if the customer has a new wireless wall controls but this is often not the case in an experiment in already existing installations.

Finalisation of Campaigns

Country	Data collected [Number of households]	Remaining [Number of households]	Campaign finished by
Belgium	45	55	April 2008
Bulgaria	100	0	Finished
Czech republic	115	0	Finished
Denmark	6	94	May 2008
France	101	0	Finished
Germany	82	18	January 2008
Greece	62	38	February 2008
Hungary	87 (97)	13 (3)	February 2008
Italy	40	60	April 2008
Norway	80	20	February 2008
Portugal	73	27	February 2008
Romania	75	25	February 2008
Total	**860**	**352**	**April 2008**