

Supplementary material C to the article “Environmental saving potentials of a smart home system from a life cycle perspective: How green is the smart home?”
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Supplementary material C provides detailed results for the different saving scenarios for PED, GWP, ADP and Ecotox, and results of sensitivity analyses for PED, GWP, ADP and Ecotox.

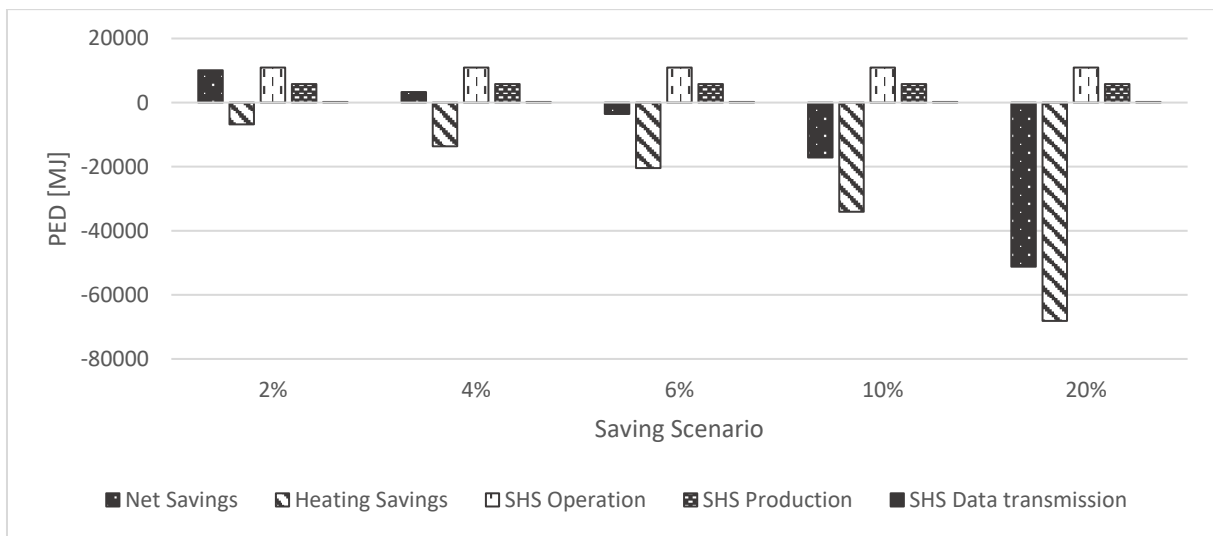


Fig C1 Changes in impact category PED of the Smart Home System for 5 scenarios and lifetime of 5 years

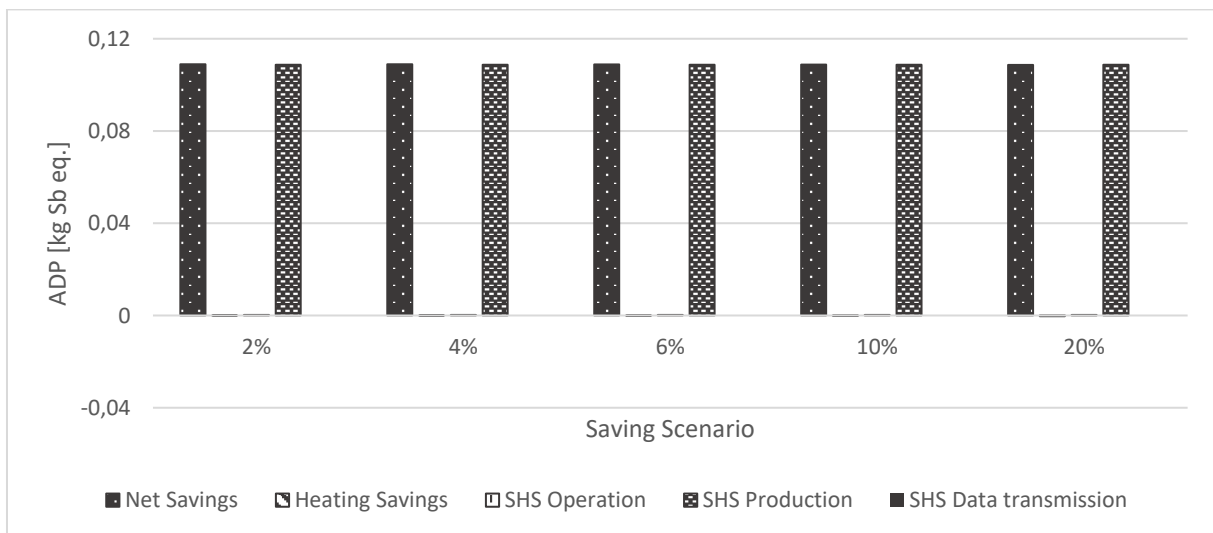


Fig C2 Changes in impact category ADP of the Smart Home System for 5 scenarios and lifetime of 5 years

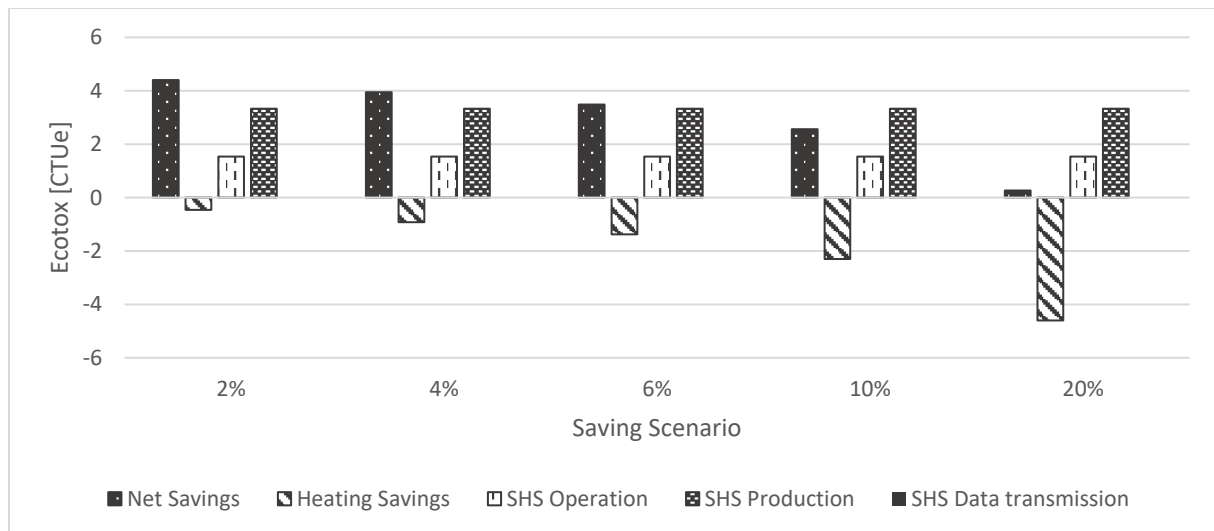


Fig C3 Changes in impact category Ecotox of the Smart Home System for 5 scenarios and lifetime of 5 years

Table C1 Net saving effects, break-even point and payback time for PED, GWP, ADP and Ecotox

Saving Scenario		2%	4%	6%	10%	20%
Net savings over 5 years	<i>PED [MJ]</i>	/	/	3,533	17,160	51,228
	<i>GWP [kg CO₂ eq.]</i>	/	/	381	1,250	3,423
	<i>ADP [kg Sb eq.]</i>	/	/	/	/	/
	<i>Ecotox [CTUe]</i>	/	/	/	/	/
Net savings over 10 years	<i>PED [MJ]</i>	/	/	12,852	40,106	108,241
	<i>GWP [kg CO₂ eq.]</i>	/	244	1,113	2,851	7,196
	<i>ADP [kg Sb eq.]</i>	/	/	/	/	/
	<i>Ecotox [CTUe]</i>	/	/	/	/	2.8
Break-even point (life time 5 years)	<i>PED [MJ]</i>	/	/	12,691	8,590	6,914
	<i>GWP [kg CO₂ eq.]</i>	/	/	625	476	404
	<i>ADP [kg Sb eq.]</i>	/	/	/	/	/
	<i>Ecotox [CTUe]</i>	/	/	/	/	/
Payback time [years]	<i>PED</i>	/	11.5*	3.1	1.3	0.5
	<i>GWP</i>	/	5.9*	2.4	1.1	0.5
	<i>ADP</i>	/	/	/	/	6,073.6*
	<i>Ecotox</i>	/	/	/	21.7*	5.4*

* payback time is not within the system's life time; / no net savings are achieved

Table C2 Payback time (years) for different operational energy settings for PED, GWP, ADP and Ecotox

Saving Scenario		2%	4%	6%	10%	20%
Operational energy demand incl. standby settings	<i>PED</i>	43.0*	3.9	2	1	0.5
	<i>GWP</i>	14.8*	3.2	1.8	0.9	0.4
	<i>ADP</i>	/	/	/	17878*	2837.7*
	<i>Ecotox</i>	/	282.2*	32.1*	11.6*	4.5
Operational energy demand - other RF	<i>PED</i>	/	4.3	2.1	1.1	0.5
	<i>GWP</i>	22.2*	3.4	1.8	1	0.4
	<i>ADP</i>	/	/	/	37,482.7*	3,094.6*
	<i>Ecotox</i>	/	/	40.2*	12.5*	4.6
Operational energy demand - Green Energy Grid Mix	<i>PED</i>	/	34.9*	3.8	1.4	0.5
	<i>GWP</i>	4.1	2	1.3	0.8	0.4
	<i>ADP</i>	/	/	/	/	/
	<i>Ecotox</i>	/	/	/	/	/
Operational energy demand - Future grid mix 2030	<i>PED</i>	/	10.3*	3	1.2	0.5
	<i>GWP</i>	/	4.7	2.2	1	0.5
	<i>ADP</i>	/	/	/	/	/
	<i>Ecotox</i>	/	/	/	18.8*	5.2*

* payback time is not within the system's life time