

PLASTIC MATTERS

A state of affairs, facts, legislation &
recommended actions in Switzerland

December 2022



EXECUTIVE SUMMARY

Plastic pollution has become one of today's most pressing environmental and health issues. Due to an exponential increase in production and consumption of plastics over the span of not even two generations¹, plastics are ubiquitous. From the Arctic to Antarctica, from the deepest depths of the ocean² to the peaks of the Himalayas³, no corner of the Earth remains untouched by the plastic deluge. In the form of microplastics, they are in the air we breathe⁴, in the water we drink⁵, in the food we eat⁶. Plastics are not only a scourge to nature, but an emerging threat to human health as well⁷.

Switzerland is no less than any other place in the world confronted with this plastic crisis. While other countries might more visibly be buried under plastic waste, **the plastic problem in Switzerland presents itself in many, more insidious ways.**

Every year around **14'000 tonnes of macro- and microplastics** find their way into the country's soils, surface waters and sediments. While the littering of macroplastic should certainly not be minimized, the microplastic pollution is even more worrying. Microplastic pollution of Swiss lakes and rivers is of the same order of magnitude as of the oceans. But also on the snowy peaks of the alps, in remote mountain lakes, or in nature reserves; wherever has been looked for them, microplastics are present in considerable concentrations.

PLASTIC POLLUTION IN SWITZERLAND – SOME FACTS

- 14,000 tons of macro- and microplastics end up in the Swiss environment every year. Most of this comes from tyre abrasion (8,900 tonnes) followed by littering (2,700 tonnes)⁸.
- Littering is not just a water problem. According to the Swiss Federal Laboratories for Materials Science and Technology, 100 tonnes of macroplastics are emitted to waters each year in Switzerland, compared to 4,400 tonnes deposited to soils⁹.
- A 2013 study of Swiss lakes found **microplastics in almost every sample**¹⁰.
- About **55 tonnes of plastic enter Lake Geneva every year**. A large part of this in the form of microplastics. This adds up 580 tonnes already accumulated in the lake¹¹.
- In the **Rhine** at Basel, an average of 238,887 microplastic particles per km² have been measured¹², and the **Rhône** is estimated to transports an estimated 10 kg of microplastics to France every day¹³.
- An estimated **53 tons of microplastics have by now accumulated in floodplains in Swiss nature reserves**¹⁴.
- Considerable amounts of microplastics have been detected in the **snow of the Alps**¹⁵ as well as **remote mountain lakes**¹⁶.

And yet, the widespread image of Switzerland is one of pristine nature, order, and cleanliness. The country is portrayed as a world champion in waste management and recycling. However, the reality is that most plastic waste in Switzerland is incinerated. This report highlights that this **very linear plastic system**, predominantly focussed on waste management, insufficiently addresses the plastic problem in the country.

Linked with their way of life, **with 127 kg per year, Swiss inhabitants have one of the highest per capita plastic uses in the world** (section 1.1). To take care of the waste produced by this resource-intense lifestyle and systematic overconsumption, **the country strongly relies on incineration**. Where plastic recycling, let alone reuse, is low, most Swiss plastic ends up incinerated, mainly after only a short usage of the material. This creates a *hidden problem* in the form of air pollution and highly toxic residual incineration waste. Besides, waste management – be it incineration or recycling – can only take care of properly collected and processed plastic. It does not tackle littering, nor is it a solution for the major problem of plastic leakage to the wider environment during use (section 1.2).

As to the first, this report shows that, despite its clean image, **in Switzerland too, a vast amount of plastic continues littering fields, forests, waterways and lakes**. Cleaning up this litter costs the country an estimated CHF200 million

per year. And while some of the litter is being retrieved, many small items like cigarette butts accumulate in the environment, especially in non-residential areas (section 1.3). Regarding the second avenue of plastic leakage, this concerns microplastics due to the abrasion, shredding and spilling from products made from or containing plastic. **Tyre wear, microfibres from synthetic clothing, or microbeads and liquid polymers intentionally added to products are important sources of plastic pollution in the country.** Once out in the environment, these macro- and microplastics add to a chemical cocktail about which awareness of its potential risks for the environment and human health is gradually emerging (section 1.4).

In Switzerland, **legislation exists through which many of these issues could be tackled.** Among other laws, the Environmental Protection Act, or the Chemicals Act contain provisions which could be applied to halt the excessive use of single-use plastics (section 2.1).

SWISS LAWS TO REGULATE PLASTICS

In Switzerland, many problems related to plastics could already be taken care of through stringent application of existing laws. There is not so much need for new laws, but for the consistent application of existing ones. Notably:

- The **Environmental Protection Act, art. 30a** could be used to prohibit disposable plastic items essentially only used once, like **take-away food items** or **plastic bags**.
- The **Environmental Protection Act, art. 26** could be used to ban **microbeads** intentionally added to articles such as personal care and cosmetics products.
- Also the **Chemicals Act**, or the **Waste Ordinance** or **Beverage Container Ordinance** could be invoked to further regulate the production, use, or disposal of plastic.

However, in practice, **the execution of this legislation is lacking. Existing ordinances are saying little to nothing about plastic** (section 2.2). Through an in-depth analysis of parliamentary interventions on plastic matters, this report finds that the **Federal Council so far appears reluctant** to use the law to regulate plastics more strictly. Instead, it focusses on voluntary measures (section 2.3).

This report suggests a change. Switzerland should adopt a stronger regulatory approach and should move from being a laggard to being a leader within the European landscape.

The recent regulatory developments within the European Union could give input to a more in-depth reflection on plastics and its problems in Switzerland too, and help the country develop its own approach tailored to the national circumstances (section 3.1). Also, following the recent adoption of the resolution ‘End Plastic Pollution: Towards an International Legally Binding Instrument’ at the United Nations Environment Assembly in 2022, countries are expected to develop national action plans to contribute to end plastic pollution. This offers Switzerland the opportunity to gear up its efforts against its plastic overconsumption and associated problems (section 3.2).

As part of such a reflection, and to develop meaningful and effective measures, it is important to acknowledge that the problems related with an increasing use of plastics have been known about for a long time and **that early warnings were ignored**, including in Switzerland (section 4.1-2). And, to structurally tackle these problems, we have to understand how **they connect with many of today’s other socio-environmental issues** (section 4.3).

Considering how the plastic crisis manifests itself in the country, while reflecting on the legal-regulatory framework in place, as well as on the origin and interconnectedness of the problem, **this report provides an in-depth discussion of possible solutions and actions to be taken.**

In this regard, it first of all proposes a set of **measures that can be implemented without delay**, if there is the political will to do so. In line with art. 30a letter a of the Environmental Protection Act, the Federal Council has the potential

to prohibit products intended for one-time-only, short-term use when the benefits of such products do not justify the harm to the environment that they cause. This applies to both **disposable take-away items** and **single-use bags**. In a similar sense also **intentionally added microbeads** can be banned under existing law (section 5.1).

Subsequently, we urge a comprehensive discussion about **what is understood by Plastic and the Circular Economy**. While both concepts are central to today's plastic debate, clear legal definitions are lacking. This hampers the systematic and comprehensive development of further actions and futureproofing of our legislation, and therefore needs to be remedied (section 5.2).

Finally, building on this reflection about comprehensive legal definitions of key concepts, the report discusses **a set of further measures to effectively address the plastic crisis in its various dimensions**. Such measures should focus on the reinstalment of a comprehensive **reuse system**, first and foremost for glass bottles, as well as on the limitation of **tyre wear**, **microfibres** and **cigarette butts**. Furthermore, work should be done about the regulation of **bioplastics** and **liquid polymers** (section 5.3).

Thus, through its examination of the main plastic problems in Switzerland and the legal dispositions under which these can be tackled, and especially by proposing concrete measures to do so, this report intends to stir up and accelerate the Swiss debate on plastic. As such, **it calls for comprehensive policy action at the federal level, and urges Switzerland to take care of the plastic crisis**.

ENDNOTES

- 1 See: Grid Arendal (2021), [Global plastic production, accumulation and future trends](#).
- 2 National Geographic (Last updated: 02.06.2022), [Plastic Bag Found at the Bottom of World's Deepest Ocean Trench](#).
- 3 Napper et al. (2020), [Reaching New Heights in Plastic Pollution—Preliminary Findings of Microplastics on Mount Everest](#). *One Earth*, 3 (5).
- 4 The Guardian (21.12.2021), [No mountain high enough: study finds plastic in 'clean' air](#); The Guardian (27.12.2019), [Revealed: microplastic pollution is raining down on city dwellers](#).
- 5 The Guardian (06.09.2017), [Plastic fibres found in tap water around the world, study reveals](#).
- 6 Conti et al. (2020), [Micro- and nano-plastics in edible fruit and vegetables. The first diet risks assessment for the general population](#). *Environmental Research*, 187.
- 7 De-la-Torre G.E. (2019), [Microplastics: an emerging threat to food security and human health](#). *Journal of Food Science and Technology*, 57; also: Campanale et al. (2020), [A Detailed Review Study on Potential Effects of Microplastics and Additives of Concern on Human Health](#). *International Journal of Environmental Research and Public Health*, 17 (4).
- 8 Der Bundesrat (Bern, 23. September 2022), [Kunststoffe in der Umwelt. Bericht des Bundesrates in Erfüllung der Postulate 18.3196 Thorens Goumaz vom 14.03.2018-18.3496 Munz vom 12.06.2018- 19.3818 Flach vom 21.06.2019- 19.4355 CVP-Fraktion vom 27.09.2019](#).
- 9 Kawecki D. & Nowack B. (2019), [Polymer-Specific Modeling of the Environmental Emissions of Seven Commodity Plastics As Macro- and Microplastics](#). *Environmental Science & Technology*, 53 (16), p. 9669; also: EMPA (2019), [5000 tons of plastic released into the environment every year](#).
- 10 Bundesamt für Umwelt (11.12.2014), [Medienmitteilungen- Erste Bestandesaufnahme von Mikroplastik in Schweizer Gewässern](#).
- 11 Boucher et al. (2019), [\(Micro\) plastic fluxes and stocks in Lake Geneva basin](#), *TrAC Trends in Analytical Chemistry*, 112.
- 12 Mani et al. (2016), [Microplastics profile along the Rhine River: Supplementary Table 2 - Microplastic particles km² in categories and total \(300 µm–5 mm\) from the Rhine and lakes](#), *Scientific Reports*, 5; Universität Basel (2015), [Kleinste Plastikteilchen: Der Rhein gehört weltweit zu den am stärksten belasteten Strömen](#).
- 13 Eawag, [Microplastics in Swiss waters](#).
- 14 Scheurer & Bigalke (2018), [Microplastics in Swiss floodplain soils](#). *Environmental Science & Technology*, 52 (6).
- 15 Bergman et al. (2019), [White and wonderful? Microplastics prevail in snow from the Alps to the Arctic](#). *Sciences Advances*, 5 (8).
- 16 Angel de Jesús Negrete Velasco et al. (2020), [Microplastic and Fibre Contamination in a Remote Mountain Lake in Switzerland](#). *Water*, 12 (9).

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