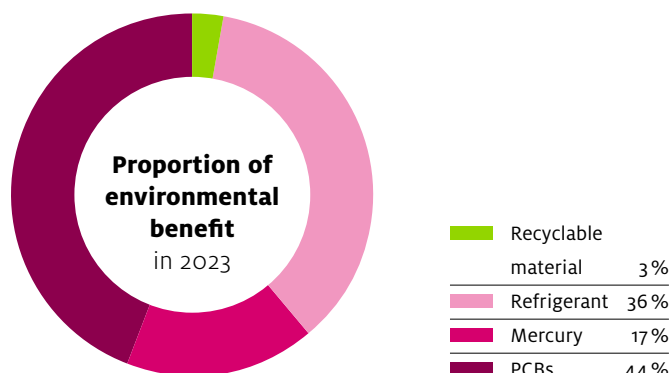


2023 life cycle assessment

Environmental benefit at a glance

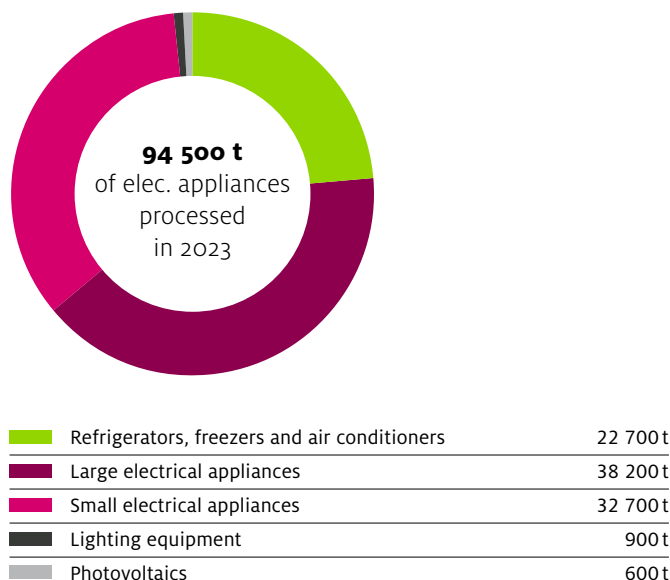
The additional environmental benefit of the recycling system from SENS eRecycling totalled around **1509 billion environmental impact points** in 2023. 97 per cent of the environmental benefit came from the removal of hazardous substances, with 44 per cent of this coming from PCB removal alone, 36 per cent from the removal of refrigerants and 17 per cent from mercury. Material recycling contributed to four per cent of the environmental benefit. The life cycle assessment was calculated based on the reference scenario as a basic assumption (see box).

More information at: www.eRecycling.ch



Recycled materials

Material		2022	2023	since 1990
Iron	t	42 729	45 656	746 332
Steel, stainless steel	t	5 431	5 932	107 058
Aluminium	t	2 786	2 844	46 589
Copper	t	3 611	3 572	55 381
Zinc	t	334	288	9 265
Silver	t	0.0	0.0	0
Gold	t	0.0	0.0	0
Lead	t	0.2	0.2	4
Nickel	t	8.5	6.8	60
Ferromanganese	t	48.3	52.0	705
Plastics	t	6 776	7 115	101 858
Glass	t	1 462	1 160	17 539
Total materials	t	63 185	66 625	1 084 791



Removed hazardous substances

Hazardous substance		2022	2023	since 1990
Refrigerant (CFC, R600a, etc.)	t	67.1	109.9	2 433
Oil	t	43	66.7	1 547
PCBs	t	0.2	0.2	43
Mercury	t	0.5	0.5	10
Others	t	<0.1	<0.1	234
Total haz. substances	t	110.9	177.4	4 267

The life cycle assessment compares the actual situation to the reference scenario. As the proportion of the components that are disposed of (incineration or landfill) is identical in both scenarios, the life cycle assessment does not consider this. This also explains the difference between the recycled materials/hazardous substances and the processed volume.

Reference scenario

Als The life cycle assessment of SENS eRecycling is calculated based on the assumption that, in a scenario "without SENS eRecycling", there would be the same volume of appliances as in the scenario "with SENS eRecycling". In the "without SENS eRecycling" scenario, the economically useful recyclable materials would also be extracted from the appliances. Hazardous substances would not be removed, however, as this process is expensive. The environmental performance of SENS eRecycling is therefore quantified in environmental impact points (UBP). It is calculated as the difference between the actual situation, the scenario "with SENS eRecycling" and the base-line scenario "without SENS eRecycling". You can view the detailed life cycle assessment for 33 years of SENS eRecycling here:

www.eRecycling.ch

Other figures

bn UBP		2022	2023	since 1990
Total	t	86 700	94 500	1 538 307
Refrigerators, freezers and air conditioners	t	18 900	22 700	414 717
Large electrical appliances	t	36 100	38 200	660 236
Small electrical appliances	t	30 700	32 700	443 965
Lighting equipment	t	1 000	900	19 389
Photovoltaics	t	1 000	600	3 300

Environmental benefit by appliance category		2022	2023	since 1990
Total	bn UBP	1 377	1 509	231 553
Refrigerators, freezers and air conditioners	bn UBP	599	763	34 167
Large electrical appliances	bn UBP	692	672	23 648
Small electrical appliances	bn UBP	32	26	172 689
Lighting equipment	bn UBP	54	49	1 049
Photovoltaics	bn UBP	0.11	0.10	1

Environmental benefit by rec. material and haz. substances		2022	2023	since 1990
Material recycling	bn UBP	46	41	796
Coolants and refrigerants avoidance	bn UBP	373	537	29 611
PCB avoidance	bn UBP	690	668	194 633
Mercury avoidance	bn UBP	268	263	5 365
BFR avoidance	bn UBP	1	1	1 148

Environmental benefit per tonne of appliances		2022	2023	since 1990
SENS eRecycling average	mil. UBP/t appliance	15.88	15.97	150.52
Refrigerators, freezers and air conditioners	mil. UBP/t appliance	31.69	33.61	82.39
Large electrical appliances	mil. UBP/t appliance	19.17	17.58	35.82
Small electrical appliances	mil. UBP/t appliance	1.05	0.78	388.97
Lighting equipment	mil. UBP/t appliance	54.07	54.09	54.11
Photovoltaics	mil. UBP/t appliance	0.11	0.17	0.16

Significance of the environmental benefit in the last 34 years

The 231,500 billion environmental impact points (UBP) saved are roughly equivalent to the environmental footprint of the entire population of Switzerland (nine million inhabitants) in seven months.

Evaluation of environmental impact

This study used the ecological scarcity method 2021 (Frischknecht et al, 2021). Evaluation using this method was developed in collaboration with the Swiss Federal Office for the Environment and is well established in Switzerland. One reason for choosing this method was that it takes into account both the environmental situation and the environmental objectives of Switzerland for the assessment and thus is widely respected with regard to sustainability. Another reason was that this method provides an actual evaluation of all important environmental aspects in this life cycle assessment, such as POP emissions and resource consumption.

Although this method reflects Swiss environmental policy, it is also widely accepted at the international level. The results are expressed in environmental impact points (UBP).

Contact

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SENS eRecycling

As an expert in the sustainable recycling of discarded electrical and electronic appliances in and around the home, lighting equipment and lamps, photovoltaic systems, heat pumps, e-cigarettes, as well as vehicle and industrial batteries, the SENS Foundation plays a crucial role in setting pioneering standards in eRecycling. It conserves resources and thus makes an important contribution to environmental protection.