THE BUSINESS OF ADDICTION:

Supply chain analysis of heated tobacco products, IQOS

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Acronyms

BAT	British American Tobacco
FCTC	Framework Convention on Tobacco Control
COFEPRIS	Mexican Health Authority
ODF	Official Daily of the Federation
FDA	Food and Drug Administration
SFF	Smoke-Free Future
GHG	Greenhouse Gas GHG
JT	Japan Tobacco International
GLTC	General Law for Tobacco Control
MRTP	Modified Risk Tobacco Product
NYSE	New York Stock Exchange
WHO	World Health Organization
PAHO	Pan American Health Organization
SFP	Smoke-Free Product
HTP	Heated Tobacco Product
PMI	Philip Morris International
RRP	Reduced Risk Product
PRC	Public Registry of Commerce
HMSP	Hanjaya Mandala Sampoerna
ENDS	Electronic Nicotine Delivery Systems
SEC	Securities and Exchange Commission
ENNDS	Electronic Non-Nicotine Delivery Systems
ANDS	Alternative Nicotine Delivery Systems
MOI	Ministry of the Interior

Overview

In 2014, Philip Morris International (PMI) first introduced its heated tobacco products in Japan and Italy, under the IQOS brand. Since then, electronic devices, in particular heated tobacco products (HTPs), have gradually gained larger space in the tobacco consumption market. IQOS products are promoted as innovative devices and, since their first years on the market, have been labeled by PMI as "reduced risk products" (RRPs).

According to the company, HTPs are the product of research, development and application of technology to present alternatives to smokers. Especially in a context in which cigarette consumption seems to have begun to slow, not only because of the negative health effects that have been widely documented and studied, but also because the tobacco industry in general is finding itself out of step with worldwide efforts to conserve the environment and the fight to reverse the effects of global warming.

In recent years, we have seen some attempts to position these products in the Mexican market. In 2019, a series of actions to promote IQOS products in public events and through social networks by public figures and influencers were reported. Despite the fact that there is no evidence to indicate that heated tobacco devices such as IQOS help consumers to give up cigarettes, in addition to their sale being banned in the country, companies have managed to keep them on sale to the public, through strategies to "get around" the current laws in countries such as Mexico.

There is an attempt to show that electronic tobacco alternatives are safe and less harmful, and there is a potential market in Mexico that is willing to consume them. However, beyond the marketing positivism, the production of HTPs, both the tobacco units and electronic devices, relies on a complex supply chain and is highly dependent on the extraction of what are called conflict metals, critical metals and minerals that are linked to a panoply of social problems.

In essence, the supply chain of IQOS devices depends on extractive industries such as metallic and non-metallic minerals, some of which are considered critical minerals, i.e., those that are particularly important to the energy transition and its impact on the development of countries. This report seeks to bring to light information useful for answering the following question: **to what extent is it sustainable to keep the addiction business afloat, even when it relies on mining over-exploitation to produce heated tobacco devices?**

1. Introduction: The business of addiction

The largest tobacco companies in the world, such as Philip Morris International (PMI), British American Tobacco (BAT) and Japan Tobacco International (JTI), have moved to diversify their portfolio of products available in the tobacco market in order to counteract the negative aspects associated with tobacco consumption, such as taste, smell, harm to third parties, air and environmental pollution, as well as serious damage to health. Earlier attempts involved adding artificial flavorings to cigarettes (such as menthol), marketing *light* versions, or modifying the number of cigarettes per pack, all of them underpinned by strong marketing strategies.

In recent years, there has been a boom in electronic nicotine delivery devices along with HTPs, which have become increasingly prevalent in the markets despite the many questions surrounding their effects on the health of the people who use them, and with whom they coexist, and despite the paucity of studies on the subject. One of the key arguments tobacco companies have touted for the development and sale of these devices revolves around the elimination of combustion; an advantage that, the companies claim, involves the release of more than six thousand substances potentially harmful to the human body.[1]

Under this argument, PMI has stated that one of its goals is to move to a business model based on non-combustible products. In particular, PMI has reported that since 2008 it has invested close to 10 billion dollars in the development and marketing of "smoke-free" products.[2] With this, PMI is promoting a media campaign in Mexico to position its combustion-free products, called Futuro Sin Humo (Future Without Smoke), in which HTPs, under the IQOS brand, are presented as the focal point.[3]

At the onset of the Covid-19 pandemic, PMI reported a decline in cigarette sales, mainly during the second quarter of 2020. However, RRPs saw an increase of close to 100% in just 3 years. Net cigarette revenues have stagnated since the pandemic. Despite this, PMI's total revenues have recovered and have been higher than in previous years. Obviously, the pandemic shrank cigarette sales, but boosted the sale of their alternative products such as HTPs.

It is worth noting that HTPs, in addition to being promoted as innovative and low risk, are part of a rapidly growing industry such as electronic devices, whose supply chain depends on a set of raw materials in addition to tobacco, such as metallic and non-metallic minerals. The exploitation and commercialization of these materials has highly harmful impacts on the lives of people and natural resources, especially the people and communities living in the territories where the mining projects are located.

We therefore propose to analyze the HTP value chain in order to obtain a broader view of their real impacts. In the first section we present what heated tobacco products are, how they work and what role they play in PMI's business plans for the coming years. Subsequently, we address the context in which heated tobacco devices have been introduced to the Mexi-can market, emphasizing the legal conditions and the way in which different corporate actors have interfered

[1] PMI Science, Why combustion is the primary problem with cigarettes, https://www.pmiscience.com/en/smoke-free/combustion/
[2] PMI, Annual Report, 2022, https://philipmorrisinternational.gcs-web.com/static-files/d2370996-825f-47b8-9203-ceebbcf3a29d.
[3] PMI, Smokeless Future, https://futurosinhumo.com.mx

to achieve their commercialization, through marketing campaigns that turn the law "around" and restrictions on tobacco product advertising.

Later on, we present a corporate analysis of PMI itself, to discover and identify the main business actors involved in the production of IQOS products. Finally, we conducted a comprehensive assessment of the impacts of HTPs not only on health, but also those derived from their production, manufacture and commercialization on the environment, land, territory and human rights.

The methodology used in this research was based on the review of public information sources including stock exchanges, the United States Securities and Exchange Commission (SEC), company websites, and companies' annual, financial and sustainability reports. Likewise, public sources in Mexico were consulted, such as the Official Gazette of the Federation (ODF) and the Public Registry of Commerce (PRC). In preparing this report, in addition to the documentary review, two interviews were conducted with experts in tobacco control policies.

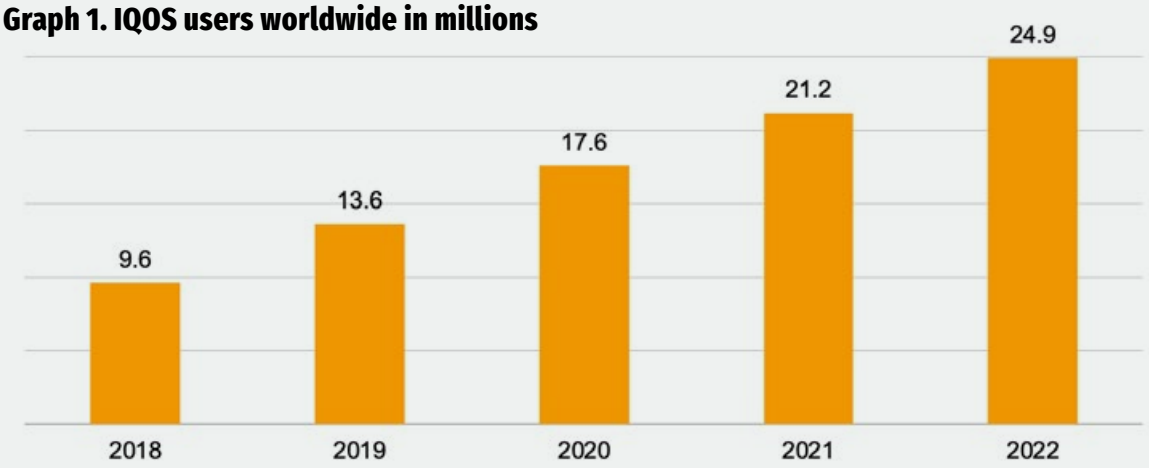
2. Snapshot of heated tobacco devices

It was in 2014 that PMI first introduced its heated tobacco products in Japan and Italy, under the IQOS brand. Since then, electronic devices, in partícular HTPs, have gradually gained larger spaces in the tobacco consumption market. By 2022, their sale and distribution had spread to 73 countries around the world.[4] The number of users globally has grown by an average of 18% per year, from 17.6 million users in 2020[5] to 21.2 million in 2021[6], while by 2022 about 24.9 million people are reported to be using some the IQOS product.[7] Although PMI claims that the products are aimed at smokers and, therefore, are an alternative to combustion-based cigarettes as a way to reduce the damage to their health, the truth is that some organizations and public agencies consider that a large sector of consumers are at an early age, and are thus a nascent market for HTPs. In this regard, there is a well-founded fear that it is young people who have never smoked may start using HTPs, considering them a "harmless" option for initiating tobacco consumption.[8]

[4] PMI, 2022.

[5] PMI, Annual Report, 2020, https://philipmorrisinternational.gcs-web.com/static-files/9f1f0ec5-f5ec-4164-93ee-8057210a8205
[6] PMI, Annual Report, 2021, https://philipmorrisinternational.gcs-web.com/static-files/517af46c-2750-4185-9b1d-7d8e8f47a854
[7] PMI, 2022.
[8] WHO, Urgent action needed to prevent children and young people from using e-cigarettes
https://www.who.int/es/news/item/14-12-2023-urgent-action-needed-to-protect-children-and-prevent-the-uptake-of-e-cigarettes

Graph 1. IQOS users worldwide in millions

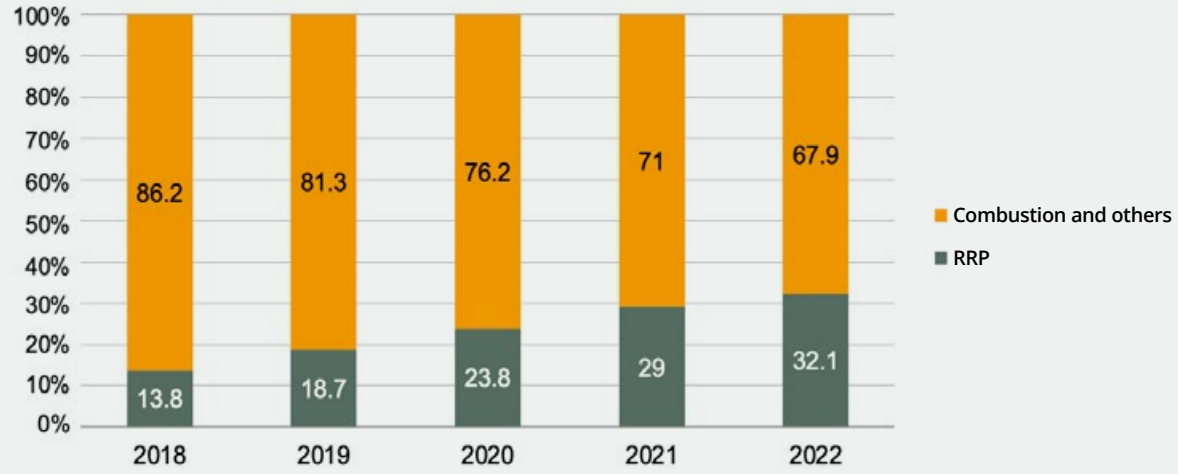


Source: Own elaboration based on PMI annual reports.

In 2018, 13.8% of PMI's total revenue came from the sale of smoke-free products (SFPs), while by 2022, at least 32.1% of PMI's total net revenue was from its SFPs, including IQOS 3, IQOS, ILUMA, BONDS, VEEV, General Snus and ZYN. In addition, as mentioned above, revenues from SFPs virtually doubled during the early years of the pandemic. In 2018, PMI posted net revenues of US $4 billion and by 2019 they had grown to US $5.5 billion. By 2022 they were up to US $10.19 billion.[9] [10]

Within this product range, a large majority of those revenues are attributable to the sale of IQOS heated tobacco devices and consumables.[11] IQOS consumable brands include Lends, Heets, Heets Creations, Heets Dimensions, Marlboro Heets and Heets by Marlboro, Marlboro Dimensions, Marlboro HeatSticks, Parliament HeatSticks, Sentia and Terea.[12]

Graphic 2. Breakdown of PMI's net revenues



Source: Own elaboration based on PMI 2019, 2020, 2021, 2022 annual reports.

[9] PMI, Annual Report 2019, http://media.corporate-ir.net/media_files/IROL/92/92211/2020-PMI-FinalFiles/index.html
[10] PMI, 2020, 2021, 2022.
[11] PMI, 2022.
[12] PMI, 2022.

As mentioned previously, IQOS new devices have been labeled by PMI as innovative and as "reduced risk products.[13] According to the description on its website, IQOS is a better alternative to cigarettes because it does not produce smoke, ash or cigarette odor and therefore causes less discomfort to people nearby. In addition, one of the main benefits highlighted by the product is that due to the lack of combustion, the levels of harmful and potentially harmful substances are significantly reduced compared to cigarette smoke.[14]

The U.S. Food and Drug Administration (FDA) authorized the marketing of IQOS 3 in the United States in April 2019, and in July 2020 authorized its advertising as a modified risk tobacco product (MRTP).[15] However, civil society and academic organizations have warned about the confusion that can be generated by a misinterpretation of the terminology used both in the FDA resolution and in the subsequent marketing strategy launched by PMI.

The focus of the FDA resolution is that HTPs present a reduced risk of exposure to some substances, but this should not be construed to indicate a reduction in the risk of disease and death. That risk has not been ruled out, and there is still uncertainty about the adverse health effects of HTPs. Even the FDA ruling acknowledges that the company will need to maintain oversight and conduct further studies to determine whether the modified risk continues to be appropriate, including assessing the potential increase in use by young people.[16]

Based on this data, heated tobacco products such as IQOS are emerging as the spearhead of PMI's proposed "transition" to becoming a smoke-free company. According to PMI's data, HTPs have replaced smoke with an aerosol that is generated by heating tobacco to a temperature approaching 350°C. These devices avoid burning the tobacco by using two heating systems: HeatControl Technology and Smartcore Induction System.[17]

The HeatControl Technology system works through a sheet or heating element that enters the tobacco units when they are inserted in heaters, while the second heating system uses a heating element that works through induction. In the second case, the metal sheet that allows the tobacco to be heated from the inside out is contained in each tobacco unit. In both cases, there are serious questions about the toxicity that the mechanism can generate on the health of the people who consume them. Both devices consist of three elements: heater, charger and tobacco sticks. (Figure 1)

[13] PMI, 2016, https://www.annualreports.com/HostedData/AnnualReportArchive/p/NYSE_PM_2016.pdf
[14] https://www.iqos.com/mx/es/ayuda/que-es-iqos.html
Venture Corporation Limited, Annual Report 2022, http://venture.listedcompany.com/misc/ar2022/ARandSR2022.pdf
[15] FDA, FDA Authorizes Marketing of IQOS Tobacco Heating System with 'Reduced Exposure' Information, July 7, 2020, https://www.fda.gov/news-events/press-announcements/fda-authorizes-marketing-iqos-tobacco-heating-system-reduced-exposure-information.
[16] STOP, FDA does not rule that IQOS reduces tobacco-related harm; however, PMI still reaffirms win, https://exposetobacco.org/wp-content/uploads/FDA_IQOS_Brief_ES.pdf
[17] PMI, Our smoke-free products, https://www.pmi.com/our-business/smoke-free-products/heated-tobacco-products

Figure 1. Elements of IQOS devices

Source: PMI

The tobacco units are smaller than traditional cigarettes and are marketed in a variety of flavors, heated electrically to release an aerosol.[18] The aerosol produced by IQOS devices is a mixture of glycerin, nicotine, chemical flavors and other components. The heater is an electronic device that contains a ceramic and metal sheet where the tobacco unit is placed and is heated to a controlled temperature that avoids burning it to produce a nicotine aerosol, by a 120mAh lithiumion battery. The pocket charger contains a 2900mAh lithiumion battery that supplies power to the heater.

Table 1. IQOS Components

	HeatControl System	SmartCore Induction System
Heater 	An electronic device that contains a ceramic and metal sheet where the tobacco unit is placed and heated to a controlled temperature to produce a nicotine aerosol, through a 120mAh lithium-ion battery.	Electronic device that heats the tobacco units through an induction system with a 120mAh battery.

[18] PMI, Our smoke-free products, https://www.pmi.com/smoke-free-products/iqos-our-tobacco-heating-system

Charger 	The pocket charger contains a 2900mAh lithiumion battery that supplies power to the heater.	IQOS Iluma
Tobacco units 	The tobacco units are smaller than traditional cigarettes and are marketed in different flavors, heated electrically to release an aerosol. The main brands are Heets, Marlboro, and Sentia.	Terea tobacco units are designed to work with IQOS Iluma devices. Each unit contains a stainless steel plate that allows it to be heated in IQOS induction systems.

Source: Own elaboration with information from PMI

IQOS heated tobacco products in their different versions are designed by Philip Morris Products SA in Switzerland and manufactured in Malaysia by various companies engaged in technology development and electronic device manufacturing, such as Venture Corporation Ltd. and Flex Ltd. while the tobacco units are produced by Philip Morris International in 8 of its 53 factories.[19] [20] [21]

PMI intends for HTPs to lead it transition toward a focus on the sale of smoke-free products. This is an attempt to join the global trend and justify its discourse of social and environmental concern and innovation. According to the company, HTPs are the product of research, development and application of technology to present alternatives to smokers. Especially in a context in which cigarette consumption seems to have begun to slow, not only because of the negative health effects, which have been widely documented and studied, but also because the tobacco industry in general is out of step with global efforts to preserve the environment, the fight to eradicate sources of greenhouse gas emissions and thus halt climate change, preserve air and water, which are severely imperiled in many countries of the global South, and natural resources in general[22]. But to what extent are HTPs really compatible with global efforts to combat climate change and/or sustainable development goals?

[19] Danielle Isaac, Should Venture worry about a third IQOS manufacturer for Philip Morris?, Singapore Bussines, https://sbr.com.sg/manufacturing/news/should-venture-worry-about-third-iqos-manufacturer-philip-morris
[20] KGI Asia, August 3, 2022, https://www.kgieworld.sg/research/kgi-daily-trading-ideas-03-aug-2022/.
[21] PMI, 2022.
[22] United Nations Organization, The tobacco industry also harms the environment, https://news.un.org/es/story/2022/05/1509502

3. IQOS in the Mexican context: a fledgling business

According to PMI, HTPs such as IQOS are intended to provide smokers with an alternative to cigarettes and an option to help them quit smoking for good. As has happened in other countries, PMI has sought to position IQOS products in Mexico, where the number of adult smokers is around 16 million, close to one million of whom are young people between 10 and 19 years of age.[23] Since 2004, Mexico has been a party to the World Health Organization's Framework Convention on Tobacco Control (WHO-FCTC) and has therefore committed to implementing measures to discourage the demand and supply of tobacco products, reaffirming the right of all people to the highest attainable standard of health. Despite this, in recent years we have seen attempts to position these products in the Mexican market. In 2019, a series of actions to promote IQOS products in public events and through social networks by public figures and *influencers were denounced*[24] for violating laws on the promotion of tobacco products.

Despite this, PMI's "Smoke-Free Future" campaign remains active in Mexico, especially in the digital sphere. This marketing campaign promotes smoke-free products, including HTPs. In Mexico, the campaign is promoted intensively on social networks and has a website. At the same time, it encourages tobacco consumers to sign a petition addressed to the legislature, requesting the generation of the necessary laws and legislative adjustments to allow the sale and distribution of heated tobacco products or other electronic nicotine delivery devices.[25]

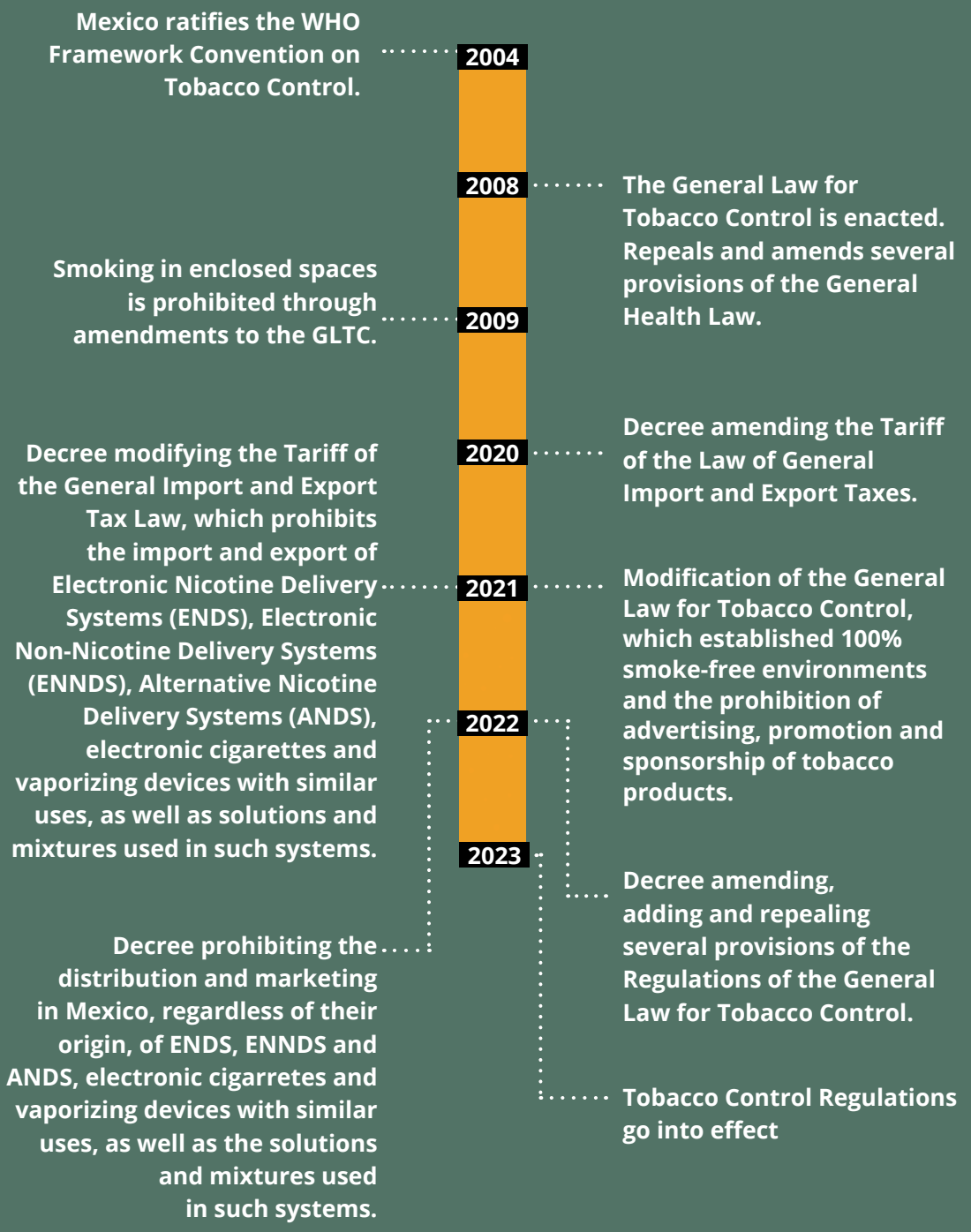
On December 14, 2021, the Mexican Senate approved an amendment to the General Law for Tobacco Control, which established 100% smoke-free environments and a total ban on advertising, promotion and sponsorship of tobacco products. Subsequently, on December 16, 2022, the new regulations for the law were enacted.[26]

In this context, a series of devices began to be sold in Mexico as an alternative to tobacco consumption, which have gained a strong following among the young population. Given the lack of studies on their health consequences and in keeping with Mexico's commitments on tobacco products, in February 2020 a decree was issued modifying the Tariff of the General Import and Export Tax Law, which prohibited the import of e-cigarettes, in harmony with the GLTC.

On May 31, 2022, the Official Gazette of the Federation published a decree entitled, in full, "Decree prohibiting the circulation and commercialization within the Republic, regardless of their origin, of Electronic Nicotine Delivery Systems, Electronic Non-Nicotine Delivery Systems, Alternative Nicotine Delivery Systems, electronic cigarettes and vaporizing devices with similar uses, as well as the solutions and mixtures used in such systems."[27]

[23] Government of Mexico, Secretaría de Salud, STCONSAME, CONADIC, Servicios de Atención Psiquiátrica, Lo que necesitas saber sobre tabaquismo, https://estrategiaenelaula.sep.gob.mx/storage/recursos/2023/04/i6uZyOhUBQ-Infografias_Tabaquismo-01.pdf
[24] Sergio Rincón, Los influencers de la nicotina: así enganchan las tabacaleras a los jóvenes, Ethos Laboratorio de Políticas Públicas, Proceso, June 1, 2020, https://www.proceso.com.mx/reportajes/2020/6/1/los-influencers-de-la-nicotina-asi-enganchan-las-tabacaleras-los-jovenes-243809.html.
[25] PMI, Smokeless Future, https://futurosinhumo.com.mx/
[26] PAHO, Mexico: The Long Road to Tobacco Control, December 2022, https://www.paho.org/es/historias/mexico-largo-camino-hacia-control-tabaco.
[27] ODF, Decree prohibiting the circulation and commercialization in the interior of the Republic, regardless of their origin, of Electronic Nicotine Delivery Systems, Similar Systems without Nicotine, Alternative Nicotine Consumption Systems, electronic cigarettes and vaporizing devices with similar uses, as well as the solutions and mixtures used in such systems, May 31, 2022, https://www.dof.gob.mx/nota_detalle.php?codigo=5653845&fecha=31/05/2022#gsc.tab=0

Industry regulatory timeline: new tobacco devices



Source: Own elaboration. ODF, Government of Mexico.

This decree led to the prohibition of the commercialization of electronic devices, including HTPs, in Mexico. However, since 2020, when the first decree was issued, some companies such as Sanborns, owned by Grupo Carso, filed a series of injunctions against it in order to continue selling both IQOS devices and their Heets tobacco units, which were granted.[28] Currently, Sanborns stores are one of the places where these devices are available for sale to the public. However, they are not the only places where IQOS HTPs are distributed. Another of the strategies used by its distributors is the organization of exclusive events, in bars or restaurants, featuring well-known personalities, where these products are promoted and sold.

Despite the fact that there is no evidence that heated tobacco devices such as IQOS help consumers to quit smoking, in addition to the fact that their sale and distribution is banned in the country, companies have managed to keep them on sale to the public through strategies that "get around" the current laws in countries such as Mexico. Additionally, these strategies expose young people and even children to tobacco product advertising, including HTPs, on social networks and other internet platforms.

4. Philip Morris International: a profitable company

Philip Morris International is one of the largest companies in the world, engaged in the tobacco industry with close to 80 thousand people employed globally. It is a publicly traded company headquartered in the United States. According to its official information, PMI is working to achieve a smoke-free future and to transform its portfolio, in the long term, with products outside the tobacco and nicotine sector. Currently its products are cigarettes and so-called "smoke-free" products, which include heated tobacco, oral nicotine and vapor products.[29]

Since 2008, PMI has been listed on the New York Stock Exchange (NYSE) and is subject to the rules of the Securities and Exchange Commission (SEC). As of December 2020, André Calantzopoulos was appointed Executive Chairman of the Board and holds the largest number of shares individually, while Jacek Olczak serves as CEO and holds the second largest number of shares in the company. PMI's shareholding structure is divided into two types of players: the main shareholders are institutions that manage investment funds, which control around 80% of Philip Morris shares. These include the Vanguard Group, BlackRock, Inc. and Capital Group Companies, Inc. through their subsidiaries Capital International Investors and Capital World Investors. Each of these owns more than 5% of PMI's shares, and together they control about 28% of the shares.[30]

[28] Roberto Noguez, Philip Morris celebrates Court ruling for sale of IQOS in Sanborns, November 27, 2020, https://www.forbes.com.mx/negocios-philip-morris-fallo-corte-venta-iqos-sanborns/#:~:text=After%20the%20amparo%20was%20granted%20a,that%20guarantees%20the%20smoking%20of%20smokers

[29] PMI, 2022.

[30] SEC, 2023, Annual Meeting of Shareholders and Proxy Statement, https://www.sec.gov/Archives/edgar/data/1413329/000110465923036062.

Table 2. Lead PMI Shareholders

Beneficial owner	Number of shares	Percentage
The Vanguard Group	134,134,252	8.65%
BlackRock, Inc.	102,158,305	6.6%
Capital International Investors	103,019,220	6.6%
Capital World Investors	100,042,888	6.5%

Source: SEC[31]

Table 3. Individual shareholders
(with less than 1% of the shares)

Name	No. of shares
Drago Azinovic	171,528
Emmanuel Babeau	82,820
Bonin Bough	4,496
André Calantzopoulos	1,007,048
Michel Combes	4,929
Juan José Daboub	3,893
Frederic de Wilde	184,187
Werner Geissler	81,787
Lisa A. Hook	12,173
Jorge Insuasty	15,513
Martin G. King(3)	128,463
Jun Makihara	25,503
Kalpana Morparia	22,514
Lucio A. Noto	131,270
Jacek Olczak	276,373
Frederik Paulsen	0
Robert B. Polet	24,043
Dessi Temperley	2,613
Stefano Volpetti	40,649
Shlomo Yanai	3,695
Group (25 persons)	2,257,279

Source: SEC[32]

[31] SEC, 2023.
[32] PMI, 2022.

Its organizational structure is divided into geographic segments: 1) European Union; 2) Eastern Europe; 3) Middle East and Africa; 4) South and Southeast Asia; 5) East Asia and Australia and; 6) Americas. It also has a Health and Wellness division, which includes the recent acquisition of Fertin Pharma A/S, Vectura Group plc (also known as Vectura Group Ltd.) and OtiTopic, Inc.[33]

The company reports a total value of US$731.1 billion in products shipped for distribution and sale in 2022 and net revenues of US $31.7 billion. PMI has close to 240 subsidiaries in approximately 80 countries around the world, most of which are located in the United States, Switzerland, the United Kingdom, Sweden and the Netherlands. In Switzerland alone, it has 22 subsidiaries. In Mexico, PMI is the majority owner of Philip Morris México Productos y Servicios, Sociedad de Responsabilidad Limitada de Capital Variable. Philip Morris México, Sociedad Anónima de Capital Variable and, Tabacos Desvenados, Sociedad Anónima de Capital Variable.

The company leases or owns several manufacturing, office, research and development facilities around the world. Switzerland is the company's headquarters. As of December 2022, it had 53 manufacturing facilities, 8 of which are dedicated to the production of heated tobacco units. The largest manufacturing facilities by volume are located in Turkey, Indonesia, Poland, Russia, Italy, the Philippines, Lithuania, the Czech Republic and Portugal.[34]

Map 1. Countries where PMI has the largest presence
(Number of subsidiaries)

Source: Own elaboration based on PMI annual reports

[33] PMI, 2022.
[34] PMI, 2022.

In this period, the WTO trade portal and the UN report that the countries with the highest participation in the export of tobacco products were: China (US $7.5bn); United Arab Emirates (US $5.8bn); Poland (US $4.4bn); Brazil (US $2.4bn) and; Romania (US $1.5bn).[35]

For Latin America, the main exporters of tobacco and manufactured products for 2022 were Brazil; the Dominican Republic; Nicaragua; Cuba; Honduras; Mexico; Argentina; Ecuador; Suriname; Trinidad and Tobago; Guatemala, and finally, Chile.[36]

In 2022, the company dealt directly with tobacco producers to supply 16% of its total demand. The company's main tobacco suppliers are located in Argentina, Brazil, China, Italy, Indonesia, Malawi, Mozambique, the Philippines, Turkey, and the United States.[37] Its supplier portfolio includes 360 companies, including carton manufacturers (packaging), acetate companies (filters), fine paper manufacturers (cigarettes) and manufacturers of inductors (susceptors) for tobacco heating devices.

In 2023, Manuel Chinchilla, newly appointed Managing Director of Philip Morris Mexico, emphasized that electronic alternatives are safe, and the company has even indicated that 80,000 people in Mexico are currently interested in new consumption alternatives, particularly in IQOS devices. The company has recognized that traditional cigarettes are becoming less and less viable.[38]

During 2021 and 2022, PMI reported that cigarette shipments of its largest brand, Marlboro, grew by 2%. Overall, all brands in PMI's portfolio, including Marlboro, L&M, Chesterfield, Parliament, Philip Morris, had a decrease in shipment volumes of 0.5% in 2022 compared to 2021. Meanwhile, heated tobacco units or heatsticks increased from 94 billion units in 2021 to 109 billion units in 2022, higher than any of its other cigarette brands, with a 14.9% increase in shipment volume (see Table 4).

[35] OMC y ONU, "Trade Map - List of markets for the selected product (Tobacco and manufactured tobacco substitutes; products, whether or not containing nicotine, ...)", 2023, https://www.trademap.org/Country_SelProduct_TS.aspx?nvpm=1%7c%7c%7c%7c%7c24%7c%7c%7c2%7c1%7c1%7c3%7c2%7c1%7c2%7c1%7c1%7c1

[36] WTO and UN.

[37] PMI, 2022.

[38] Perla Vallejo, Ya no más Marlboro, primero la salud: Manuel Chinchilla, Ecosfera, 29 de septiembre de 2023, https://ecoosfera.com/wellness/ya-no-mas-marlboro-primero-salud/

Table 4. Global PMI product volume

Cigarettes	2022	2021	Change
Marlboro	**244,649**	**239,905**	2.0%
L&M	**82,588**	**84,342**	(2.1)%
Chesterfield	**67,054**	**58,800**	14.0%
Parliament	**43,999**	**41,621**	5.7%
Philip Morris	**39,620**	**42,395**	(6.5)%
Others	**143,998**	**157,812**	(8.8)%
Total cigarettes	**621,908**	**624,875**	(0.5)%
Heated Tobacco Units	**109,169**	**94,976**	14.9%
TOTAL	**731,077**	**719,851**	1.6%

Nota: Philip Morris includes Philip Morris/Dubliss.

Source: PMI Annual Report 2022

The IQOS devices reflect the transformation that the tobacco industry has undergone in response to the unsustainability of its business model, not only because of the serious health effects, but also because of its incompatibility with global efforts to reduce environmental impact, ensure the highest levels of health and find more sustainable ways to address climate change.

Against this backdrop, the tobacco industry is looking to turn towards a business model based on the production of electronic devices, with the aim of presenting an innovative and technologically active face that will allow it to maintain its profitable earnings. This is justified by its attempt to move towards a model not dependent on cigarettes, which basically translates into new ways of managing addiction; ultimately, what continues to be marketed is nicotine, albeit in different forms. As one of the people interviewed for this report commented on HTPs, "They have realized that the business is not in tobacco, but in addiction." [39]

HTP supply chain

One of the central points of our analysis is the cumulative impacts of HTPs must be understood from the broader perspective of consumer health, and of the effects stemming from each of the production stages. For this reason, in this section we propose to describe in general terms what each stage of production consists of. Based on the components of IQOS products, Heatsticks are produced by PMI in its own manufacturing facilities, including its plant in Romania, which has announced that a production plant would be dedicated exclusively to Heets.[40] Last year,

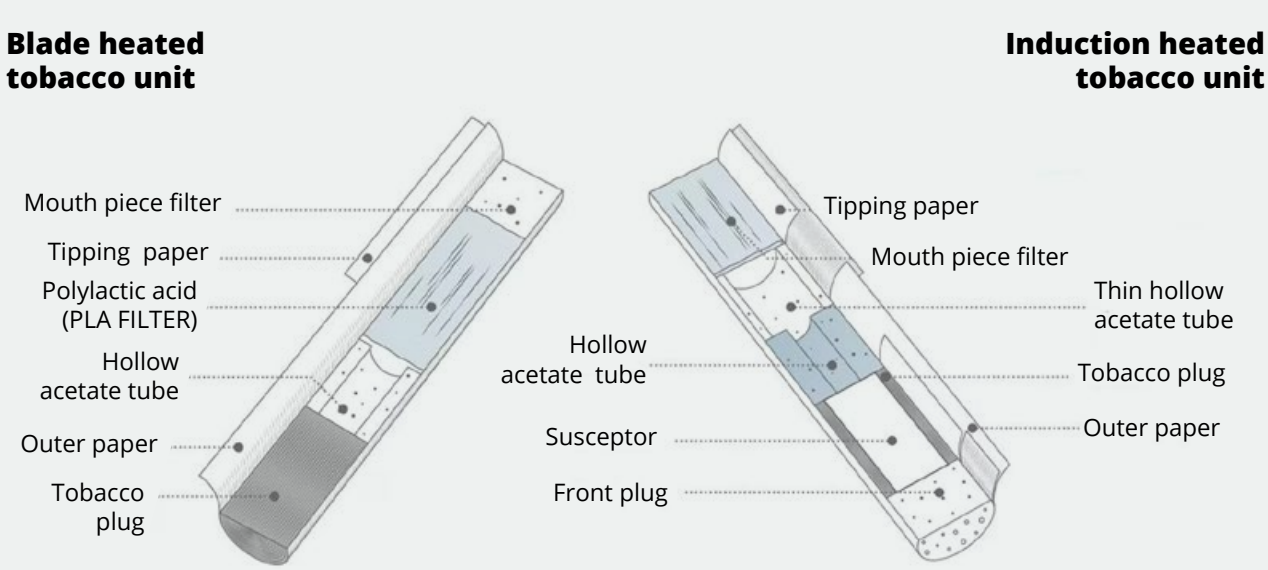
[39] Interview conducted by PODER on November 10, 2023.
[40] Nicoleta Banilla, Philip Morris starts production at new HEETS plant in Romania, SeeNews, November 27, 2017, https://seenews.com/news/philip-morris-starts-production-at-new-heets-plant-in-romania-592559

PMI's Indonesian subsidiary Hanjaya Mandala Sampoerna (HMSP) opened a new factory for the production of IQOS-Heets.[41]

The production of tobacco units is a process that begins with tobacco cultivation and curing. In 2022, PMI purchased tobacco leaves of various types, grades and styles around the world, mostly from independent tobacco vendors. In 2022, it dealt directly with farmers in several countries, including Argentina, Brazil, Italy, Pakistan, and Poland. In 2022, direct purchases from farmers accounted for approximately 16% of PMI's global tobacco leaf requirements.[42]

Subsequently, the tobacco leaves are mixed and crushed to be transformed into tobacco powder. This powder is mixed with water, glycerin, fibers and guar gum to make a paste.[43] This paste is then placed on metal bands and once it dries, the resulting sheets must be detached and placed on a band to form a coil. The pressing process is used to form rods of tobacco, which are then cut to incorporate the polymer filters and rolled together with the acetate tubes to create tobacco sticks.[44]

Figure 2. Tobacco unit components



Source: PMI Science

[41] 2 Firsts, Indonesia's HMSP opens new plant for IQOS-HEETS production, January 17, 2023, https://www.2firsts.com/es/news/es-indonesias-hmsp-opens-new-factory-for-iqos-heets-production
[42] PMI, 2022.
[43] PMI Science, https://www.pmiscience.com/en/news-events/scientific-update-magazine/manufacturing-the-tobacco-sticks-/
[44] PMI Science.

Table 5. Main tobacco suppliers for the production of Heets.

SUPPLIER	INPUTS
AGRICOLA JARAMILLO JARAGRI S.A.	Tobacco
COMPAÑÍA COLOMBIANA DE TABACO S.A.S.	Tobacco
LA FLOR DE COPAN HONDURAS S.A.	Tobacco
PHILIP MORRIS INVESTMENTS B.V.	Tobacco
PREMIUM TABACOS DO BRASIL LTDA	Tobacco
PREMIUM TOBACCO MALAWI LTD	Tobacco
TABACALERA SAN CASTILLO TABACASTILLO S.A.	Tobacco
TABACOS DEL PACÍFICO NORTE S.A. DE C.V.	Tobacco
UNIVERSAL LEAF TABACOS LTDA	Tobacco

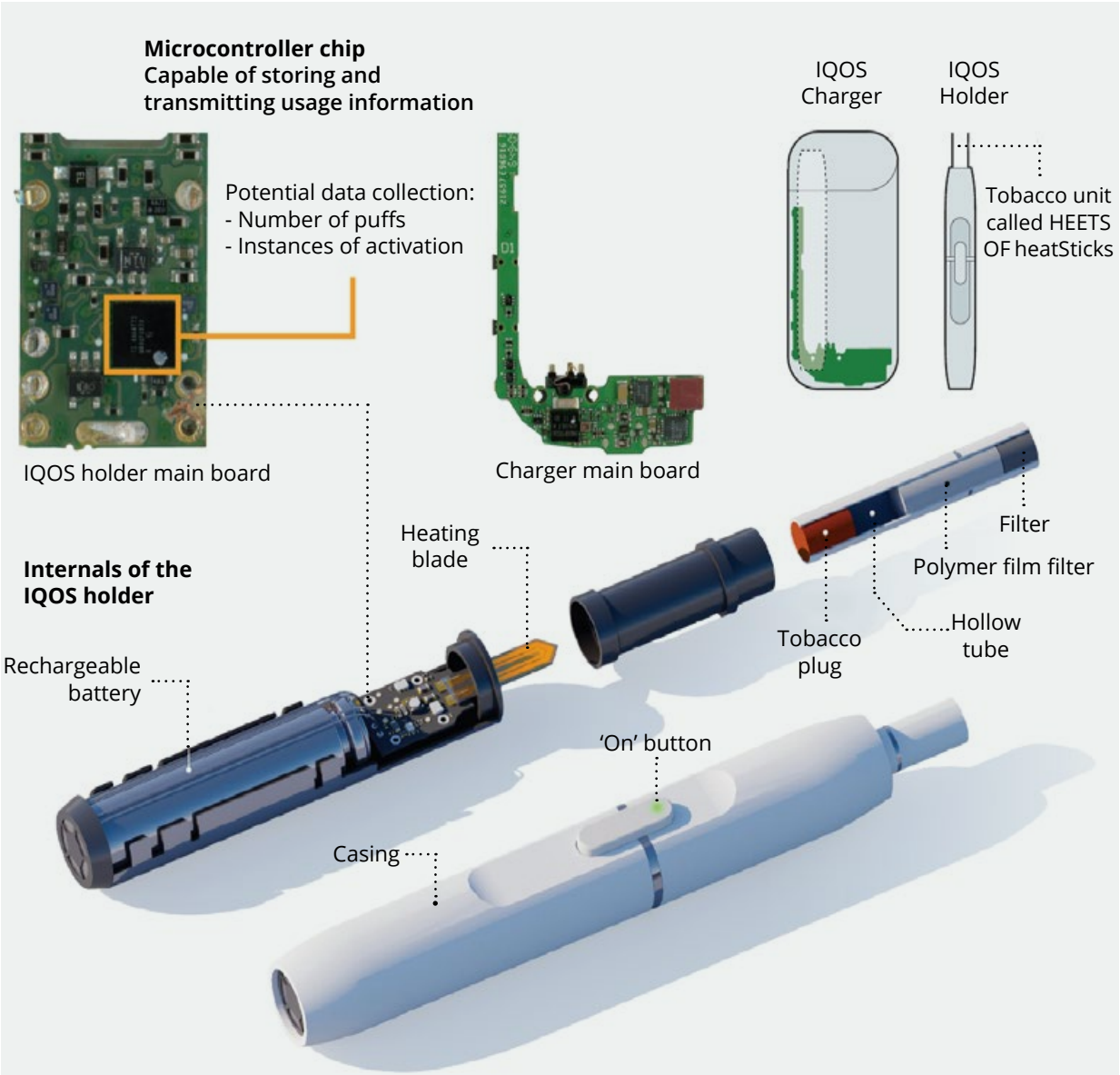
Source: Own elaboration

The production of the electronic components of the IQOS are primarily manufactured in Malaysia. According to public information, two companies dedicated to technology services, research and development, advanced manufacturing and supply chain solutions are involved in their production: Venture Corporation Ltd, founded in 1989, and Flex Ltd,[45] formerly known as Flextronics, and founded in Silicon Valley in 1969, both with facilities in Malaysia.[46] [47] ITM Semiconductor and MinebeaMitsumi have supplied various circuits for the assembly of IQOS devices.[48]

The supply chain for IQOS devices is highly dependent on extractive industries such as metallic and non-metallic minerals, some of which are considered critical minerals, i.e., those that are essential to the energy transition and its impact on the development of countries.[49] Among them are germanium, boron, gallium and arsenic, as well as gold, platinum and tungsten, among others, which are minerals necessary for the production of microprocessors or semiconductors, as well as electronic circuits or on the ceramic heating foil inside IQOS, which has traces of gold and platinum.[50]

[45] SGInvestors, Venture Corporation – Whispers from the other side, https://research.sginvestors.io/2018/12/venture-corporation-uob-kay-hian-research-2018-12-06.html
[46] Danielle Issac, Singapore Business Review.
[47] Flex, About, https://flex.com/company#our-history
[48] TheElec, ITM supplies battery protection circuit for IQOS e-cigarette, Jan. 11, 2021, https://www.thelec.net/news/articleView.html?idxno=2152.
[49] ECLAC, Critical Minerals for the Energy Transition, https://foroalc2030.cepal.org/2023/es/programa/minerales-criticos-la-transicion-energetica
[50] Sul Mulroy, Azo mining, November 14, 2019, https://www.azomining.com/Article.aspx?ArticleID=1532

Figure 3. Internal elements of the IQOS-HTPs



Source: Reuters based on TechInsights.[51]

As shown in the diagrams above, the IQOS devices require a controlled system for heating the tobacco units, which involves two main components: a resistor or stainless steel sheet, as in the case of Terea products, which is inserted into each of the consumables (called the susceptor) and that is heated by an induction system while allowing the tobacco to heat up (Figure 2).

[51] Tom Lasseter, Duff Wilson, Thomas Wilson y Paristosh Bansal, Reuters, 15 de mayo de 2018, https://www.reuters.com/investigates/special-report/tobacco-iqos-device/

In addition to the use of stainless steel, its production requires a high demand for rechargeable batteries, one located in the heater and one located in the charger, which in turn allows recharging the heater after having been used in two tobacco units. Lithium-ion batteries used in different applications, from automotive vehicles to electronic devices, require various minerals for their manufacture and depend heavily on lithium, cobalt, nickel, manganese, and graphite.[52]

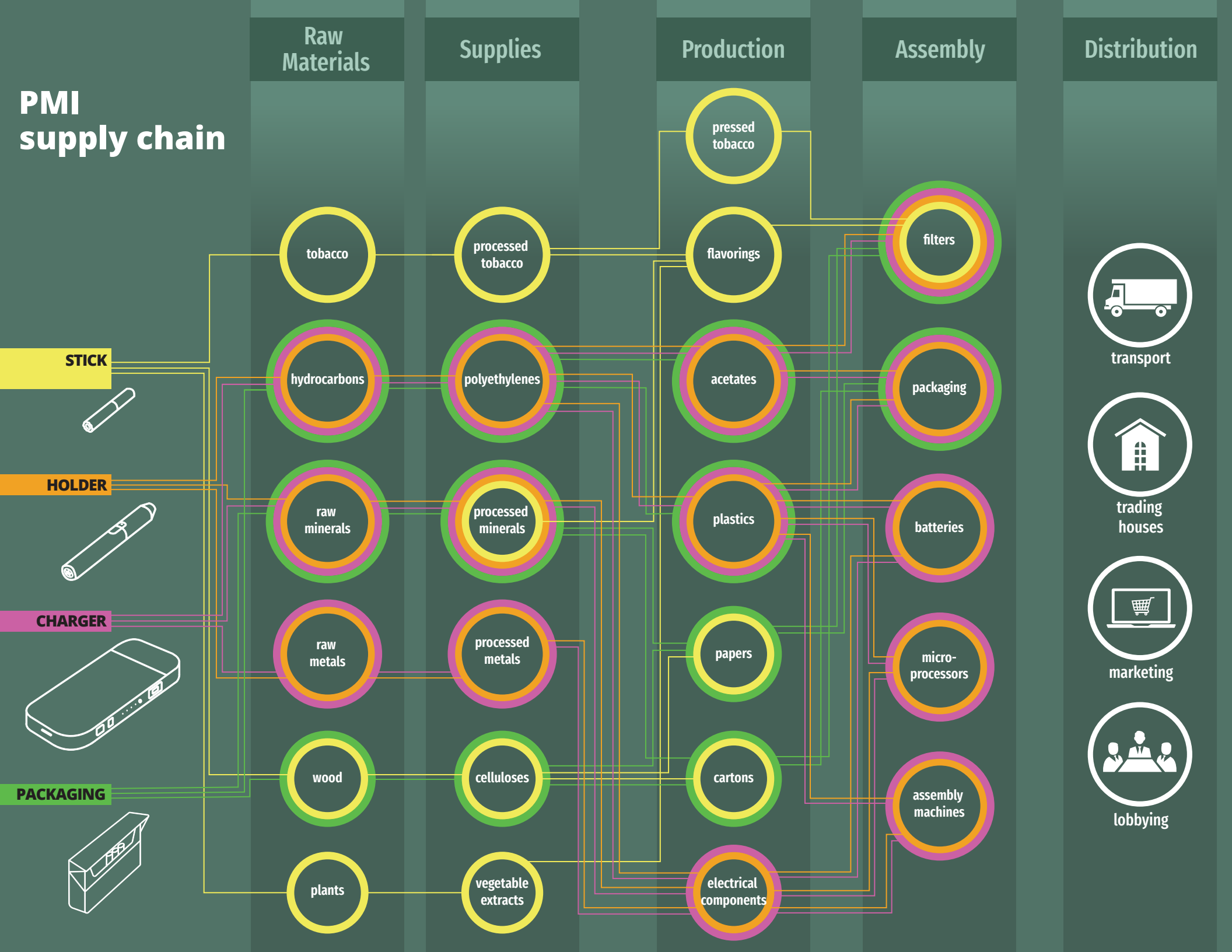
Currently, this mineral is being extracted in seven countries with the largest lithium reserves: Australia, China, Chile, Brazil, Argentina, Bolivia, Zimbabwe, and Portugal. The lithium triangle, comprising Argentina, Bolivia, and Chile, accounts for about 65% of the world's lithium resources and will account for 29.5% of total world production by 2020.[53]

The following infographic shows the HTP supply chain divided by each of the following: the tobacco units, the heater, the charger, and the packaging. It identifies the different stages involved in their production, from raw materials, inputs, production, assembly, and finally, distribution.

[52] IEA, Minerals required for clean energy transitions, https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions/mineral-requirements-for-clean-energy-transitions#abstract

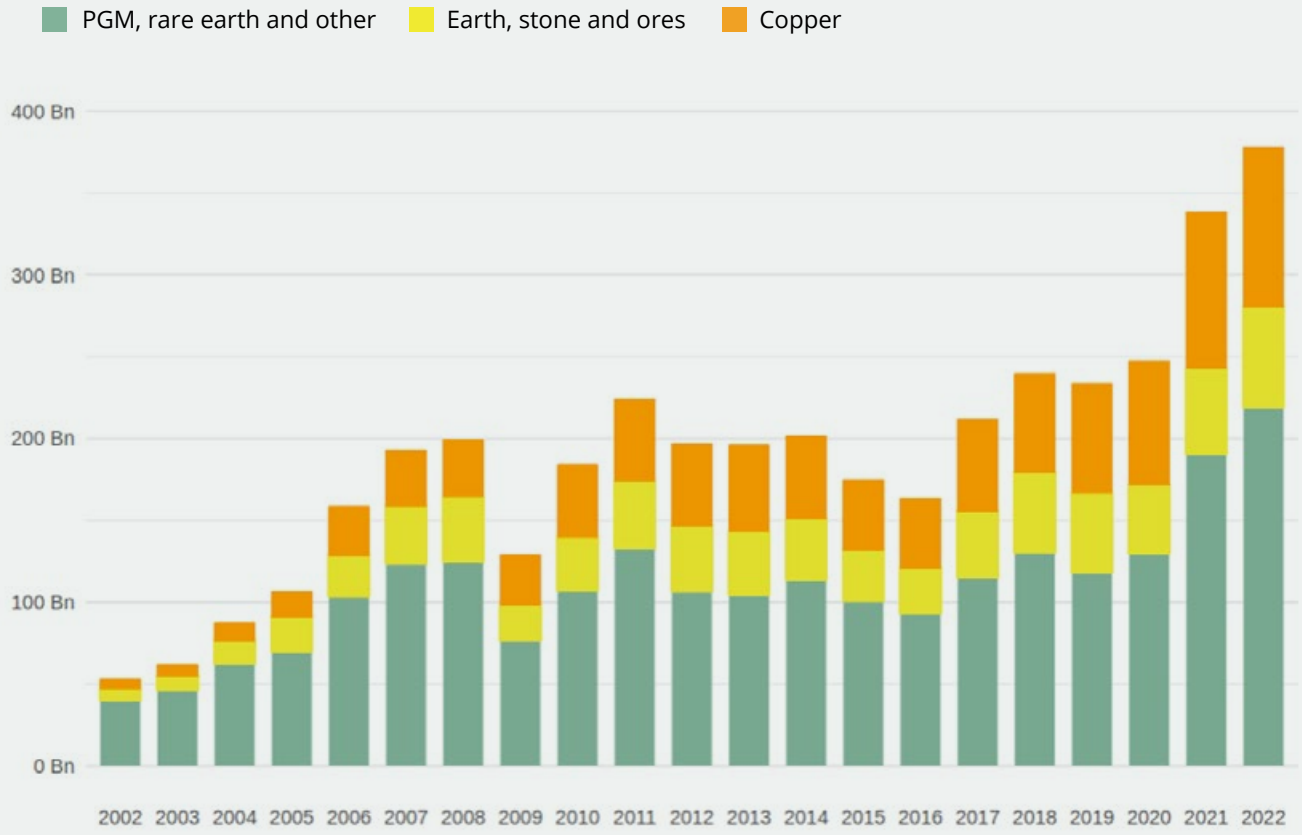
[53] Beatriz Olivera, Carlos Tornel and Aleida Azamar, Critical Minerals for Energy Transition. Conflictos y alternativas hacia una transformación socioecológica, Heinrich Boell Stiftung Foundation, 2022, https://mx.boell.org/sites/default/files/2022-12/minerales-criticos-e-book-ok.pdf.

PMI supply chain



Meanwhile, there is a growing trend, particularly among the extractive industries, which has popularized the term "energy transition," to suggest that this group of minerals, including copper, aluminum, and lithium, will be key to moving to an energy consumption scheme free of fossil fuels. This is because, for one, they are necessary for the production of batteries to replace hydrocarbons in the automotive industry or in the generation of energy by less polluting means. This seems to have a direct influence on the growing demand for these minerals. According to the WTO, the value of trade in unprocessed essential minerals has accelerated over the past five years. In 2021 and 2022 alone, there was increase of more than US $100bn in imports of critical minerals.[54]

Figure 5. Imports of Critical Minerals (US$ billions)



Source: WTO

[54] Monia Snoussi-Mimouni and Sandra Avérous, WTO, High demand for essential energy minerals puts pressure on supply chains, January 10, 2024, https://www.wto.org/spanish/blogs_s/data_blog_s/blog_dta_10jan24_s.htm

But mining also has negative impacts on multiple levels, both on the environment and on human rights. As global demand for minerals increases, so do the repercussions of their extraction in areas where their deposits are located.

Amid this complex debate over alternatives to the extractivist economic model, which is responsible for a significant part of the serious environmental damage inflicted on the world today, it is pertinent to ask how "sustainable" it is to increase the pressure on global mining in order to keep afloat the addiction business in which the production of heated tobacco devices is embedded. In an attempt to answer this question, in the following section, we focus on analyzing some of the main impacts we have identified around the electronic devices and the tobacco industry.

5. Analysis of the impacts of the HTPs

In this section, we address the main impacts associated with the HTP supply chain, to highlight where the greatest risks lie, but also to understand the real costs of their production and thus be in a position to evaluate the viability and sustainability of these products based on arguments beyond corporate financial claims.

As described in the previous section, the HTP supply chain is complex and rife with risk, as it is closely linked to activities that have negative effects at multiple levels. We will therefore divide this analysis into two parts, starting with some of the effects that have already been widely documented from tobacco production. In a second part, we address the impacts directly related to the extractive industries, to which the production of electronic devices is linked.

Some of the impacts of tobacco production are related to land use. Large areas of land are used for tobacco cultivation, which has led to deforestation and, consequently, to an increase in greenhouse gas emissions. Similarly, the use of large amounts of water and the use of chemicals and pesticides pose risks to people and the environment, while the curing of tobacco leaves also has notable environmental effects due to the methods used for drying.[55]

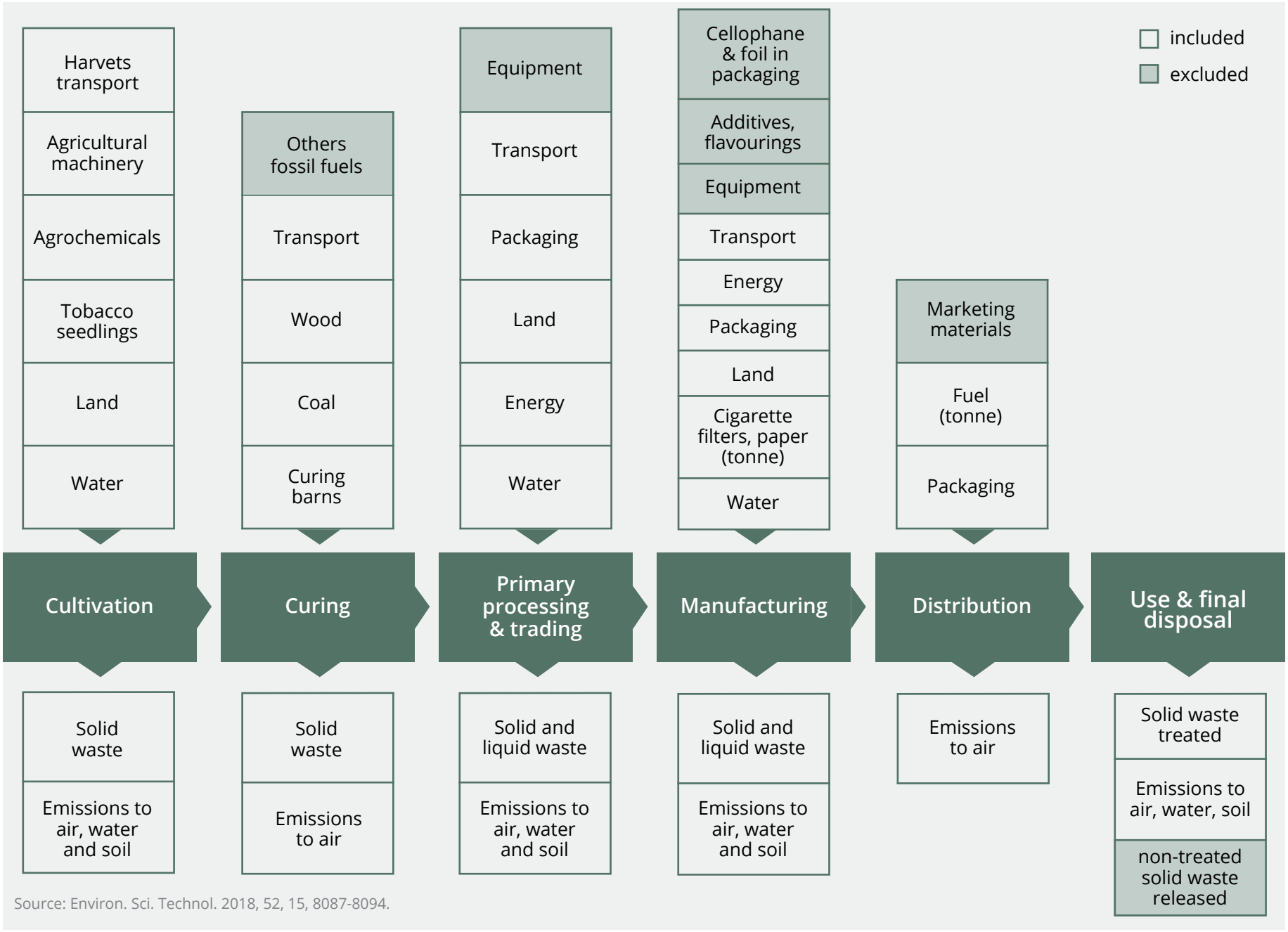
Tobacco consumption through electronic heating methods has sparked several debates about the effects on the health of consumers and those around them. Contrary to the FDA list of potentially harmful elements, research has found volatile organic compounds, polycyclic aromatic hydrocarbons, carbon dioxide and nitric oxide, which contradicts the claim that pyrolysis[56] of tobacco is minimized in IQOS.[57]

[55] Action on Smoking and Health, Tobacco and Environment. September 2021, https://ash.org.uk/uploads/Tobacco-Environment.pdf?v=1650647225

[56] Pyrolysis is a thermal decomposition that occurs in the absence of oxygen. Pyrolysis is always the first step in combustion and gasification processes, followed by total or partial oxidation of the primary products. Michael Klug, Revista de Química PUCP, 2012, Vol. 26, no. 1-2, https://revistas.pucp.edu.pe/index.php/quimica/article/download/5547/5543/.

[57] Barbara Davis, Monique Williams, Prue Talbot, IQOS: Evidence of Pyrolysis and Release of a Toxicant from Plastic, 2018, University of California, United States, https://www.researchgate.net/publication/323781469_IQOS_Evidence_of_pyrolysis_and_release_of_a_toxicant_from_plastic

Figure 6. Impacts of tobacco cultivation on the environment



Source: Environ. Sci. Technol. 2018, 52, 15, 8087-8094.

In addition to the health effects of HTP consumption, the HTP production supply chain involves the manufacture of electronic devices, including heating elements such as resistors or ceramic-coated metal sheets, semiconductors and electronic circuits, as well as lithium-ion batteries. As mentioned in the previous section, the manufacturing of these devices depends on the use of different materials such as metallic and non-metallic minerals, including germanium, boron, gallium and arsenic, as well as gold, platinum and tungsten, lithium, cobalt, nickel, manganese and graphite.

Some of the minerals used in the production of electronic devices are considered conflict minerals: tin, tungsten, tantalum and gold. These are raw materials that are often mined illegally and without state control in conflict regions or high-risk zones such as the DRC or one of its neighboring countries, where violations of human rights and international law are closely linked to this activity.[58]

The extraction of these minerals can sometimes be used to finance armed conflicts in some countries. Since 2014, companies registered in the United States are required to file an annual report with the SEC to disclose whether they use any conflict minerals. This is based on Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Although the Dodd-Frank Act only applies to U.S. companies, their suppliers must also comply based on contractual obligation).[59]

Although companies are obligated to publish the list of suppliers from which they source their minerals and make explicit their rejection of obtaining minerals that finance armed conflicts, this regulation has great limitations. It is extremely difficult for companies to ensure that their materials are conflict-free throughout their supply chain, and they are limited to stating that if they find one among the foundries that supply them with materials, they will seek to replace it with another.

On the other hand, one of the main concerns about the impacts of mining has to do with the water crisis caused by the extraction of lithium for the battery industry in producing countries such as Bolivia, where it directly affects food production, livestock breeding, the tourism industry, and drinking water sources in general, while other impacts, such as air, water and soil pollution, are generally manifested over time.[60]

Nickel is another material used mainly in the manufacture of high-grade steel and, increasingly, in batteries. This material is extracted from the deep sea and has resulted in damage to freshwater and marine ecosystems.[61] [62]

Platinum group metals are often traded as intermediate goods to produce a wide range of manufactured goods (from catalytic converters to cell phones). South Africa is the world's largest

[58] IMDS Professional Environmental Product Compliance, Conflict Minerals Specialty Information, https://www.imds-professional.com/es/informacion-especializada-minerales-de-conflicto/
[59] IMDS Professional Environmental Product Compliance.[60] Beatriz Olivera et al., p. 80.
[60] Beatriz Olivera et al., p. 80.
[61] Beatriz Olivera et al., p. 72.
[62] Jacobo García, El País, Así se compra un Estado. Cómo una minera rusa corrompió todos los poderes en Guatemala, March 6, 2022, https://elpais.com/internacional/2022-03-06/asi-se-compra-un-estado-como-una-minera-rusa-corrompio-a-todos-los-poderes-en-guatemala.html

producer of these metals (over 90% of global reserves). In 2012, a series of strikes by workers demanding better wages broke out at various platinum mines in South Africa, and 34 people died in the resulting conflicts. Its exploitation is associated with pollution of the air, streams and wells due to the explosive materials used for its extraction.[63] The primary minerals associated with platinum ore are known as platinum group minerals (PGMs), which include platinum, palladium, rhodium, iridium, osmium and ruthenium.[64]

The following table lists some of the main impacts associated with the minerals most prominently used to produce electronic devices, semiconductors and rechargeable lithium batteries.

Table 6. Impacts associated with some conflict and critical minerals

Minerals	Producing countries (2022)	Main Importers	Impacts associated with its exploitation
Platinum	South Africa, Russia, Canada, United States, Zimbabwe.	United States, Germany and Japan.	Health impacts derived from its extraction.
Tungsten	Rwanda, Spain and Bolivia.	China, the United States and Austria.	Human rights violations in conflict zones such as child labor, sexual violence, disappearances, forced resettlement.
Lithium	Chile, Argentina, Bolivia (Lithium Triangle), Australia, China.	China, South Korea and Japan.	Contamination of water, air, soil. Depletion of water resources. Loss of flora and fauna.
Cobalt	Democratic Republic of the Congo.	China, Morocco and Finland.	Financing of armed conflicts in the DRC. Eviction and dispossession of land and housing in DRC. Poor working conditions and child exploitation.
Nickel	Indonesia, Philippines, New Caledonia, Russia.	China, Canada and South Korea.	Contamination of freshwater and marine ecosystems. Lack of consultation with indigenous communities, assassinations, criminalization of environmental defenders and journalists.

[63] David Bollero, Público, El drama del platino: contaminar para dejar de contaminar, November 17, 2012, https://www.publico.es/ciencias/drama-del-platino-contaminar-dejar.html.
[64] WTO, Information Note on Trade in Intermediate Goods: Trade in Platinum Group Metals in 2020, https://www.wto.org/spanish/res_s/statis_s/miwi_s/info_note_pgms_s.pdf.

Copper	Chile, Peru, China and DRC	China, Germany and United States	Affecting the rights of communities, contamination of the envi-ronment and water sources and dispersion of air pollutants, poor working conditions, accidents.
Tin	Indonesia, China, Myanmar and Peru.	China, EU and Japan.	"Artisanal" extractive activity. Soil and water contamination. In some African countries, child labor has been documented, as well as control of its exploitation by armed groups.
Gold	China, Russia, Australia.	Switzerland, China, United Arab Emirates.	Impact on water availability, air, water and soil contamination.

Source: Own elaboration

Table 7. Matrix of impacts linked to the HTP supply chain

Process	Health	Environment (land, territory, water, air, biodiversity)	Child labor/ exploitation	Armed conflicts	Human rights of communities
Tobacco Cultivation	Chemicals and pesti-cides	Large amounts of land, water, deforesta-tion, deforestation			Possible im-pacts on the territory
Tobacco pro-cessing and manufactur-ing units		Carbon emissions			
Mining	Exposure to toxic substances	Water stress, air po-llution from open pit mines, contamination of water sources and soil through seepage, impact on ecosystems.	Child exploi-tation. Sexual exploitation around extractive projects, risk of accidents.	Illegal ex-traction of minerals for the financing of arms and the prolonga-tion of armed conflicts.	Lack of consent from indigenous communities. Criminaliza-tion of human rights defenders. Projects that do not comply with international due diligence stan-dards, disruption of local organiza-tional and econo-mic dynamics.

Manufac-turing of electronic devices		Low salaries
Packaging	GHG emissions	
Distribution	High GHG emissions	
Use and disposal	Waste contamination	

Source: Own elaboration.

Main markets for HTPs

The introduction of HTPs and their large-scale distribution has expanded the business model and its supply chain, making it necessary to outsource part of the process related to the assembly and manufacture of electronic devices. In terms of consumption, the data show that some high-income regions of the world are the biggest consumers, while middle and low-income regions continue to consume little of these products, although in some cases they are gaining a foothold.

The following table shows the HTP shipment volume by geographic region. The countries of the European Union, mainly Italy, Germany, Poland, France and Spain, accounted for the highest shipment volume in 2022, and were also those showing the highest growth from 2021 to 2022, surpassing East Asia and Australia, which up until 2021 was the area with the highest shipment volume. The regions with the lowest shipment volume are the Americas, including Argentina and Mexico, and South and Southeast Asia, although it is noteworthy that in 2022, Asia almost doubled its shipment volume from 240 million units in 2021, while Mexico's figure fell from 576 to 532 in 2022 (see Table 8).

Table 8. HTP shipment volume by region

Heated tobacco units	2022	2021	2020
European Union	**39,515**	**28,208**	19,842
Eastern Europe	**24,806**	**25,650**	20,898
Middle East & Africa	**4,456**	**2,140**	1,022
South & Southeast Asia	**469**	**240**	36
East Asia & Australia	**39,391**	**38,162**	33,862
Americas	**532**	**576**	451
Total Heated Tobacco Units	**109,169**	**94,976**	76,111

Source: PMI annual report 2022

Table 9. Net revenues by region

	For the year ended december 31		
Combustible tobacco products:	**2022**	**2021**	**2020**
European Union	7,212	8,211	8,052
Eastern Europe	2,410	2,240	2,250
Middle East & Africa	3,567	3,110	3,005
South & Southeast Asia	4,372	4,385	4,395
East Asia & Australia	2,138	2,414	2,468
Americas	1,804	1,706	1,577
Swedish Match	70	-----	-----
TOTAL	**21,572**	**22,067**	**21,747**

Smoke-free products	**2022**	**2021**	**2020**
Smoke-free products excluding wellness and healthcare:			
European Union	4,907	4,064	2,650
Eastern Europe	1,315	1,304	1,128
Middle East & Africa	334	183	83
South & Southeast Asia	23	11	1
East Asia & Australia	2,994	3,539	2,961
Americas	99	137	124
Swedish Match	246	-----	-----
Sub-total PLH	**9,919**	**9,237**	**6,947**
Wellness and Healthcare	271	101	-----
TOTAL	**10,190**	**9,338**	**6,947**
Total PMI net revenues	**$31,762**	**$31,405**	**$28,694**

Source: PMI 2022

PMI revenues by region show that SFPs have the largest presence in the European Union. While combustible tobacco products experienced a decline of about US $1 billion from 2021 to 2022, SFPs grew by about US $800 million over the same period. While in the EU, SFP revenues represent 68% of combustible tobacco products, in Eastern Europe they reach about 50% of PMI's revenues from combustible tobacco products. In the case of the Americas, that percentage of SFPs in relation to revenues from combustible tobacco products represents 5%, compared with only 0.52% in Southeast Asia and 9.3% in Africa (see Table 9).

Thus, the HTP supply chain, like others based on the intensive exploitation of natural resources, is a business that deepens the capitalist model based on neo-colonial extractivism, in which, paradoxically, the least significant markets are those where the environmental and social liabilities and the consequences of human rights violations remain and are most acutely felt.

6. Conclusions

PMI has announced that it is working to overhaul its product portfolio to reduce cigarette consumption and increase the number of so-called smoke-free products. However, its total revenues still depend to a large extent on the sale of the former, so total substitution seems to be a long-term plan. In the meantime, the company has made a stronger foray into the electronic devices industry, including HTPs.

HTPs have allowed PMI to skirt control policies in various countries, such as Mexico, where despite being banned, these products continue to be distributed. It has also managed to promote its IQOS devices through a narrative based on their benefits, many of which come from technological development and the application of innovation. Similarly, it has managed to cobble together marketing campaigns through the use of social networks, exploiting the loopholes of tobacco control measures.

HTPs are electronic devices whose supply chain depends to a large extent on the mining industry. In this sense, their production is closely linked to the chain of impacts that their extraction generates around the world, such as environmental degradation, water scarcity, contamination of aquifers and, consequently, on the health of indigenous peoples and communities, in addition to the lack of free, prior and informed consultation in the development of many of these extractive projects, the criminalization of environmental and human rights defenders, violence, child exploitation, displacement and the financing of armed conflicts, among many others.

The complexity of supply chains and the lack of corporate transparency make it extremely difficult to know the level of risk that companies have of acquiring inputs from contexts of human rights violations. In this sense, cataloging these devices as "reduced risk" products is a fallacy because it fails take into account the cost of their production and the impacts generated by each of the inputs required for their production, in addition to the challenges they face in terms of ongoing research on the health effects on users and non-users.

Paradoxically, the impacts generated by the capitalist-extractivist model of accumulation on which these electronic devices are based, have more profound effects on people living in historically discriminated contexts such as indigenous peoples and communities, women and girls, people living in poverty and migrants, who live and are located in middle and low-income coun-

tries. On the other hand, the most important HTP consumption markets are located in middle- and high-income countries; a relationship that reveals the deep colonialist spirit surrounding the business of electronic tobacco devices. As long as there is a plethora of electronic devices aimed at meeting specific needs, heated tobacco devices are bound to find new and more innovative ways to perpetuate the profits of addiction.

7. Recommendations

To governments:

- Guarantee rights to health, information, and ensure that companies comply with their obligations to respect human rights.
- Policies and guidelines should be developed that are consistent with the highest standards of tobacco prohibition worldwide.
- Regulate and monitor the lobbying activities of major tobacco companies on the executive and legislative branches of government.
- Limit the participation of public figures in advertising (even secondary) that promotes tobacco consumption, since the dependence is the same whether it is combustible or aerosol.

To companies:

- Establish channels that provide clear and less confusing information regarding the impacts and collateral damage of tobacco use in Mexico.
- Disclose the itemized expenses spent on advertising, lobbying and community work.
- Prepare statements (by independent auditors) that describe the environmental (not just health) impacts derived from a transition in the production of electronic devices. According to our information, new devices increase the ecological footprint of the new consumption model.
- Establish mandatory measures for companies to conduct human rights due diligence and transparency throughout their supply chain.

To civil society:

- Include a value chain analysis of the new electronic devices, because a truthful reporting of the impacts associated with the “Smoke-Free Future” campaigns requires this information. A comprehensive view of this new consumption model shows that the production model multiplies environmental impacts, since the inclusion of critical minerals and electronic industries increases the environmental footprint of tobacco companies.

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