20% energy saving by following simple consumer recommendations in using the dishwasher *

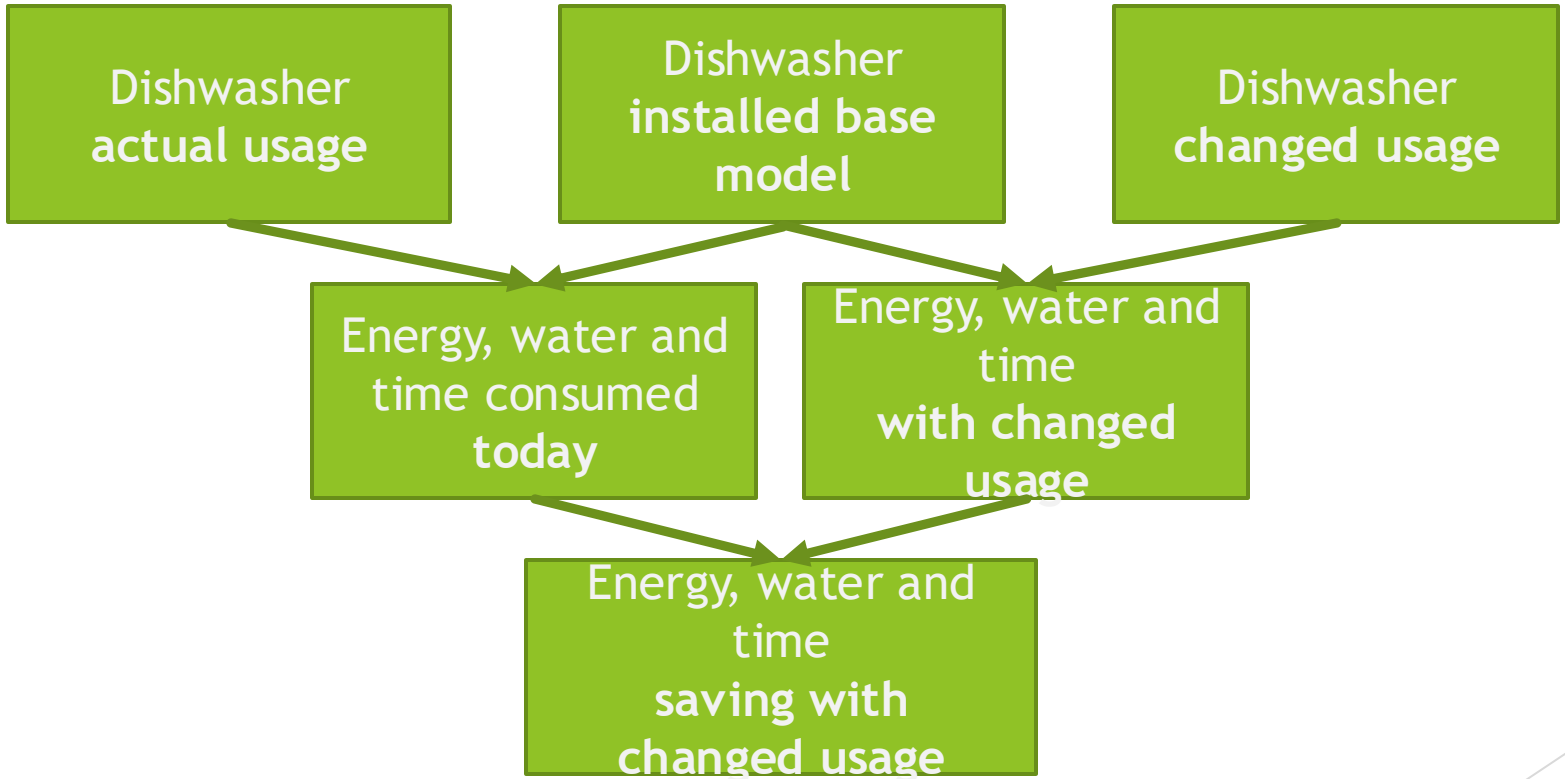
Thomas Alt [1], Rainer Stamminger [2]

[1] Henkel AG & Co. KGaA, Düsseldorf, Germany,
[2] University of Bonn, Nussallee 5, 53115 Bonn, Germany

* This paper is an extract and summary of a paper with title 'How many resources can be saved by changing consumers' automatic dishwashing behaviour?' published in the Journal *Tenside, Surfactant, Detergent,* DOI:10.1515/tsd-2022-2489 and a paper with the title 'Saving resources without sacrificing results: An empirical investigation of the dishwashing reality of British consumers in an international comparison' published in the Journal *Tenside, Surfactant, Detergent,* DOI:10.1515/tsd-2024-2582.

- Fig. 1, Fig. 2 and Table 2 are new in this paper and have not been published in those other two papers.

Modelling resource use of the installed base of dishwashers in households



Consumer surveys

- Representative (regarding age and household size) in each country! Only panellists which personally operate the household's dishwasher substantially
- Seven European countries (France (FR), Italy (IT), Hungary (HU), Germany (DE), Poland (PL), Spain (ES), Turkey (TR) and the United Kingdom (UK))
- Panellists from commercial provider: 700 in 'smaller' (PL, HU and TR), 1200 in larger countries
- Consistency check of answers

Characterisation of seven different programmes of a dishwasher and examples of representation on a dishwasher with name (related symbols are omitted here)

Example of the name of programme on the dishwasher	Short name	Programme characteristic
Eco	Eco	Energy-saving programme; programme for the energy label for **normally soiled** dishes with proven cleaning efficiency
Normal/regular/everyday	Nor	Normal programme for everyday use for **normally soiled** dishes
Intense/pots & pans/heavy	Int	Programme for **heavy soiled** and dried-on dishes, for example pots and pans
Auto/sensor	Aut	Programme which adjusts its operation according to the features detected
Gentle/delicate/glasses wash	Gen	Programme for **lightly soiled** dishes, glassware and delicate items
Quick/fast/short (45°, Jet, 30', express, …)	Qul	Quick programme for **lightly soiled** dishes
Quick/fast/short (65°, power, plus, …)	Quh	Quick programme for **normally soiled** dishes

‚Modifiers' available on dishwasher

Modifiers given	answers 'Yes' in %						
	HU	PL	DE	IT	ES	TR	UK
Express / speed / quick / time saving	28,2%	35,1%	36,9%	26,2%	36,9%	22,8%	38,9%
Half load	36,5%	41,4%	16,9%	43,6%	54,0%	27,1%	34,0%
Hygiene	21,6%	15,7%	11,5%	14,9%	24,0%	14,0%	13,5%
Intensive	40,5%	19,1%	33,9%	36,2%	49,6%	7,4%	34,9%
Extra dry	21,3%	17,8%	10,8%	17,6%	20,7%	7,4%	15,4%
Tablet	38,9%	2,2%	12,9%	6,4%	5,6%	10,5%	13,0%
There is no modifier / I don't know	21,4%	29,5%	36,8%	25,4%	10,3%	10,8%	29,9%

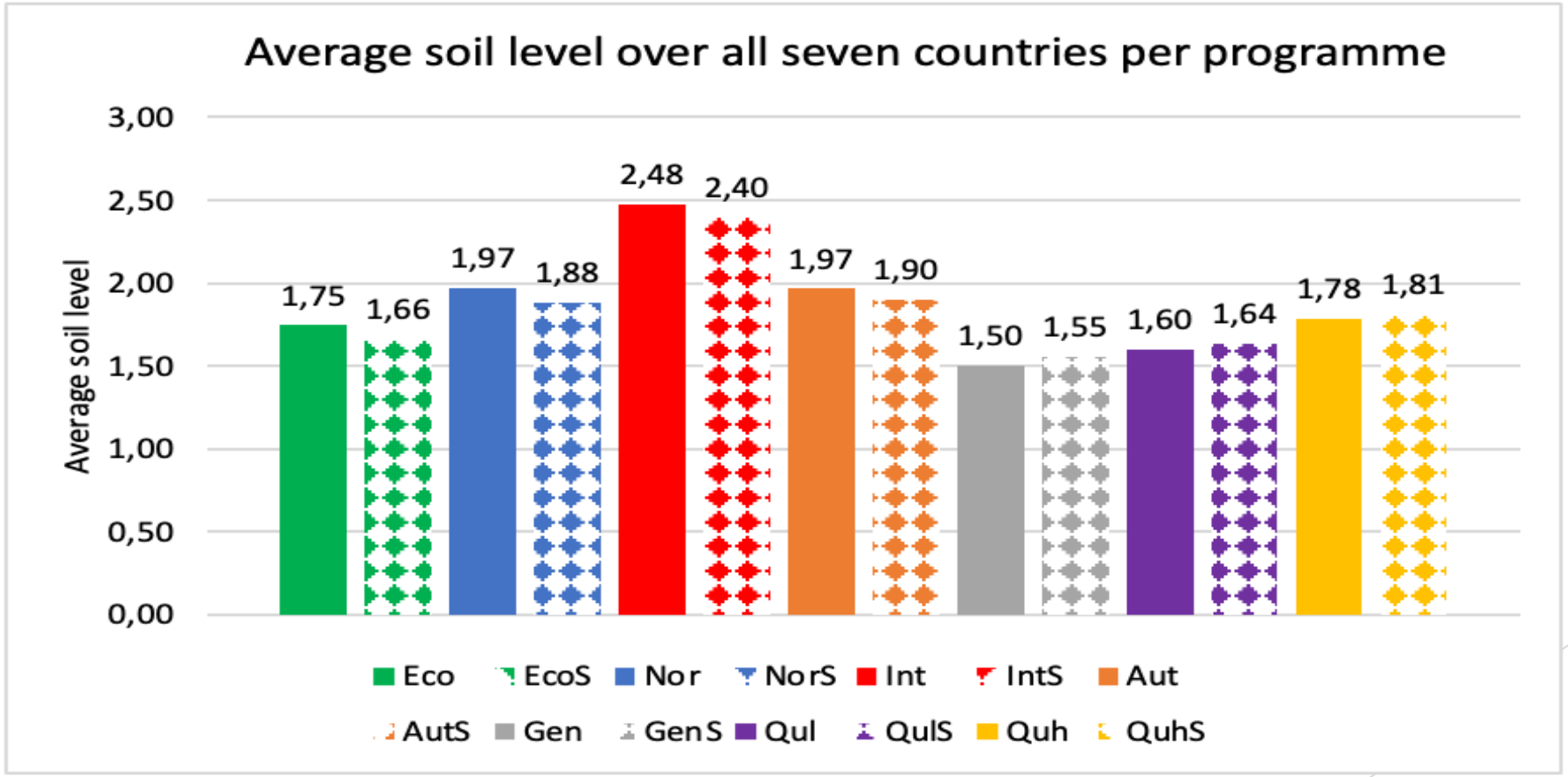
Level of soiling of the dishes cleaned - Definition

Definitions as given to the participants:

1. “Lightly soiled (e.g. breadcrumbs)”
2. “Normally soiled (e.g. sauce residues, tea cups)”
3. “Heavily / highly soiled (e.g. grease / baked-in stains)”

Numbers are used to calculate averages

Average soil levels
(xxxS means ‚when the modifyer ‚express / …' was used)

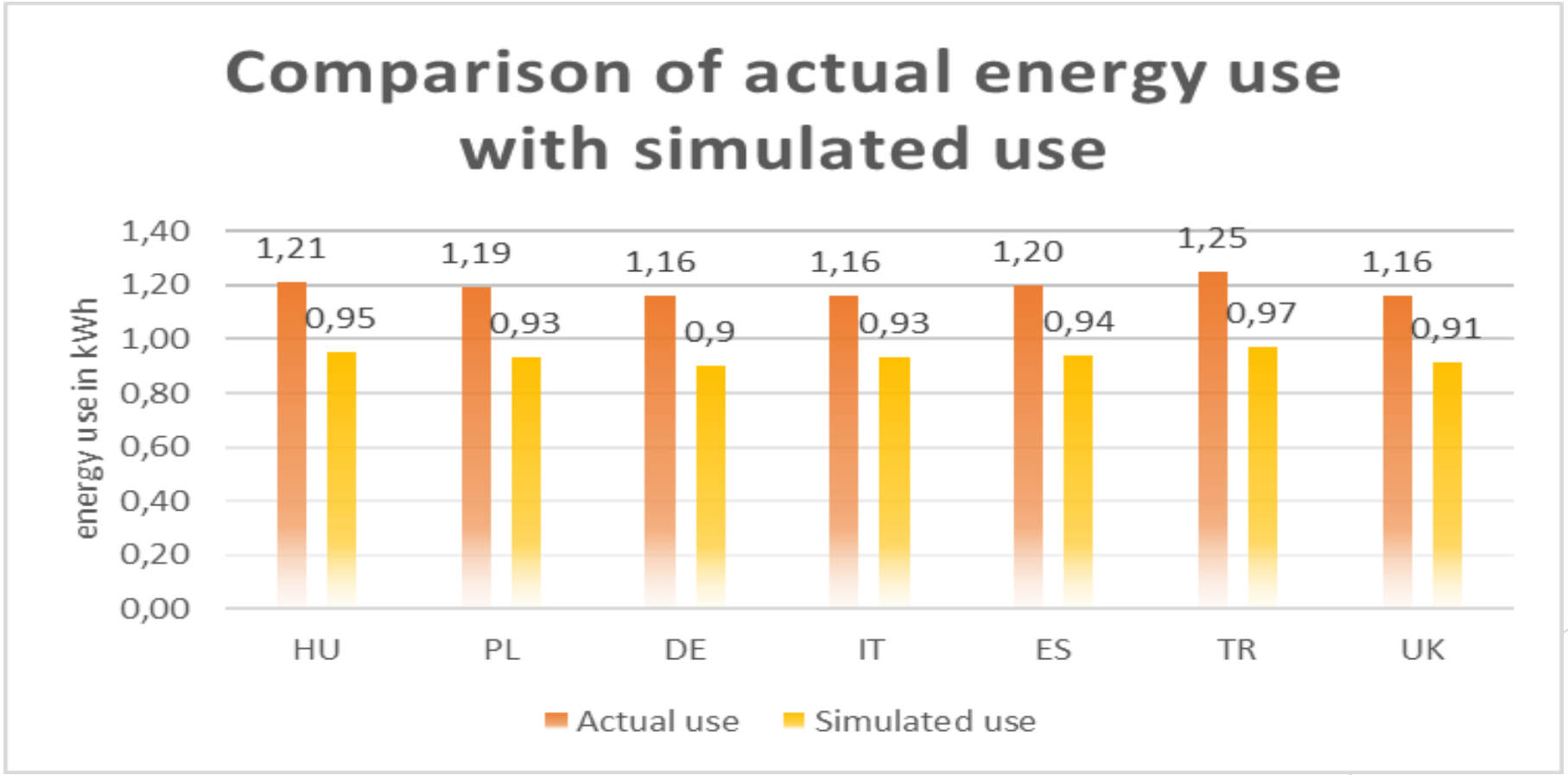


Recommendations

- Recommendations for consumers:

1. for heavily soiled dishes the intensive programme (Int) is the most efficient choice;
2. for lightly soiled dishes the Quick low temperature (Qul) programmes is sufficient and most efficient;
3. for normally soiled dishes the Eco programmes is the best choice as it is used as basis for the European Energy label and Ecodesign requirements as requested by COMMISSION REGULATION (EU) 2019/2022 of 1 October 2019 (and former versions) and has stringent requirements on cleaning normally soiled dishes.

Comparison of energy use –
actual versus recommendations simulated



Conclusions

For all seven countries:

- remarkable reductions in energy use between 20% and 22% are possible.
- water consumption reductions between 16% and 18% are calculated.

These savings can be achieved

- With the available stock of installed dishwashers
- With the available dishwashing detergents
- Just by following the three recommendations!
- Accepting a longer programme duration for the ‘eco’ programme!

Thank you very much

We are pleased to answer your questions

PROF. DR. RAINER STAMMINGER
consultancy - services

Contact:
Senior Prof. Dr. Rainer Stamminger

Erbsenbodenstr. 31
91207 Lauf
Germany

Mobil: +49-171-55 075 48 preferred
stamminger@uni-bonn.de

Dr. Thomas Alt

Senior Key Account Manager

Henkel AG & Co. KGaA

thomas.alt@henkel.com