

In collaboration with



Arbeitsgemeinschaft
Tabakprävention Schweiz

Association suisse pour
la prévention du tabagisme

Associazione svizzera per
la prevenzione del tabagismo



Tobacco and the Environment

Tobacco harms people and the environment

Brief.

Tobacco is a major ecosystem disruptor. By continuing to produce and profit from tobacco and by perpetuating its long-lasting harms on the environment, the tobacco industry undermines efforts toward ecosystem restoration and all Sustainable Development Goals.

June 2024

Tobacco and the Environment: Key facts

- Tobacco cultivation requires large amounts of **pesticides, fungicides and fertilisers**, which contaminate soil and nearby water sources.
- The **cultivation and drying** of tobacco alone is responsible for **5% of global deforestation**.
- Discarded cigarette butts are a **significant source of pollution**, as they do not biodegrade. If they reach bodies of water, they cause great harm to marine life.
- **Each of the 17 UN Sustainable Development Goals (SDG)** is negatively impacted by tobacco production and consumption.

6 trillion cigarettes leave their mark

The tobacco industry's negative consequences on public health are widely acknowledged, with tobacco use killing around eight million people per year. Governments all around the world, as well as medical institutions and civil society regularly address the harmful health effects of the tobacco industry.^{1,2} However, the ecological impact that arises along the entire life cycle of a cigarette is often overlooked however.¹

The immense environmental damage caused by tobacco products starts before any user takes their first puff, and continues long after they throw them away.² The industry produces six trillion cigarettes each year, which are consumed by 1.1 billion smokers worldwide.³ Many are unaware that tobacco plays a crucial role in causing climate change and impairing the future of agriculture and food security. Currently, tobacco is grown in over 125 countries on an estimated area of four million hectares as a cash crop, with the harmful effects of its cultivation on the environment most apparent in low- to middle-income countries (LMIC).^{4,5}

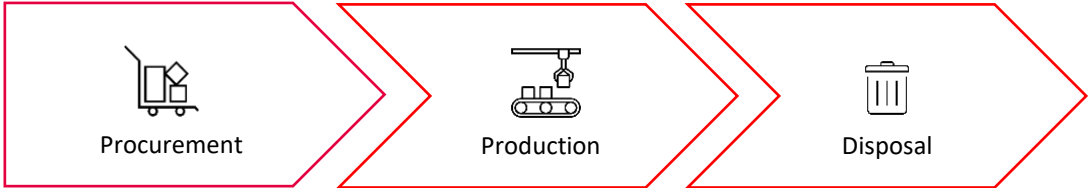
Large areas of forest destroyed

The entire lifecycle of tobacco has a negative impact on the environment. These effects permeate, from cultivation and drying to cigarette distribution, consumption, and disposal. These detrimental effects arise from various causes, such as the utilisation of scarce arable land and water for tobacco cultivation, or extensive deforestation as a result of the clearing of thousands of hectares of woodland to make space for tobacco production and fuel for drying tobacco leaves.⁶ Disturbingly, by the mid-1990s, tobacco-growing LMICs experienced an annual loss of 211,000 hectares of woodland areas. For example, between 1962 and 2002, 68,000 hectares of forests were lost in India⁷, between 1990 and 2007, 74,440 hectares of forest were lost in Brazil, as well as 13,400 hectares of forest in Malawi.⁸



A devastating supply chain

Tobacco products cause harm and pollute throughout their long and complex life cycle. We will be looking at it in three stages.



Phase 1: Procurement

Tobacco Cultivation

Tobacco farming, primarily conducted as a monoculture, necessitates the extensive use of pesticides and fungicides, leading to several environmental issues. These chemicals, essential for managing pests and diseases in dense tobacco plantings, unfortunately, seep into the soil, contaminating the ground and nearby water bodies.

The tobacco plant is very water- and nutrient-needy, requiring significant use of fertilisers.⁹ Fertilisers remain unaffordable for many small-production farmers in LMICs, and without fertilisers, agricultural plots are unfit for continuous tobacco use.¹⁰ As soil fertility is lost over time in tobacco growing areas, small-scale farmers responsible for much of

the tobacco cultivation must resort to clearing new fertile areas of woodlands to allow for continued tobacco growing. As the pressure to produce more tobacco continues to grow, so does the need for more arable lands, thus leading to a devastating deforestation cycle with far-reaching environmental, social, and economic consequences.^{11 12} In Tanzania for example, 69% of tobacco farmers were observed clearing new areas of woodlands every season, with only 25% using the same plots for tobacco for two consecutive seasons. As a result, Tanzania suffers from one of the highest rates of tobacco-related deforestation globally.¹³ Such farming practices are also amongst the reasons for increasing soil erosion, depletion, and pollution. According to the WHO, tobacco cultivation accounts for around 5% of global deforestation.^{14 15}



Tobacco Drying

Tobacco drying, also called “curing” is a standardised drying process that allows certain chemical and physical changes to occur. This multistage process is very energy-intensive; coal or large amounts of wood have to be burnt to generate heat. This releases numerous chemicals that pollute the air in addition to consuming raw materials.¹⁶ According to the WHO, an estimated 8.05 million tonnes of wood are used annually solely for so-called “flue-curing” drying. To dry one tonne of tobacco, roughly 7.8 tonnes of wood are used. In other words: To dry 300 cigarettes, one tree is burnt.¹⁷ This curing alone accounts for 2–3% of global deforestation.^{15 18}

Data from 2008 shows the extent of the destruction:

- 27% of Pakistan’s total annual deforestation¹⁷
- Loss of roughly 11,000 hectares of the Miombo ecosystem in Tanzania¹⁷
- Loss of 13.3% of forest cover in rural areas of Mwazisi, Malawi.⁸

Trees are essential for ensuring food security and driving economic growth. They help preserve underground water sources, improve soil fertility, reduce high temperatures, and maintain moisture levels, thereby lessening the effects of droughts.^{19 20}

Ongoing land degradation however impairs agricultural productivity, leading to lower food security and reinforces entrenched poverty. Forest ecosystems are critical not only for environmental sustainability but also for socio-economic development.^{19 20} The detrimental relationship between tobacco cultivation and food security is thus a significant concern from a public health perspective, since the focus on the cultivation of tobacco limits access to adequate and nutritious food.



Image top: Tobacco leaves left to dry, rusted on Unsplash, Image bottom: A child tobacco worker, surrounded by bales of dried tobacco leaves. ©Rocco Rorandaelli

Phase 2: Production

CO₂-emissions for 3 million flights

The environmental impact of tobacco manufacturing and distribution is also a significant concern. The second phase of the tobacco lifecycle, from production to distribution, causes immense CO₂ emissions – in fact, the same amount as 3 million transatlantic flights!²¹

Once the raw tobacco leaf reaches a manufacturer, it must be processed into a desirable consumer product. This involves preparing the tobacco leaf, such as shredding, mixing in chemicals, alongside the manufacture of commercial cigarette paper, filters, and packaging.²² The transport of tobacco by lorry, ship, and train from one supplier to the next further compounds the CO₂ footprint and exacerbates pollution.

Moreover, the environmental burden is intensified by the waste generated from the packaging of tobacco products. In 2021 alone, the disposal of cigarette boxes and cartons amounted to waste weighing approximately 2 million tonnes—equivalent to the mass of over 9,000 freight trains.²¹

Major tobacco companies have admitted that the majority of their CO₂ footprint comes from their supply chain activities, which involve everything from the procurement of raw materials to the transportation and distribution of finished products. According to the WHO, the annual energy consumption of PMI, JTI and BAT is comparable to the energy needed to produce two million automobiles.²³ This highlights the unsustainable nature of tobacco production, which places a heavy burden on our planet's resources. Despite recognizing these issues, tobacco companies have been reluctant to provide comprehensive data that could help measure the full environmental impact of their activities, making it challenging to address these environmental concerns effectively.²⁴ The

Process Steps

Click on the process steps to find out more about who is involved in the tobacco industry supply chain.



Tobacco Forms



Tobacco Actors



The Tobacco Supply Chain, illustrated by Tobacco Tactics

Tobacco Tactics platform have nonetheless established the [Tobacco Supply Chain Database](#) to

illustrate the full supply chain of tobacco products, the location of each step, with a global mapping of who is involved and their environmental impact.

Phase 3: Disposal



In March 2022, more than 900,000 cigarette butts were collected within 2 weeks throughout Switzerland ©[stop2drop](#)

Tobacco and Plastic

Tobacco and plastic pollution have become major environmental concerns in recent years, with both industries contributing to the destruction of natural habitats and harm to wildlife. According to a 2017 report by the WHO, more than 6.5 trillion cigarettes are distributed annually¹¹, up from 5.5 trillion cigarettes produced in 2004.²⁵ Nearly all are inadequately disposed, thus becoming one of the most littered items on the planet.²⁶

Cigarette filters are made of plastic. They often end up in the oceans and other bodies of water, where they can harm marine life.^{25 27 28} Moreover, the chemicals in discarded cigarette butts can leach into the water further aggravate the harm to surrounding ecosystems and ultimately human health.^{11 29} In addition, the plastic packaging used for cigarettes and other tobacco products also contributes to pollution. This packaging is also not biodegradable and can take hundreds of years to decompose. When ingested by wildlife, they may injure or even cause death.^{30 31}

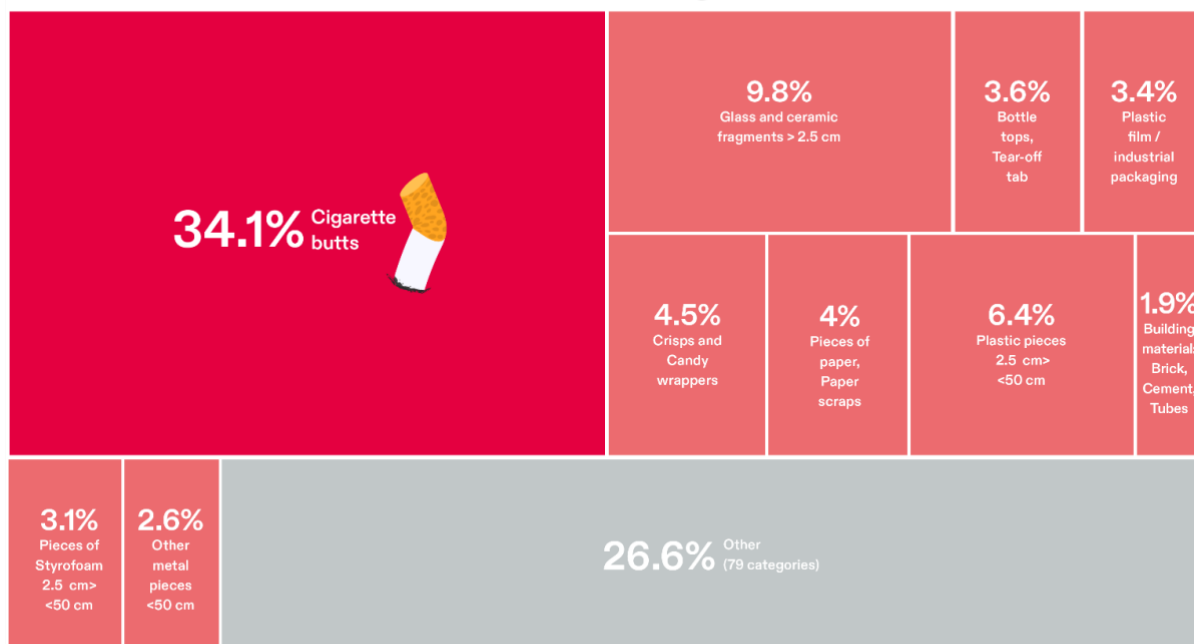
The clean-up and disposal of tobacco waste products, much of it related to cigarette use, is a negative economic externality present throughout the world, and incurs enormous costs to society. The tobacco industry consistently pursues the “blame-the-victim approach” by placing the burden of responsibility for littering solely on smokers. The industry mainly calls for regulations against careless littering, and has vehemently opposes preventive policies such as a ban on plastic filters in cigarettes.^{32 33}

Cities incur significant costs for clean-up and disposal of public areas, with annual costs ranging from USD 22 million for San Francisco, and USD 80 million for New York City.³⁴ Every year, municipalities in Switzerland spend around CHF 52 million on removing and cleaning up cigarette litter.³⁵

Actions such as [stop2drop](#) stand as a significant initiative in Switzerland, focusing on the issue of cigarette litter and its environmental consequences. Stop2drop’s activities spotlight the urgent need for action to mitigate the environmental and health hazards of discarded cigarette butts.

These efforts are part of a broader, global effort to address environmental pollution, with similar initiatives taking place both nationally and internationally. For instance, [Trashtraveller](#) in Portugal and several programs in France illustrate the widespread commitment to environmental preservation. These efforts show that change is possible and serve as motivation, particularly for young individuals, to get involved and contribute to a cleaner environment. The Swiss Association for Tobacco Control (AT Switzerland) also supports the Stop Tobacco Pollution Alliance (STPA), which advocates for [the prohibition of cigarette filters](#) and holds the tobacco industry accountable for the environmental harm caused by their products. STPA and AT Switzerland strongly urge politicians to enact a ban on these toxic filters and demand that the tobacco industry be held responsible for the environmental damage caused by their products.

Frequency of Top 10 waste categories and materials



WWF/STOPPP 2018. Swiss Litter Report

Tobacco and the Environment in Switzerland

The 2018 Swiss Litter Report published by WWF and STOPPP (Stop Plastic Pollution CH) revealed that in 2017/18, cigarette butts were the most frequently found waste category at 112 locations along Switzerland's main rivers and lakes. The Federal Office for the Environment (FOEN) repeated the study in 2020/21 and confirmed this again. This highlights that even in Switzerland, tobacco is one of the main sources of waste.³⁶ Here as well, cigarette butts are extremely toxic to wildlife and aquatic organisms. To get an idea of how people from French-speaking Switzerland viewed tobacco and the environment, Unisanté conducted a survey in 2022. They found that although people were aware of the pollution caused by cigarette butts, the respondents underestimated the ecological and climatic impact of tobacco growing. The results also show that people in French-speaking Switzerland are open to stepping up prevention measures.³⁷

Although tobacco consumption in Switzerland leads to large additional costs to the health care system, as well as to the environment, the Swiss government directly supports the tobacco industry and domestic production of tobacco through the SOTA Fund.³⁸ As in other parts of the world, tobacco cultivation in Switzerland is resource-intensive and environmentally unfriendly (see [AT News](#)).^{39 40} This process not only requires vast amounts of water for cultivation and energy for drying, but also powerful

pesticides and fungicides to treat the delicate, non-native plant, which in turn harm soil, water, and surrounding ecosystems.⁴¹



Sustainable Development or Tobacco

Tobacco has a negative impact on each of the 17 Sustainable Development Goals (SDG) (see [AT's SDG Series](#)). The whole supply chain of tobacco production has a disastrous impact on the life of people in tobacco-growing countries, on the environment, and on human rights. In summary, the cultivation, production, and use of tobacco products harms the environment and human health, both directly and indirectly. This means that there is a need for the implementation of sustainable alternatives, and reduction of tobacco consumption to mitigate the negative consequences of this industry on the SDGs.

Tobacco Industry Greenwashing and Manipulation

Greenwashing has been employed by the most polluting or controversial industries on the planet, including tobacco. The tobacco industry has persistently attempted to burnish its reputation and products through programmes such as beach clean-ups, and funding of environmental and disaster-relief organisations. In Switzerland, key examples include actions such as the Lara Green campaign led by Swiss Cigarette, or the IGSU clean-up day financed by JTI (see [AT News](#)).



Prime example of greenwashing: Parisienne eco advertisement (Image: 20 min, edited by AT Switzerland)

Path Forward

Tobacco stands in the way of food security

Tobacco cultivation, curing, and manufacturing are prominent stages in a supply chain that exerts significant pressure on resources and causes substantial environmental harm. Reducing tobacco production in countries where tobacco takes precedence over food crops would not only mitigate these negative impacts but also free up valuable land for more diversified crop farming, thereby enhancing food security. The conversion from tobacco-growing to cultivating alternative crops such as potatoes, tomatoes, maize, or wheat has been identified as a viable option in several tobacco-producing nations. Importantly, the yield of these alternative crops is often considerably higher than that of tobacco. For instance, in Brazil, a hectare of land can yield over three tonnes of wheat, against less than two tonnes of tobacco (dry weight). The difference in yields is even more substantial in the

case of tomatoes, with yields in China and the United States being 25 and 41 times higher respectively when compared to tobacco. Similarly, a hectare of land in Indonesia and Zimbabwe has the potential to produce 19 times more potatoes than the 1–1.2 tonnes of tobacco currently grown.

Moreover, studies indicate that farmers transitioning from tobacco to alternative crops can earn higher profits while reducing labour and input requirements. In India, for example, economically viable alternative crops such as hybrid cotton, chili, groundnut, and French beans have emerged through mixed cropping practices as suitable substitutes for tobacco.¹⁷



Smallholder farmer in the Kilimanjaro region, Tanzania, practising maize-pigeonpea intercropping ©ICRISAT

2023 World No Tobacco Day: We Need Food, not Tobacco.

The 2023 WHO World No Tobacco Day theme was “We need food, not tobacco”. The aim of the 2023 global campaign was to raise awareness amongst tobacco farmers of alternative crop production and marketing opportunities and encourage them to grow sustainable, nutritious crops. It also aimed to expose the tobacco industry’s efforts to interfere with attempts to substitute tobacco-growing with sustainable crops, thereby contributing to the global food crisis.⁴²

As tobacco production monopolises valuable resources such as water, land, and fertilisers, which would otherwise be used for growing food, it contributes to the growing food crisis driven by conflicts, climate change, and the economic and social impacts of the COVID-19 pandemic. The competition for resources leads to food scarcity and increased food prices, making it difficult for people to access sufficient and nutritious food, particularly in low-income communities. Tobacco production has been shown to be responsible for the displacement of food and other economic crops in Bangladesh. For example, the very fertile region of Kushtia (the second largest tobacco-producing district in the country) had once been a food-surplus region. Now, tobacco occupies the best lands in the district, having displaced vegetables, pulses, sugar cane, and jute crops. A similar pattern is taking place in the Chittagong Hill Tracts, where tobacco is replacing the traditional rice- and vegetable- growing economies.¹³

The relationship between tobacco and food security is a critical public health issue. To address this issue, it is crucial to implement policies, such as green taxes, that reduce the negative impacts of tobacco production on the environment, food security, as well as promote access to nutritious food and essential health services.⁴³ By taking a comprehensive approach, one can help ensure that all communities have the resources they need to thrive and achieve good health.^{1 4} Furthermore, governments must adhere to the guidelines set by the WHO FCTC, particularly article 5.3 to ensure the tobacco industry’s influence on policy making is controlled.



[In their 2023 campaign video](#), the WHO show a local Kenyan farmer telling the story of how switching from growing tobacco to beans changed her life ©[WHO](#)

References:

- 1 Leppan W, Lecours N, Buckles D. *Tobacco control and tobacco farming: Separating myth from reality*. London [England], Ottawa, Ontario: Anthem Press; International Development Research Centre, 2014.
- 2 Tobacco Atlas. Tobacco and the Environment | Tobacco Atlas, 2024. <https://tobaccoatlas.org/features/tobacco-and-environment/> (accessed 3 Apr 2024).
- 3 Reitsma MB, Kendrick PJ, Ababneh E, Abbafati C, Abbasi-Kangevari M, Abdoli A, et al. Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990–2019: a systematic analysis from the Global Burden of Disease Study 2019. *The Lancet* 2021.
- 4 Lorenzo D de. Ending Tobacco Farming Could Free Over 4 Million Hectares Across 120 Countries. *Forbes* 2021.
- 5 Jimu L, Mataruse L, Musemwa L, Nyakudya IW. The miombo ecoregion up in smoke: The effect of tobacco curing. *World Development Perspectives* 2017;5: 44–6.
- 6 Zafeiridou M, Hopkinson NS, Voulvoulis N. Cigarette smoking: an assessment of tobacco’s global environmental footprint across its entire supply chain, and policy strategies to reduce it., 2018. <https://fctc.who.int/publications/m/item/cigarette-smoking>.
- 7 World Health Organization. *Tobacco and its environmental impact: an overview*. Geneva: World Health Organization, 2017.
- 8 Ngwira S, Watanabe T. An Analysis of the Causes of Deforestation in Malawi: A Case of Mwazisi. *Land* 2019;8: 48.
- 9 von Eichborn S, Mangora MM, Akther F, Knotz S, eds. *Ruinierte Natur. Entwaldung, Pestizide und Nikotin*. Berlin: Unfaitobacco, 2018.
- 10 Lan L. Tobacco Farming and Shocking Environmental Risks: In many tobacco growing countries, evidence indicates irreparable environmental damage from tobacco agriculture., 2019. <https://www.tiredearth.com/articles/tobacco-farming-and-shocking-environmental-risks>.
- 11 Hendlin YH, Bialous SA. The environmental externalities of tobacco manufacturing: A review of tobacco industry reporting. *Ambio* 2020;49: 17–34.
- 12 Cattaruzza MS, MONDERA F, ANTINOZZI M. Tobacco is also very damaging to the environment! *Tabaccologia* 2022: 7–10.
- 13 Lecours N, Almeida GEG, Abdallah JM, Novotny TE. Environmental health impacts of tobacco farming: a review of the literature. *Tob Control* 2012;21: 191–6.
- 14 Stopping Tobacco Organizations and Products (STOP). The Tobacco Industry and the Environment, 2021. <https://exposetobacco.org/resource/ti-and-environment/> (accessed 10 Feb 2023).
- 15 WHO. Poisoning our Planet, 2022. <https://www.who.int/campaigns/world-no-tobacco-day/2022> (accessed 14 Apr 2022).
- 16 Musoni, Nazare, Manzungu, Chekenya. *Redesign of commonly used tobacco curing barns in Zimbabwe for increased energy efficiency*, 2013. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.303.2087&rep=rep1&type=pdf>.
- 17 Zafeiridou M, Hopkinson NS, Voulvoulis N. Cigarette Smoking: An Assessment of Tobacco's Global Environmental Footprint Across Its Entire Supply Chain. *Environmental science & technology* 2018;52: 8087–94.
- 18 Hu T-W, Lee AH. Tobacco control and tobacco farming in African countries. *J Public Health Pol* 2015;36: 41–51.
- 19 Vira B, Wildburger C, Mansourian S. Forests, Trees and Landscapes for Food Security and Nutrition: A Global Assessment Report 2015.
- 20 Sanchez PA, Buresh RJ, Leakey RRB. Trees, soils, and food security. *Phil. Trans. R. Soc. Lond. B* 1997;352: 949–61.
- 21 *Tobacco: Poisoning Our Planet*. Geneva, 2022. <https://iris.who.int/bitstream/handle/10665/354579/9789240051287-eng.pdf?sequence=1> (accessed 17 Oct 2023).

- 22 *Tobacco Atlas*. 6 ed. Atlanta, GA: MCGRAW-HILL EDUCATION, 2018.
- 23 Lynn A. The Dirt Behind Big Tobacco and the Environment. *STOP* 2021.
- 24 TobaccoTactics. Tobacco and the Environment, 2022. <https://tobaccotactics.org/article/tobacco-and-the-environment/> (accessed 3 Apr 2024).
- 25 Kadir AA, Sarani NA. Cigarette Butts Pollution and Environmental Impact – A Review. *International Integrated Engineering Summit 2014* 2015;773-774: 1106–10.
- 26 Stop Tobacco Pollution Alliance. UN Treaty on Plastic Pollution, 2022. <https://ggtc.world/actions/campaigns/campaign-letter/stop-tobacco-pollution-alliance> (accessed 30 Nov 2022).
- 27 Shen M, Li Y, Song B, Zhou C, Gong J, Zeng G. Smoked cigarette butts: Unignorable source for environmental microplastic fibers. *The Science of the total environment* 2021;791: 148384.
- 28 Novotny TE, Lum K, Smith E, Wang V, Barnes R. Cigarettes butts and the case for an environmental policy on hazardous cigarette waste. *International journal of environmental research and public health* 2009;6: 1691–705.
- 29 Slaughter E, Gersberg RM, Watanabe K, Rudolph J, Stransky C, Novotny TE. Toxicity of cigarette butts, and their chemical components, to marine and freshwater fish. *Tob Control* 2011;20 Suppl 1: i25-9.
- 30 Bundesamt für Umwelt (BAFU). Littering: Kunststoffe in der Umwelt. Fanktenblatt Nr. 7.
- 31 Dobaradaran S, Soleimani F, Akhbarizadeh R, Schmidt TC, Marzban M, BasirianJahromi R. Environmental fate of cigarette butts and their toxicity in aquatic organisms: A comprehensive systematic review. *Environmental research* 2021;195: 110881.
- 32 Goldberg RF, Vandenberg LN. The science of spin: targeted strategies to manufacture doubt with detrimental effects on environmental and public health. *Environmental health : a global access science source* 2021;20: 33.
- 33 Novotny TE. Environmental accountability for tobacco product waste. *Tobacco control* 2019.
- 34 Beutel MW, Harmon TC, Novotny TE, Mock J, Gilmore ME, Hart SC, et al. A Review of Environmental Pollution from the Use and Disposal of Cigarettes and Electronic Cigarettes: Contaminants, Sources, and Impacts. *Sustainability* 2021;13: 12994.
- 35 stop2drop. Herausforderungen – stop2drop, 2023. <https://stop2drop.ch/herausforderungen/> (accessed 24 May 2023).
- 36 UFAM, Bundesamt für Umwelt BAFU | Office fédéral de l'environnement OFEV | Ufficio federale dell'ambiente. Dieser Abfall liegt an Schweizer Gewässern, 2023. <https://www.bafu.admin.ch/bafu/de/home/themen/abfall/dossiers/littering-schweizer-gewaesser.html> (accessed 3 Feb 2023).
- 37 Unisanté. Tabac et environnement: qu'en pensent les Romand·e·s?, 2023. <https://www.unisante.ch/fr/unisante/actualites/tabac-environnement-quen-pensent-romandes> (accessed 10 Aug 2023).
- 38 Boeglin P. Sur l'environnement, des géants du tabac très écoutés à Berne. *Le Temps* 2024.
- 39 Aminian E, Sadowski IJ, Cornuz J. Impact environnemental du tabagisme. *Rev Med Suisse* 2019;669: 1974–8.
- 40 Revue Medicale Suisse. SANTE ET ENVIRONNEMENT (Senn Nicolas, Del Rio Maria et al.) | Revue Medicale Suisse, 2023 (accessed 10 Aug 2023).
- 41 Mangora MM, Akther F, Knotz S. Ruinierte Natur: Entwaldung, Pestizide und Nikotin, 2018. https://unfairtobacco.org/wp-content/uploads/2018/12/Ruinierte-Natur_2018.pdf (accessed 5 Apr 2022).
- 42 WHO. World No Tobacco Day 2023: We need food, not tobacco, 2023. <https://www.who.int/europe/news-room/events/item/2023/05/31/default-calendar/world-no-tobacco-day-2023--we-need-food--not-tobacco> (accessed 24 May 2023).
- 43 Hopkinson NS, Arnott D, Voulvoulis N. Environmental consequences of tobacco production and consumption. *The Lancet* 2019;394: 1007–8.