



**GLOBAL
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AGAINST TRANSNATIONAL
ORGANIZED CRIME

VIOLENT AND VIBRANT

MEXICO'S AVOCADO BOOM
AND ORGANIZED CRIME

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EXECUTIVE SUMMARY

The growing consumption of avocados globally has increased interest in the social, economic and environmental impacts of avocado production in Mexico, and in the political-criminal networks that have expanded around the industry.¹ However, most studies tend to present organized crime and the use of violence as barriers to the market economy, arguing that criminal actors are only an obstacle to legal economic accumulation and trade.² These assumptions have led to narratives of 'state vs drug cartels' and 'avocado producers vs drug cartels' in Michoacán, the Mexican state that has become the world's leading producer of the fruit³. These narratives ignore the complex history of agro-industrial development, state interventions and the growth of criminal markets in the region.⁴

Over the past decades, the legal market's exponential growth has been accompanied by rising levels of violence and insecurity. Between 1994, the first year that the North American Free Trade Agreement was applied, and 2021, avocado production increased by 213% and value increased by 7 071%,⁵ in a market that has included the European Union since 2000, when the first EU-Mexico free trade agreement was signed.⁶ Contrary to studies that suggest market growth and violence are mutually exclusive, homicides increased as avocado business boomed. Between 2005 and 2015, homicides fluctuated between 17 and 24 per 100 000 people per year in Michoacán. However, between 2016 and 2021, as the production value of avocados exploded, homicides increased as well, reaching 54 homicides per 100 000 people (2 628 in total).⁷

Moreover, in a region that experiences economic booms and high levels of insecurity, violence is a valuable political and economic tool. It enables new territories, markets, and value chains to be conquered and agricultural borders to expand, which happened systematically with avocados. Numerous studies have shown that in Mexico, and Michoacán in particular, public support for the agro-industry, private sector and organized crime tends to maintain unstable yet constant relationships that are characterized by confrontation and collusion.⁸ Therefore, the idea that crime is expanding to the detriment of the private sector is partly misleading. In fact, as this policy report shows, connections between public authorities, local elites and violent groups are particularly strong at the local level and central to the expansion of the market.

Most studies on avocado production and violence focus on the relationship between Mexico and the USA because Mexico consolidated its position as the leading trading partner and supplier of the US in the first half of 2023.⁹ However, in 1997, Mexico became the first Latin American country to sign an Economic Partnership, Political Coordination and Cooperation Agreement (Global Agreement) with the EU. Since the agreement came into force in 2000, bilateral trade has more than tripled and the EU is now Mexico's second-biggest export market.¹⁰ In 2013, leaders committed to update the EU-Mexico Global Agreement and final negotiations are in process, with ratification possibly in 2023.

In recent years, the EU has published various regulations aimed at improving vetting practices over imported goods. In particular, the 2023 EU's deforestation regulation requires companies trading in cattle, cocoa, coffee, oil palm, rubber, soya and wood, as well as products derived from these commodities, to conduct diligence on the value chain and to certify that the imported goods do not result from recent deforestation, forest degradation or infraction of local environmental and social laws.¹¹ Although not included in the list of commodities, avocados and their production are heavily linked to environmental harm and organized crime, which is involved in the entire production and export process, and at the core of the gray area between licit and illicit markets.¹²

In spite of the avocado industry's contribution to trade and local development, social organizations in Mexico and the EU have called for human rights and environmental protection to be placed at the heart of the discussions.¹³ Avocado production and exports – both to the US or the EU – display many worrying signs, of criminal organizations being involved in the market, documented violence, and environmental and health impacts.

As the EU and Mexico continue discussions about 'modernizing' the Global Agreement, this report highlights the complex relationships that exist between organized crime, public authorities and the private sector in the production of avocados. To better understand these links, this report argues that the illegality of certain activities and actors (for example, drug trafficking and drug cartels) are not a 'parasitic phenomenon', but are deeply embedded practices in local society and integral to the history of local and regional capital accumulation.¹⁴ For example, since the 1970s, local and international growth of Michoacán's drug economy was connected with public and private investments in infrastructures supporting the region's agricultural development.¹⁵ Then, in the 1980s and 1990s, large-scale organization of drug trafficking was facilitated by the connections built between Michoacán and foreign consumer markets, initially the USA and then the EU.

The region is both attractive to and dependent on fluctuations in international legal and illegal demand. The booming avocado industry has expanded in parallel to criminal organizations. Like limes, Michoacán avocados are a prime example of a flourishing legal market deeply infiltrated by criminal actors – and the free trade agreements acted as catalyzers for profit and market expansion, while violence has continued to rise. The avocado industry is also synonymous with serious environmental damage. In Michoacán, the increased international demand led to an expansion of land dedicated to avocado production, to the detriment of forest cover, resulting in deforestation and the subsequent degradation of soil, water and biodiversity. This agricultural expansion relied on the use of violence by multiple actors interested in turning forests and protected areas into agricultural land. According to governmental sources, 80% of the avocado orchards in Michoacán were established illegally, initially through unauthorized land use that was then turned into legal parcels thanks to corruption of public authorities.¹⁶

According to the National Forestry Commission (CONAFOR), between 2001 and 2018, gross deforestation occurred on 269 676 hectares (ha) in Michoacán (14 982 ha per year), of which 70.69% were transformed into grasslands and 28.16% into cropland.¹⁷ The substitution of forest by orchards is also associated with a reduction of fauna species, while studies found traces of chemical pesticides in the aquifer, resulting contaminated water for human consumption and associated health diseases.¹⁸ These impacts are directly tied to international demand, between 2012 and 2019, avocado trade from Mexico to Europe went from less than €10 million to a record €282 million.¹⁹

This policy report presents how international demand, flourishing capitalism and organized crime groups have shaped the functioning of a multi-billion-dollar industry in which politico-criminal relations play a crucial role. It also shows the extent to which the search for a solution to deforestation – in the context of the EU 2023 regulation, for example – cannot be satisfied solely through environmental certifications. Even if public security and judicial measures were effective in prevent illicit agricultural expansion, which is not the case, illegal deforestation cannot be tackled without addressing the systemic corruption and inability of state agencies responsible for protecting the environmental and overseeing agriculture to carry out their missions. Similarly, the fight against criminal groups' involvement in avocado production would require a decisive commitment by the public prosecutor's office, something which is only a distant project, given the levels of impunity in Michoacán.

To understand the dynamics of violence that accompanied the avocado boom, and the potential impact of further liberalizing trade between Mexico and the EU, this report takes a political economy approach that combines fieldwork, interviews, and quantitative and spatial analysis. It presents the history of violent, rural capitalism in Michoacán, disentangles the social, economic and environmental impacts of the avocado trade, and proposes potential solutions.



MICHOACÁN: THE WORLD'S AVOCADO CAPITAL

Mexico is known as the historical cradle of potato, tomato, vanilla and chocolate production, but is less known for avocados, which are the pride of Michoacán, a state in the West. For over 10 000 years, the avocado, or *ahuacatl* (in Nahuatl, an Uto-Aztecan language) has been a staple food in Mexico but was only exported from the 1980s. The history of the avocado production in Mexico is marked by key political moments. At the beginning of the twentieth century, avocado industry was modest but growing, destined mainly for the domestic market.²⁰ Between 1900 and 1907, production grew from 6 908 tons²¹ to 16 718 tons.²² The first defining moment was in 1914, when the United States imposed a ban on Mexican avocados that would last more than 80 years (until 1997). The ban was based on phytosanitary reasons, as the presence of borers in the fruits could contaminate plantations in the US but was also a protectionist measure taken to protect the emerging Californian avocado industry from Mexican competitors.²³

Then, in 1917, Mexico's new Constitution gave the government the power to enact land reform, through expropriating *haciendas* (estates) and redistributing the land among peasants through the collective system of *ejidos*.²⁴ During the decades that followed, the government promoted an export-oriented agriculture. From the 1960s, agriculture modernized, with the development of agronomic research and the increasing use of chemical pesticides to enhance yields and meet other countries' phytosanitary standards. In Michoacán, from the late 1940s to the 1980s, the federal and state governments decided to revert partially to land collectivization and invested in extensive irrigation systems, mechanization and transport infrastructure, with the aim of developing the production of export commodities – mainly melon, lemon and cotton at that time – in the central Apatzingán valley.²⁵

To protect the upstream rivers and guarantee that the valley would receive enough water, between 1934 and 1973, the Mexican government passed a series of bans on forest logging in the Purhepecha plateau, where a large part of Michoacán's avocado production is currently concentrated. However, instead of protecting the forest and its water resources, these bans fueled the development of widespread corruption, whereby the state's forestry commission arbitrarily granted extraction permits.²⁶ During the early 1960s, several producers from the Apatzingán valley used their political connections within the forestry commission to buy or rent lands in the Purhepecha plateau, which they subsequently deforested illegally and introduced the first industrialized avocado plantations in the region.²⁷

In 1970, the USA refused Mexico's first request to allow the exportation of Michoacán avocados and then, in 1975, denied a second request from the state of Sinaloa.²⁸ However, Mexico continued to develop other export markets in Japan, Canada and (from 1982) several European countries.²⁹ Domestic demand for avocados also continued to grow: between 1960 and 2000, the annual domestic consumption of avocados increased from 200 grams to 10 kilograms per person.³⁰

From 1990, the USA and Mexico resumed their bilateral negotiations for the export of avocados and, in 1994, signed the North American Free Trade Agreement (NAFTA). Finally, in 1997, the US Department of Agriculture (USDA) approved the commercial import of avocados from Michoacán, subject to strict phytosanitary regulations. The initial approval was for four municipalities in Michoacán – Uruapan, Periban, Tancitaro and Salvador Escalante – to export to 19 states in the US. In 1997, Mexico also became the first Latin American country to sign an Economic Partnership, Political Coordination and Cooperation Agreement (Global Agreement) with the EU, which

came into force in 2000. The Global Agreement covered political dialogue, trade relations and cooperation, and was expanded to a free trade agreement including goods (in 2000) and services (in 2001). Since then, bilateral trade between Mexico and the EU has more than tripled. Today, the EU is Mexico's second strongest export market and second largest foreign direct investor (after the US) – between 2012 and 2019, Mexico's exports of avocados to Europe grew from less than €10 million to €282 million.³¹

The Asociación de Productores y Exportadores de Aguacate de México (APEAM, Mexican association of avocado producers and exporters) has played a crucial role in organizing the avocado production and ensuring quality standards. Established in 1997, the APEAM works as a central trade union and holds enormous economic and political power in Michoacán – and Mexico as a whole. It helped Michoacán avocados to gain recognition in the international market and municipalities to be granted export certifications to the US and the EU.

The impact of market liberalization on avocado production

The Mexican association of avocado producers and exporters (APEAM) has played a crucial role in organizing the avocado production and ensuring quality standards. Established in 1997, the APEAM works as a central trade union and holds enormous economic and political power in Michoacán – and Mexico as a whole. It helped Michoacán avocados to gain recognition in the international market and municipalities to be granted export certifications to the US and the EU.

In 2021, Mexico was the world's largest producer of avocados, producing 2.4 million tons of avocados, or 28% of the global production, followed by Colombia (11%) and Peru (9%).³² About 80% (980.9 million tons) of Mexico's avocados were exported to the USA.³³ According to the UN's Food and Agriculture Organization (FAO),³⁴ between 1994 and 2021, Mexico's avocado exports increased by 3 536% in volume (from 33 750 to 1 227 070 tons) and by 7 071% in value (from US\$41.5 to US\$2 976 million, in real 2021 US\$).³⁵

From 1994 (the first year that the NAFTA applied), avocado production in Mexico grew exponentially. Between 1994 and 2022:

- Production volumes increased by 213%, from 0.8 million to 2.52 million tons per year.
- Average yield increased by 21%, from 8.9 tons/hectares (ha) to 10.8 tons/ha.
- Production value (in real 2022 Mexican peso, \$MXN)³⁶ increased by 528%, from \$10.11 billion MXN to \$63.45 billion MXN.
- The average price paid to producers³⁷ (in real 2022 \$MXN)³⁸ increased by 98%, from \$12 634 MXN to \$24 973 MXN per ton.
- Land dedicated to avocado production increased by 173%, from 92 379 ha to 252 133 ha.

This boom was driven by the expansion of land dedicated to avocado production, as the production volume and value increased more than the yields per hectare and average price per ton paid to producers.

In 2022, avocados were Mexico's second most valuable crop (after corn) based on production value,³⁹ out of the almost 450 types of crops monitored by the Servicio de Información Agroalimentaria y Pesquera (SIAP, Mexico's agri-food and fisheries information service). Although only 1.5% of land in Mexico was dedicated to avocado production⁴⁰ in 2022 (up from 0.4% in 1980 and 0.6% in 1994), as Figure 1 shows, the surface area and production volumes have accelerated since the mid-2000s (although growing since at least 1980⁴¹).



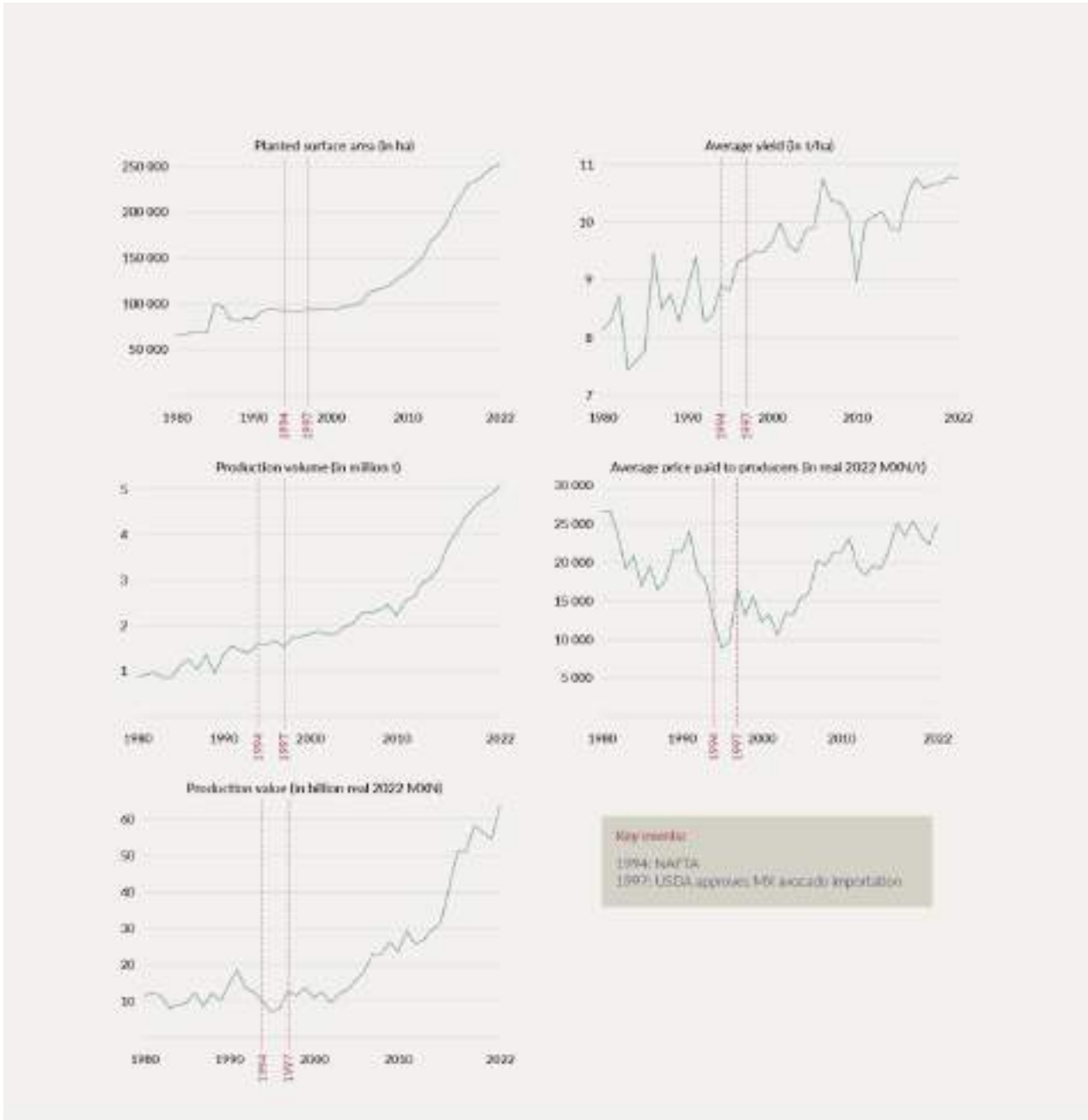


FIGURE 1 Mexico's avocado main production statistics, 1980–2022.

Source: Authors, with data from the SIAP

A geographic overview of avocado production in Michoacán

In Mexico, avocado production is concentrated geographically, predominantly in Michoacán (Figure 2). In 2022, this state accounted for 70% of the land dedicated to avocados (compared to 47% in 1980), 73% of the avocados produced by Mexico (compared to 33% in 1980) and 74% of the production value (compared to 29% in 1980). In 2015/16, the state was also responsible for 85.9% of the country's avocado exports,⁴² valued at US\$1.8 million per year.



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State	Planted surface area (in % of the country's total)	Production quantity (in % of the country's total)	Production value (in % of the country's total)
Michoacan	70%	73%	74%
Jalisco	11%	12%	15%
Estado de México	5%	5%	4%
Nayarit	3%	3%	2%
Morelos	2%	2%	2%
Other states	9%	5%	3%

FIGURE 2 Mexican states' participation in national avocado production, 2022.

Source: Authors, with data from the SIAP

Avocado production in Michoacán is located mostly on the slopes and surrounding valleys of the Neovolcanic Tarasca and the Southern Borderline Scarp, which are subprovinces in the Trans-Mexican Volcanic Belt (Figure 3).



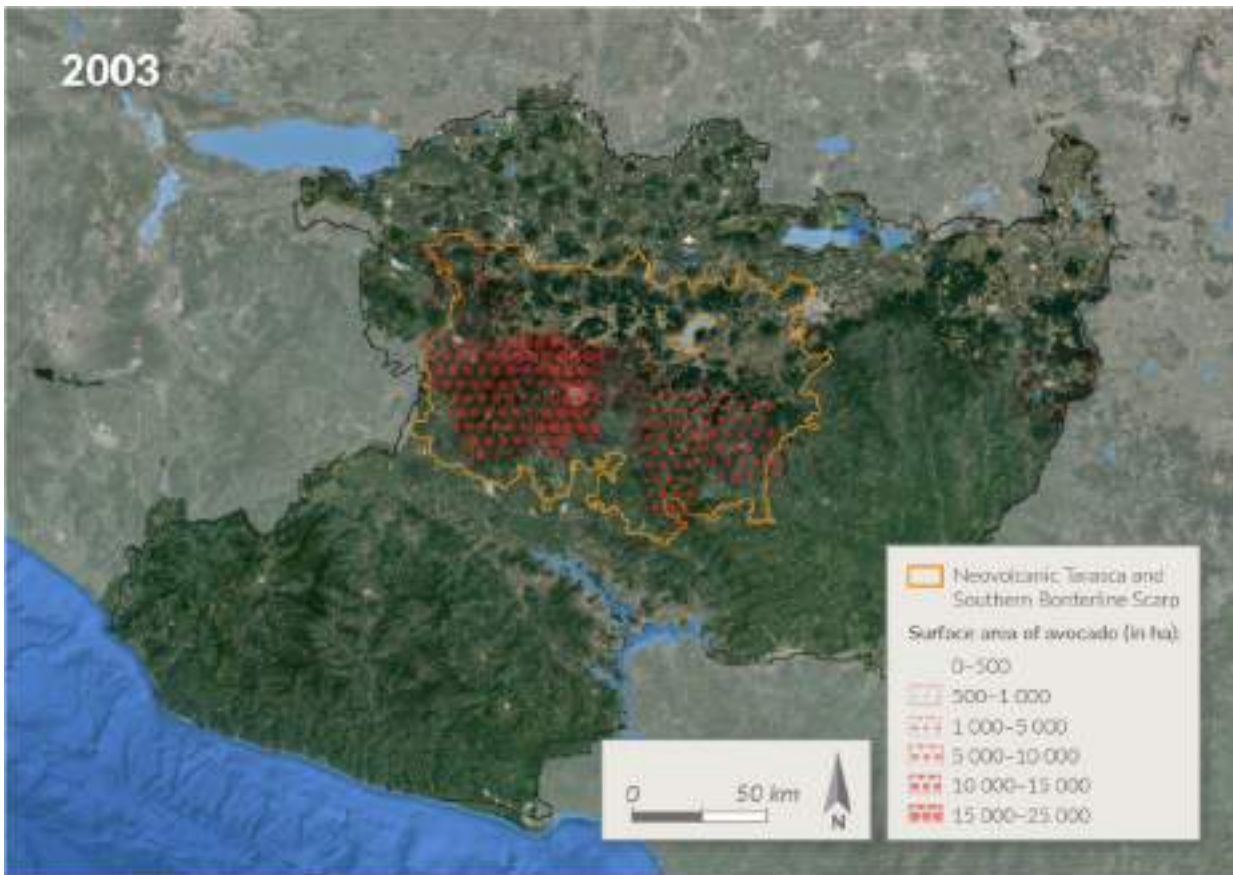


FIGURE 3 Avocado production at municipal level and physiography, Michoacán, 2003 and 2022.

Source: Authors, with data from the SIAP, INEGI and Google Satellite layer



In 2022, 10 municipalities in Michoacán accounted for 75% of the land dedicated to avocado production and 73% of production value (Figure 4). This distribution of avocado production has changed little since 2003, which was the first year that the SIAP published municipal data.

Municipality	Planted surface area (in ha)	Production value (in real 2022 MXN)	Planted surface area (in % of the State's total)	Production value (in % of the State's total)
Tancitaro	24 805	6 103 479 955	14.10%	13.00%
Uruapan	17 640	4 865 398 257	10.00%	10.40%
Tacámbaro	17 320	4 669 418 201	9.80%	10.00%
Salvador Escalante	16 665	4 813 638 636	9.50%	10.30%
Ario	16 514	4 794 886 731	9.40%	10.20%
Peribán	11 716	3 575 194 160	6.70%	7.60%
Nuevo Parangaricutiro	8 990	2 427 050 978	5.10%	5.20%
Los Reyes	7 149	1 894 519 335	4.10%	4.00%
Turicato	6 572	1 732 746 335	3.70%	3.70%
Tingüindín	5 361	1 674 212 111	3.00%	3.60%
Other municipalities	43 447	10 248 711 290	24.70%	21.90%

FIGURE 4 Top 10 avocado-producing municipalities in Michoacán, 2022.

Source: Authors, with data from the SIAP

Despite the image propagated by the authorities and avocado producers, the growth in global consumption of avocados has not resulted in economic trickle-down for all. While a handful of families own hundreds, if not thousands, of hectares, and an avocado-producing ‘middle class’ has certainly emerged, the unskilled or low-skilled labourers (on which the industry relies) have not benefited from the ‘green-gold’ bonanza, and most are still employed on daily contracts.

In 2020, Michoacán was the tenth most marginalized state (out of 32 states) in Mexico, with a ‘high’ degree of marginalization.⁴³ Almost half (45.6%) of its population lives in poverty, including 8.4% in extreme poverty.⁴⁴ However, socio-economic development is better in Michoacán’s avocado-producing municipalities than in the south-eastern part of Tierra Caliente, next to the state of Guerrero, and coastal regions, where the most marginalized and impoverished municipalities are located. In 2010, none of the top 10 avocado-producing municipalities in Michoacán had a high or very high degree of marginalization, and this continued to be the case in 2020, except for Turicato, which has relatively high levels of illiteracy, homes with dirt floors and no sewage (Figure 5). Poverty levels overall have improved since 2010, when between 50% and 75% of the population lived in poverty in all 10 municipalities. By 2020, only three municipalities still had more than half of their population living in poverty: Salvador Escalante (62.4%), Nuevo Parangaricutiro (55.7%) and Turicato (52.3%), as reflected in Figure 6.



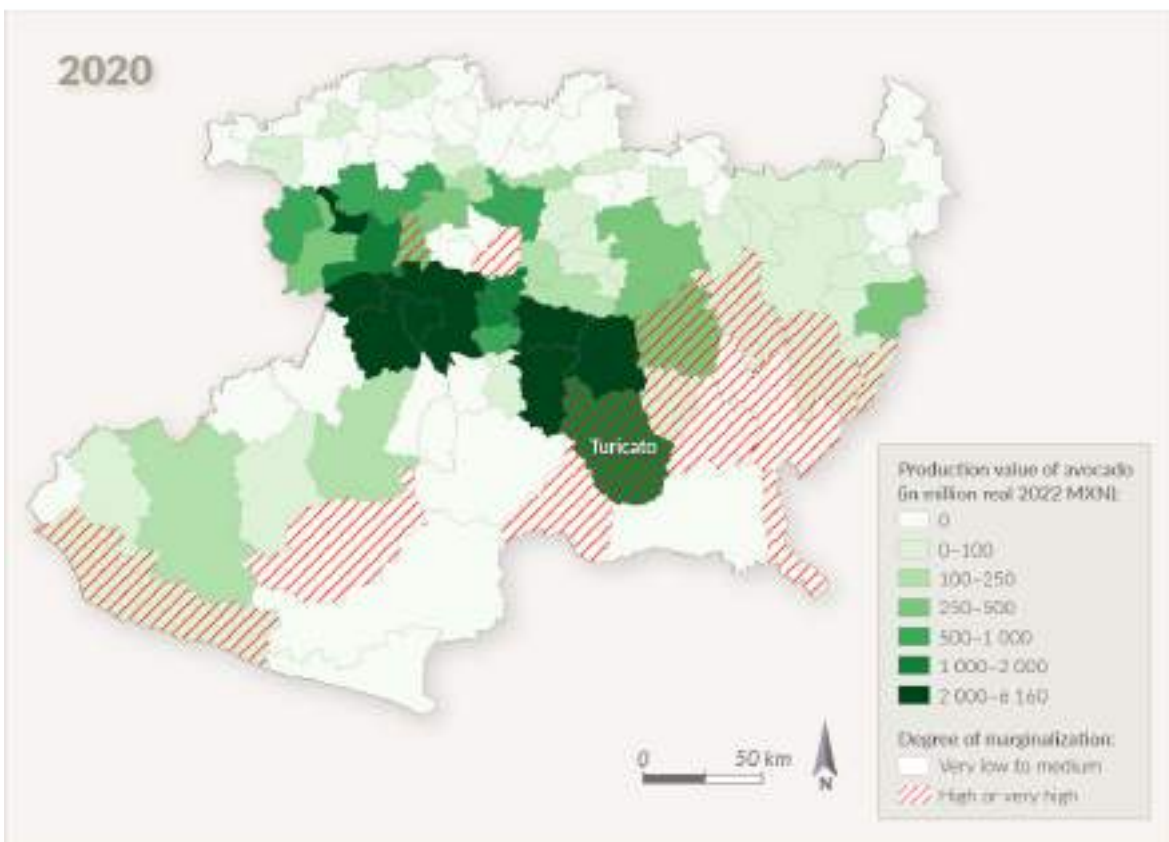
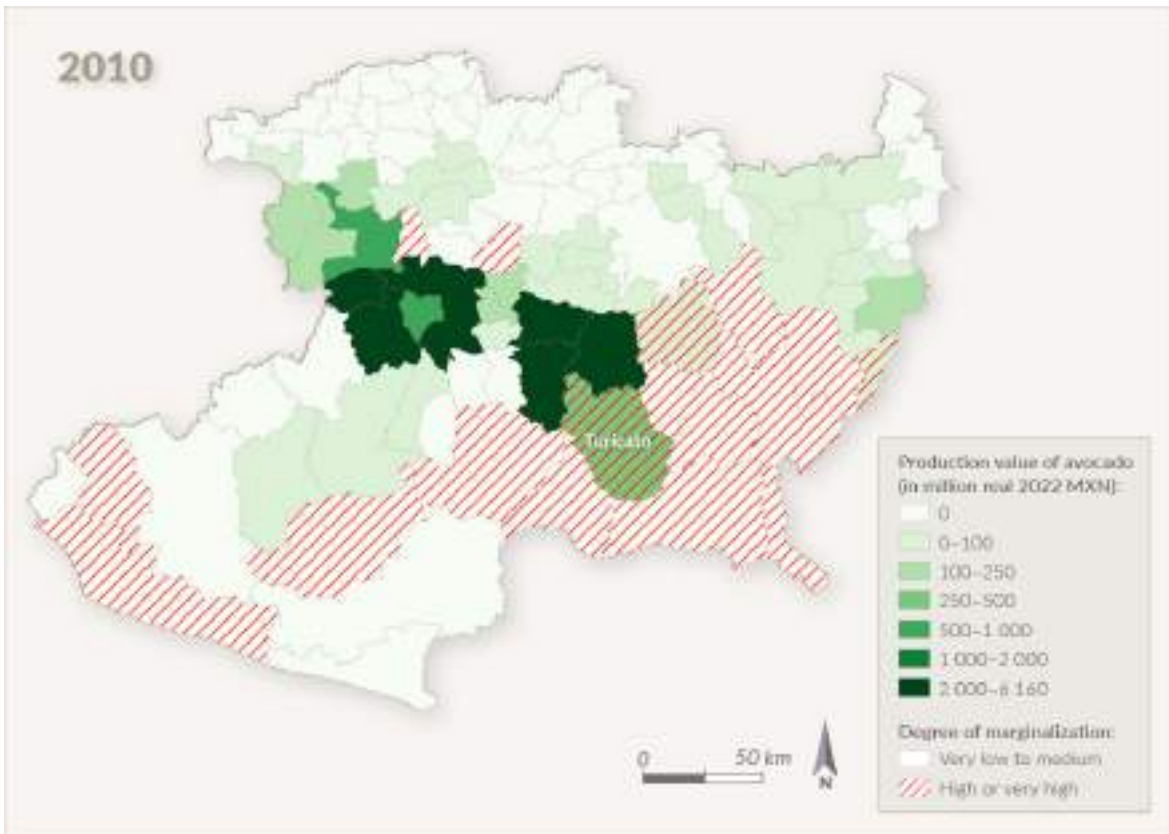


FIGURE 5 Avocado production and marginalization in Michoacán, 2010 and 2020.
 Source: Authors, with data from the SIAP and CONAPO



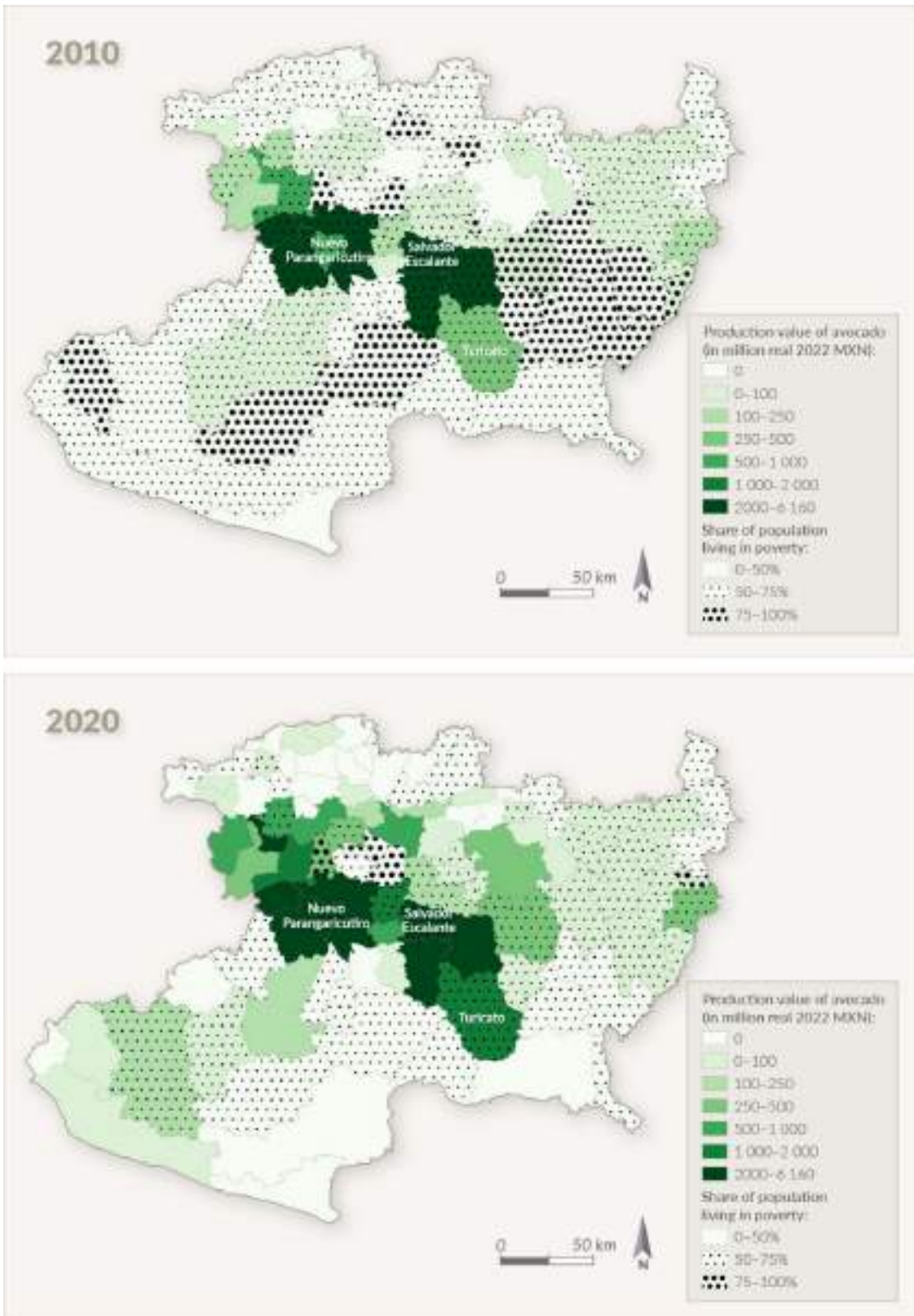


FIGURE 6 Avocado production and poverty in Michoacán, 2010 and 2020.

Source: Authors, with data from the SIAP and CONEVAL

This socio-economic reality adds nuance to the image that avocado-producing municipalities are distinct in Michoacán. Beyond the figures, these territories are far from being islands of prosperity and development but are deeply linked to the violence, repression and control by criminal groups that affect the rest of the state.



MICHOACÁN: A HISTORY OF CAPITALISM, STATE INTERVENTION AND VIOLENCE

Michoacán's association with drug trafficking, criminal organizations and violence dates to the 1950s, when farmers and traffickers produced and exported heroin and marijuana to the USA. Over the next three decades, networks of traffickers operated in relative autonomy from one another. However, from the 1980s, Michoacán became a crucial element of international drug trafficking, thanks to its location on the Pacific coast, the know-how accumulated by traffickers and the opening of new transport routes for South American cocaine via Mexico. The Pacific deep-water port of Lazaro Cardenas also became a key asset for the import of precursor chemicals essential to the production of synthetic drugs, such as methamphetamine and fentanyl, for which demand exploded in the USA. As a result, between the early 1980s and the late 1990s, Michoacán became a strategic territory in the 'geopolitics' of drugs, playing a strategic role in their importation, production and trafficking.

This evolution directly affected the state's economy, socio-political balances, and the position of drug traffickers in society and legitimate markets. Criminal networks became more organized, rationalizing their workforce and production activities, and invested massively in firepower and protection mechanisms designed to control drug trafficking against both rival groups and the state's armed forces. As their economic capacities skyrocketed, local traffickers began to organize into 'cartels'.

The birth of drug trafficking elites

Initially drug traffickers worked in parallel with established players, which included landowners, elected officials, army officials, *caciques* (informal bosses) and economic elites. Then, from the 1990s, as profits from drugs increased, traffickers began to fight for more independence from the patronage of the elites and to gain control over strategic territories and new legitimate markets.

Powerful political-criminal networks, with shared economic, electoral and criminal interests, developed through conflict, as well as collusion, corruption and political protection. These networks were deeply unstable and characterized by constant conflict among traffickers, and with their political protectors. This contributed to the rise in violence and its use in regulating politics and society, resulting in higher or much higher homicide rates in Michoacán than the national average. Michoacán became known as an ungovernable territory, located 'outside the margins of the state'⁴⁵; criminal groups using terror, displacement and mass atrocities; and the state's militarization under the cover of the 'war on drugs'.

However, contrary to popular belief, powerful, organized criminal organizations do not produce, traffic and control drugs away from government's control, but do so in conjunction with public authorities and private capital.⁴⁶ Therefore, it is essential to place how criminal markets are constructed within the political, legal and social conditions that transform specific territories and production structures into criminalized and illicit economies, which are deeply intertwined and connected with licit ones, such as avocado production.⁴⁷

This is also important for understanding how these margins relate to capitalistic market forces. The Michoacán economy is highly dependent on the production of avocado, lime, berries, timber (to a certain extent) and mining, all of which are legal activities geared towards international export. Therefore, the region is both attractive to and

dependent on fluctuations in international legal and illegal demand, especially from the US and the EU. However, international demand, as the 'driving force' of both legal and illegal trades, does not alone explain the relationships that link the two, and how these affect the local balance of power, the role of violence as a means of control, and the behaviour of the state as an organ of approval, coercion and repression.⁴⁸

Agriculture, capital accumulation and a booming drugs economy

During the 1980s and 1990s, Michoacán was more deeply integrated into the international drug trade. In the 1980s, the arrival of cocaine turned the state into a narcotics transit hub and accelerated the professionalization of the *narcos*. As crime bosses centralized an increasingly complex drug trade, involving production, import and export, they needed more powerful political protection and, having accumulated economic and social capital, were able to enter new legitimate economic sectors, enforce social norms and control political structures and public budgets.

The local (and international) drug economy cannot be understood without studying the economic processes linked to the 'legal' agricultural issues that bind Michoacán to the political economy of Mexico and to international markets.⁴⁹ During the 1980s, the relationships created between political forces and traffickers coincided with neo-liberal reforms in agriculture, international trade and public administration. The opening up of international markets and reconfiguring of financial structures led to a collapse in Michoacán's agricultural economy. At the same time, Mexico drastically cut its public programmes that supported agriculture. This opened up major opportunities for social advancement and political positioning for traffickers who had large amounts of capital available, some of which needed to be laundered. Those who controlled drug production suddenly found themselves in at an advantage compared to the legitimate players who were directly affected by the economy's collapse. This moment marked a turning point for the social ascent of drug traffickers, and their consolidation as a new economic, social, political and cultural elite. In the Tierra Caliente basin region, as well as in the avocado hills and plateau, agricultural crises, mass emigration and government's austerity policies had a dramatic effect on social equilibrium. Sergio, a former Mayor, described the impact on the rural economy and the hundreds of isolated, small-scale peasants who produced marihuana and poppy scattered across the region.

We lost our options at that point. [...] The private banks, to whom we had to turn, were much more aggressive than the state in terms of loans, rates. [...] And we, as medium-sized agricultural producers, weren't really prepared to work like that. We didn't have the productivity, the time, the machines. A lot of people simply lost their land in the 1980s – you had to sell, even families who had money, good families, local caciques. [...] Little by little, the ones who had money were the ones who grew marihuana. [...] And they began to lend money, to finance 'clean' activities instead of the banks. [...] They generated activity, they invested, and that created a bond, and a commitment.⁵⁰

These crises affected social mobility.⁵¹ According to Sergio, the status of many middle- and upper-class families declined, as their properties and landholdings lost value or went bankrupt, to the benefit of smaller traders and drug traffickers. During this period, those who had managed to accumulate capital, which was used for illicit crops and the legal crops that often serve as a screen, were in the best position to invest in the rapidly expanding agro-industrial export sector, including opportunities outside their municipality: in the irrigated valleys of Apatzingán, and the avocado plantations of the Uruapan area. This ability to invest large sums in new activities favoured the economic growth – and new social role – of traffickers who began to buy up land. The new connections built between Michoacán and consumer markets (initially in the USA and then globally, including the EU), facilitated the large-scale organization of drug trafficking. Drugs and fruit and vegetables, such as avocados, perfectly

integrated into these dynamics, while the free trade agreements of the 1980s, 1990s and 2000s, which facilitated cross-border and export trade, were an unprecedented catalyst for profit and violence.

Social dynamics of violence, market evolution and the rise of violent entrepreneurs

Although it is difficult to document direct links between investments by traffickers and the boom in avocado production, several interviewees mentioned that the laundering of drug money was a central factor in the rapid development of the avocado industry. The story of two brothers from Michoacán illustrates these dynamics.

Luis Valencia Valencia and Armando Valencia Cornelio were heads of the 'Valencia' family organization and entrepreneurs in the Uruapan and Aguililla regions, two major areas for drug trafficking and agricultural production. During the 1980s and 1990s, the Valencia family was active in avocado production, which experienced its first boom in the Uruapan and Tancitaro regions. The family invested in and directly managed at least six avocado farms and opened several avocado packing facilities (empacadoras), as part of their strategy to participate in the broader agricultural value chain. Indeed, in the 1990s, the Valencia organization was dubbed as the cartel de los aguacates (the avocado cartel) or los reyes del aguacate (the avocado kings).⁵² With businesses that employed hundreds of people, the Valencia family's finances, local power, and prestige grew. By multiplying investments in the legal economy, the Valencia family broadened its social base and local roots in the region. Throughout the 1980s and 1990s, the family was at the heart of the rationalization of criminal activities and the development of agro-industry in Michoacán. This dynamic has continued under an endless list of criminal organizations.

Like limes, Michoacán avocados are a thriving legal market that has been infiltrated by criminal actors. Similar to what happened in Colombia in the mid-1990s, this market has seen the emergence of 'violent entrepreneurs', or trafficking groups that evolve into business actors who are able to control strategic territories through protection rackets and different levels of social control,⁵³ and to invest in the rapidly developing new legal and illegal markets.

In Michoacán, one such criminal organization was the 'Zetas', formed by ex-special forces who had deserted from the Mexican army and marine corps in western Mexico. At the beginning of the 2000s, the Zetas 'invaded' Michoacán, bringing with them their military tactics, use of terror and indiscriminate violence, and extortion rackets, which were applied to traffickers, local agro-industrialists, and traders and inhabitants of the territories in which they operated. As a result, the region saw an upsurge in violent competition between armed groups, and the appearance of checkpoints, armed patrols and new forms of violence designed to keep the territory as secure as possible and exert considerable pressure on the populations living there.

La Familia Michoacana and los Caballeros Templarios: the bureaucratization of extortion

Similar practices characterized the criminal organizations that replaced the Zetas. Between 2004 and 2006, the war between local criminal actors and the Zetas led to the formation of a new criminal group called La Familia Michoacana (the Michoacán family), which sought to unite all regional traffickers, while pursuing and refining the practices of extorting individuals and businesses, especially in the agricultural sector. For example, in 2009, La Familia's leaders summoned avocado producers who owned farms larger than five hectares to a meeting. The cartel possessed the official registers of avocado producers drawn up by Michoacán's Ministry of Agriculture.

The meeting, which was attended by over 300 producers, was to establish the cartel's 'protection' agreements and claimed to be a break from the Zetas' way of doing business.

[The Zetas] continue to rape women, kidnap and kill children, as you know. [...] To fight them, we need to send personnel from here to the whole country, so we are asking you for your co-operation. Everyone knows what they can contribute and, if you can't, no problem. For all those who are here, cooperation is voluntary. But those who did not attend [the meeting] will pay a fixed fee.⁵⁴

The desire to control natural resources was not new, as shown by the Valencia clan (avocado production) and the Zetas (port interfaces and extorting commercial activities). However, La Familia integrated and rationalized these practices into an extortion-protection administration, which was later refined by a new criminal group, the Caballeros Templarios (the Knights templar), born out of a schism in La Familia in 2011. Although (like La Familia), the Caballeros Templarios claimed to be combatting extortion practices, going as far as to execute local racketeers, within a couple of months, they had put in place one of the most sophisticated extortion systems in Mexico. The latter comprised a constant territorial presence, the installation of checkpoints and the organization of armed patrols; the establishment and imposition of social norms on how to behave in the public space; the systematic regulation and extortion of commercial and agro-industrial activities; and strict control of political life at local level, through selecting or eliminating elected officials and their administration.

The Caballeros Templarios systematized the practices initiated by La Familia Michoacána and were able to proceed methodically because they possessed the agricultural registers and official cadasters. They reportedly demanded that each grower pay \$2 000 MXN per hectare (around USD 100\$). In 2012, the year in which the Caballeros Templarios were at their strongest, the total cultivated area in Michoacán was 112 673 hectares. Assuming that the traffickers managed to collect \$2 000 MXN per hectare, their revenue from extortion would have been \$225 million MXN annually (around 12 million dollars in 2012). Furthermore, according to press reports and our interviews, the Caballeros Templarios imposed a tax on every kilo sold by producers to wholesalers and packers. In 2012, annual production amounted to 1.12 million tons, representing revenue of \$2.2 billion MXN (around USD 130 \$ million) for the criminal group. It is estimated that in 2012, the Caballeros Templarios stole 1.1% of Michoacán's GDP in avocado production value.⁵⁵

Following the initial investments made by the Valencia family cartel, the Caballeros Templarios gradually took control of an essential link in the avocado value chain: packaging. Avocados destined for export must be packaged according to very strict criteria of hygiene, presentation and size, and most specialized and certified packaging companies are located near to the production areas. According to our interviewees, the Templarios imposed a tax on packaging companies, while some leaders acquired, or gained control of, certain packaging branches. In 2011 and 2012, fires at several packaging facilities were interpreted as signals that the cartel was exerting pressure against competitors or bad payers – and by 2013, the Templarios seemed to be present – or control – most of the avocado production chain in Michoacán. Identical practices have been put in place for lime growers in Michoacán, in particular in the municipalities of Buenavista Tomatlan and Apatzingán.

At the same time, the Templarios threatened or executed landowners and (in some cases) carried out massive deforestation to develop their own timber production, which is also a phenomenon observed in avocado-producing regions. What distinguished the cartel from other criminal actors was their ability to secure a political role in the territories where they dominated. Yet the relationship between entrepreneurs of violence and landowners is not one-way. Historically, the *latifundistas* (owners of a large estate) of Michoacán used armed men to protect their properties and convoys of goods from bandits. These practices have never disappeared and have consolidated relations between agricultural producers, private violent groups and public authorities. Indeed, it is common for public authorities and forces – especially the police – to 'rent' their services for private protection, or to endorse the protection offered by armed groups to producers.

As a result of the economic interests linked to the commercialization of avocados, the financial and security stakes have become increasingly important, and actors interested in having a cut of this flourishing trade have multiplied. For example, in 2011, the APEAM in Michoacán issued a press release protesting the theft and extortion committed by the Federal Police, among others.⁵⁶ Against this backdrop, several interviewees reported that avocado producers had approached criminal groups, asking them to guarantee their protection, including against public forces.

Practices of violence and human rights violations

Based on dozens of testimonies of the violent practices imposed by drug cartels, coercion and protection-racket form the daily life of avocado-producing regions in the state of Michoacán.

THE STORY OF PABLO, AN AVOCADO PRODUCER IN TANCITARO

Like all producers in the region where the cartel dominated, Pablo, a landowner, paid a tax to the Caballeros Templarios. In February 2013, the cartel abducted his teenage daughter and, a few days later, demanded a ransom of \$14 million MXN (around USD 850 000 \$ at 2012 exchange rates) – an extraordinary sum, even for a major avocado producer. Unable to collect the ransom within the allotted time, the producer approached the local cartel leader to offer half of the sum demanded in cash and the other half in land and property. According to the discussions we had that day on the barricade with Pablo's friends:⁵⁷

When Pablo got there, the gentleman (*el señor*) found some garbage bags with a note signed by the *Caballeros Templarios* saying: 'Since you've collected half the money, we'll give you back half of your daughter'. The gentleman left with half his daughter's body, in pieces, in garbage bags. [...] And nobody ever found the rest. [...] That's what they were doing to us, [and to me], you understand?

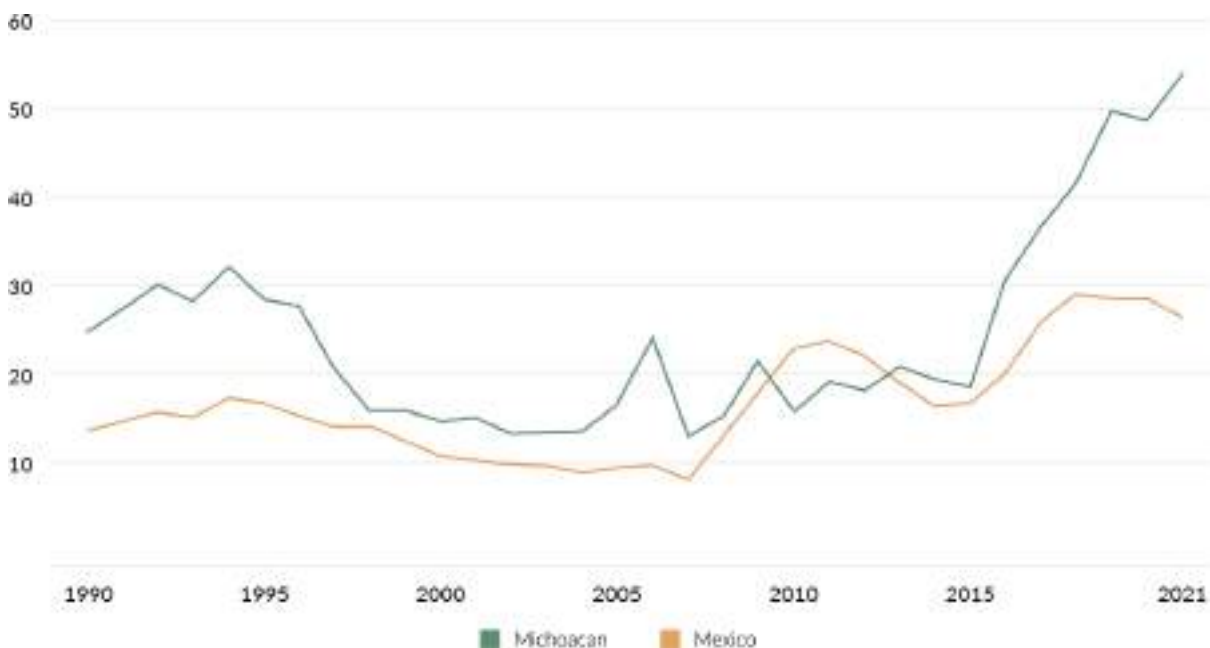


FIGURE 7 Homicide rate per 100K people in Michoacán and Mexico, 1990–2021.

Source: Authors, with data from the INEGI



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Between 2016 and 2020, the number of missing persons in Michoacán increased dramatically, from 145 to 913 people per year. Despite a decrease in 2021, the number of missing persons appears to be rising again.⁵⁸ Many of the murders and missing persons recorded in Michoacán between 2016 and 2021 occurred in the most populated and urbanized municipalities:

- 13% of homicides and 9% of missing persons were in Morelia (the state's capital).
- 14% of homicides and 9% of missing persons were in Zamora.
- 10% of homicides and 9% of missing persons were in Uruapan, which also happens to be the second largest avocado-producing municipality.

However, these violent trends do not necessarily reflect what is happening in avocado-producing municipalities, as almost half of Michoacán's municipalities do not cultivate avocados. The official data shows that avocado production and lethal violence are not necessarily correlated: over the last 20 years, the homicide rate has remained stable, while the production value has increased in most avocado-producing municipalities. Homicides decreased in some municipalities, such as Turicato, but increased hugely in Uruapan and Tinguindin (Figure 8).

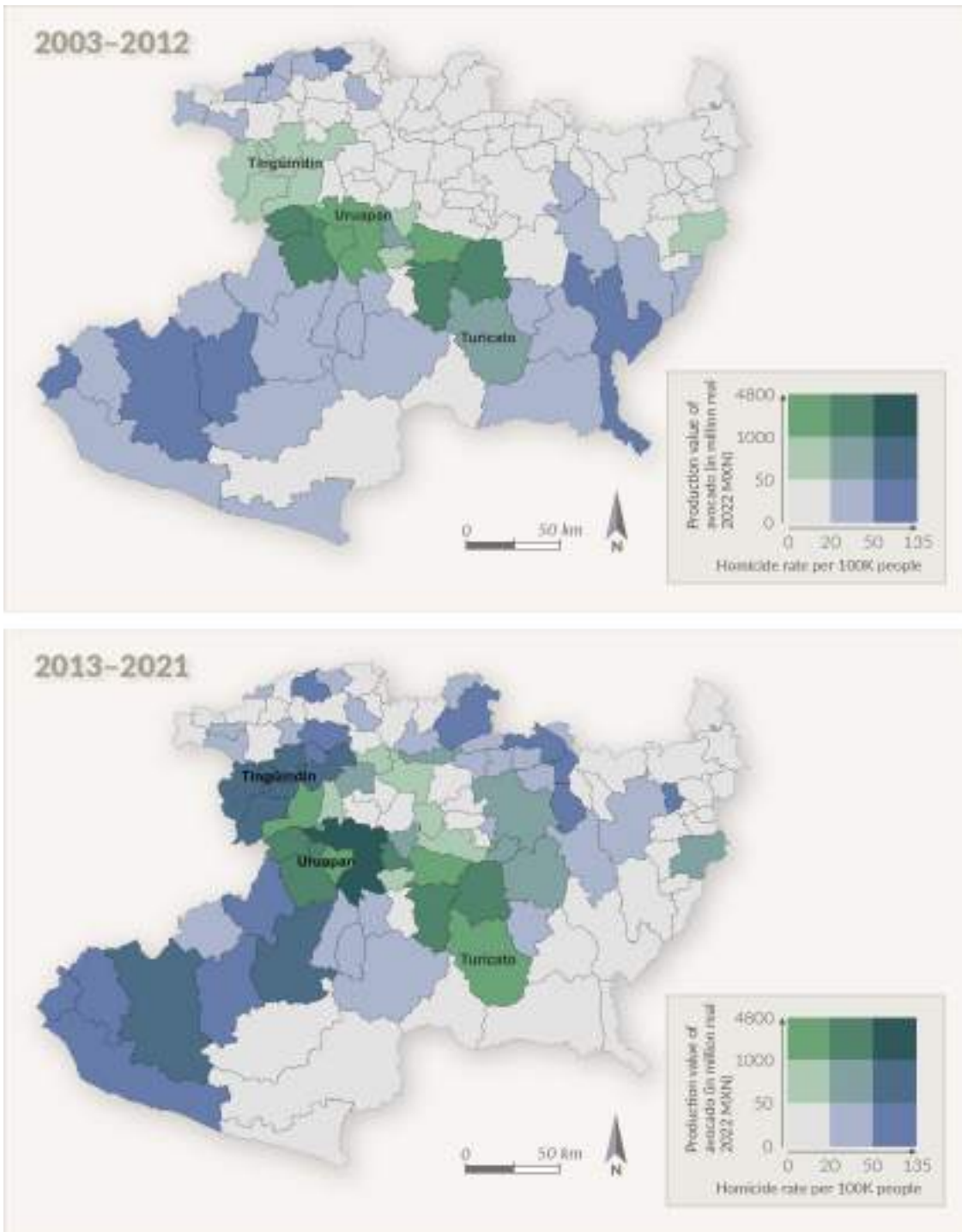


FIGURE 8 Avocado production and homicide rate in municipalities of Michoacán, 2003–2012 and 2013–2021.

Source: Authors, with data from the SIAP and INEGI

However, homicides and missing persons are not the only forms of violence found in avocado-producing municipalities in Michoacán. In Uruapan, where the Caballeros Templarios operated, one victim described a sophisticated method of extortion that targeted day labourers. The criminal organization established a training centre offering courses in avocado harvesting and conditioning techniques to comply with exportation criteria. But the training centre’s real purpose was to collect information on the day labourers to extort them.



The rise of self-defence groups and private militias

The Caballeros Templarios dominated until they were overthrown by the *autodefensas* (self-defence groups) during a conflict that lasted from February 2013 to August 2015. The *autodefensa* movement was a reaction to the control exerted by the criminal organization over the region's economic, political and social life (Figure 9).

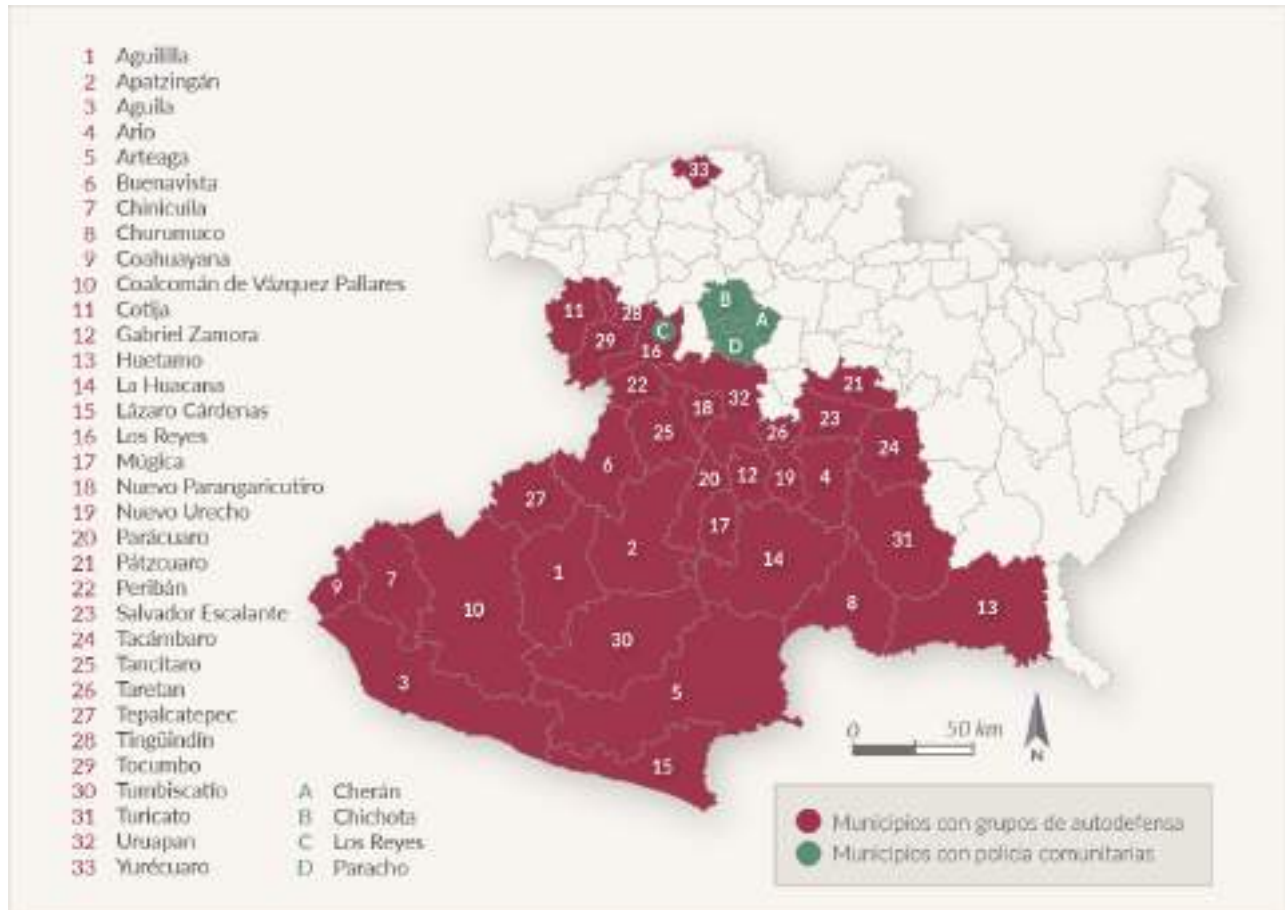


FIGURE 9 Municipalities with *autodefensas* and community police forces in Michoacán.

Source: CNDH, 2016, Special report on *autodefensa* groups in the state of Michoacán and human rights violations related with the conflict

Agro-industrial actors provided crucial logistical and financial support to the *autodefensas* in several regions of Michoacán: lime growers in Tepalcatepec, La Ruana and Buenavista, timber industrialists, in Coalcomán, and banana growers, in Coahuayana.

The unique case of Tancitaro municipality

In the avocado-producing regions, especially in Tancitaro, the growers' unions took the lead in coordinating and funding local *autodefensas*. On 16 November 2013, when the *autodefensas* formed in Tancitaro, the Mayor was ordered to administer financial and logistical aid to the *autodefensas*, under the supervision of an independent council that had taken control of the municipality. The council was formed by the association of avocado producers and exporters, and a broader coalition of actors willing to finance and supervise the *vigilantes*, with the aim of stopping extortion at the production stage and of protecting shipments to packing and export centers.

During the first weeks, hundreds of men were mobilized. The local board in charge of health certification for avocado exports and the APEAM joined forces to coordinate the local *autodefensas*. It was decided that avocado growers would finance the *autodefensas* through contributions based on farm size: the larger the farm, the greater the contribution. The money collected was used to compensate active *autodefensa* members who could no longer work their land, to buy weapons and to build checkpoints.

In 2014, the self-defence groups evolved. Avocado producers created a unique municipal police force, the Cuerpo de Seguridad Pública de Tancitaro (CUSEPT), which still exists in 2023. The CUSEPT is a public-private force, designed by agro-industrialists in direct coordination with the Federal Police. It is an elite police force, financed by both the municipality (with funds intended for the traditional municipal police) and large avocado producers. The latter established the logistical, operational and human criteria for the CUSEPT, demanding for example that in exchange for their financial contribution, the CUSEPT be deployed only within the Tancitaro municipality and that its members be all locals. Finally, and most significantly in terms of their political bargaining capacity, the producers secured an agreement⁵⁹ that selected personnel could attend a federal police training academy for three months. The result is a unique, well-trained public-private force partly financed by avocado growers, whose numbers grew with successive waves of recruitment.

Among avocado producers, the unanimous view seems to be that the amounts they pay to finance the CUSEPT are always lower than the extortion fees charged by criminal groups. They justify their approach with entrepreneurial pragmatism: it is more profitable to maintain local police forces – along with remaining vigilante groups – for protection than to be exposed to the extortion and violence of groups they cannot control. As one avocado-producer, who is still the head of an *autodefensa* group explained:⁶⁰

We are used to pay for everything, for protection in particular. You pay the police, you pay the army; it's part of the system. So when a criminal group comes to you and asks for money, it's part of the same system. [...] The problem is that they're too greedy, they want more and more money, more participation, more power, and then you have them with you, they're buying land, they're expropriating you, they kill you, but you're still paying them. [...] So if you create a local *autodefensa*, with people from here that we know, families [...] who are doing the same job of protection, people are fine with paying them for the job, you know. This is what our group does now, we protect the orchards, the production, the convoys, because someone has to do it, and we know we can't trust the police or the army or anything coming from the government, so we do it ourselves, and we pay for it from our own pockets.

The producer's view reflects the belief that protection is a service, which is negotiated with a public or private player who provides it in return for payment. In this case, avocado producers prefer to provide and organize their own protection than rely on public security forces. Paying a monthly fee for armed protection is part of their business model. Producers donate money, often linked to the size of their farms, that is used to acquire firearms (notably AR-15s and AK-47s), paramilitary equipment such as bulletproof vests, uniforms, and helmets, and to pay the running costs of the patrols that guard the farms, particularly at night or during periods of confrontation with the cartels.⁶¹

The consolidation of private militias and ongoing violence

In 2015, the 'official' demobilization of the *autodefensas* did not shut down the groups, particularly in avocado-producing regions, where many armed groups continue to operate, bringing together dozens or hundreds of men to act as 'community police', 'self-defense' or a mixture of both. Although these groups say that they serve communities, fighting criminal groups that threaten economic activities and populations with indiscriminate violence, the reality is more complex. Indeed, some active groups are accused of having links to more powerful



cartels. For various leaders of these groups,⁶² an alliance with a dominant cartel is preferable, even if it means having to pay regular taxes and obeying its rules, as independence would be impossible to maintain over the long term.

These arrangements exist in parallel to those of the municipality of Tancitaro, where CUSEPT still operates. Tancitaro therefore enjoys increased surveillance and a capacity for protection and security against incursions by criminal groups. By contrast, surrounding municipalities experience regular clashes between criminal groups seeking to establish themselves in the region. Leaders of the *autodefensas* groups operating in the region regularly complain about feeling abandoned by Tancitaro producers and the Michoacán government.⁶³

However, the avocado industry cannot totally extricate itself from the adjacent violence and its consequences on daily life and business activities. For example, on 14 February 2022, threats to an American agricultural phytosanitary inspector in Michoacán caused the US to suspend imports of avocados.⁶⁴ This unprecedented measure sparked deep concern within the APEAM and provoked a series of high-level negotiations between the Mexican Federal Government, and US authorities. After days of uncertainty, the USDA Animal and Plant Health Inspection Service (APHIS) finally announced the restart of its avocado inspection programme and the resumption of avocado exports to the USA. It followed the introduction of additional safety measures for APHIS inspectors by Mexico's national plant protection organization (SENASICA) and APEAM. At the time, many local sources were sceptical about such a drastic measure, which was interpreted as a political decision by the USA to put pressure on the Mexican government during a period of diplomatic tension. Indeed, the view was that American inspectors were used to local conditions of insecurity, and violence was managed by the entire supply chain on the ground, without referring to higher authorities. Nevertheless, the episode reminded the public of the pressures faced by commercial players in Michoacán, and their exposure to danger.

Overall, the avocado region is characterized by the coexistence of community police, criminal groups, public forces and para-public forces financed by producers. The forms of security enjoyed by citizens fluctuate according to the interests of the state, avocado-producing elites and local political bosses. It is private (not public) security that governs the region, resulting in chronic instability and particularly high levels of violence, which does not really affect the health of the avocado industry. As this section has illustrated, for decades, avocado producers have coexisted and expanded with criminal organizations and are a prime example of violent capitalism.



AVOCADO BOOM: VIOLENCE, COLLUSION AND CLIMATE CHANGE

The avocado industry is also synonymous with serious environmental damage. In Michoacán, the increased international demand led to an expansion of land dedicated to avocado production, resulting in deforestation and the subsequent degradation of soil, water and biodiversity.⁶⁵ This agricultural expansion also relied on the use of violence by multiple actors interested in turning forests and protected areas into agricultural land.⁶⁶

Violence and the expansion of the avocado frontier

In Mexico, like many other countries or regions that experience economic booms and high levels of insecurity, violence is a valuable political and economic tool. It enables new territories, markets and value chains to be conquered and agricultural frontiers to expand, which is what happened in Michoacán. During a face-to-face interview in 2021, an avocado producer explained the collusion between public authorities, local elites and violent groups:⁶⁷

The land here was worth very little 30 or 40 years ago, but the avocado boomed and a good hectare is now worth millions. So production began to expand and expand. The problem is that a large part of the region is situated in protected natural areas, so you're not supposed to be able to expand production on this land. But you know here everything can be done, so those who have more money go to their government *buddies* and ask for changes in land use. Or, let's say, you go into the forest, you start burning the forest, setting fires, displacing the people who live there; you offer them money to leave, but if they don't want to move, you give them a good scare and that's it. [...] That's what the criminal groups do well. So you go to a group, you tell them that you want to clear an area and you pay or come to an agreement with them, you let them cut down the forest, for example. [...] And then the groups go, they kill, they take people out, they deforest, and then, after a couple years, you see an avocado orchard certified [for export].

Far from being an isolated criminal behavior, deforestation by drug cartels is deeply connected with legitimate private actors. As several interviewees stated, drug bosses are not necessarily interested in running avocado orchards. Rather, they will extract revenues from long-term protection rackets. More importantly, drug traffickers often lack the experience and direct political connections to start an avocado farm, as well as to obtain the indispensable phytosanitary certification for export. This is where the grey areas fostered by politico-criminal relations come into play. While drug cartels are used to displace people and deforest, economic elites bring the necessary economic capital to invest in new orchards, and public authorities deliver permits that grant property, change of land use, and access to legitimate markets. Therefore, finding a solution to deforestation, to meet the EU 2023 regulation on deforestation-free products and the current EU-Mexico Global Agreement's negotiations, cannot depend only on public safety. Even if public security measures were effective, which is not the case, illegal deforestation cannot be tackled without addressing the systemic corruption, inaction, and inability of state agencies responsible for protecting the environment and overseeing agriculture to carry out their missions seriously and transparently. Similarly, to tackle the use of violence in expanding avocado production would require a strong commitment from the public prosecutor's office, something which is only a distant project, given the level of impunity in Michoacán.⁶⁸



Deforestation and loss of biodiversity

The worrying environmental outlook is confirmed by available data. Between 1976 and 2000, Michoacán had a net deforestation⁶⁹ of 521 426 ha of temperate and tropical forest (20 857 ha per year, equivalent to 0.6% reduction each year), while agricultural lands grew by 247 042 ha (10 293 ha per year, equivalent to 0.6% increase each year).⁷⁰ According to the National Forestry Commission (CONAFOR), between 2001 and 2018, gross deforestation occurred on 269 676 ha in the state (14 982 ha per year), of which 70.69% were transformed into grasslands and 28.16% into cropland.⁷¹

A comparison of maps from 1992 and 2018 shows how the forest cover has progressively disappeared to be replaced by agricultural land in Michoacán, especially in the main avocado-producing municipalities (Figure 10).

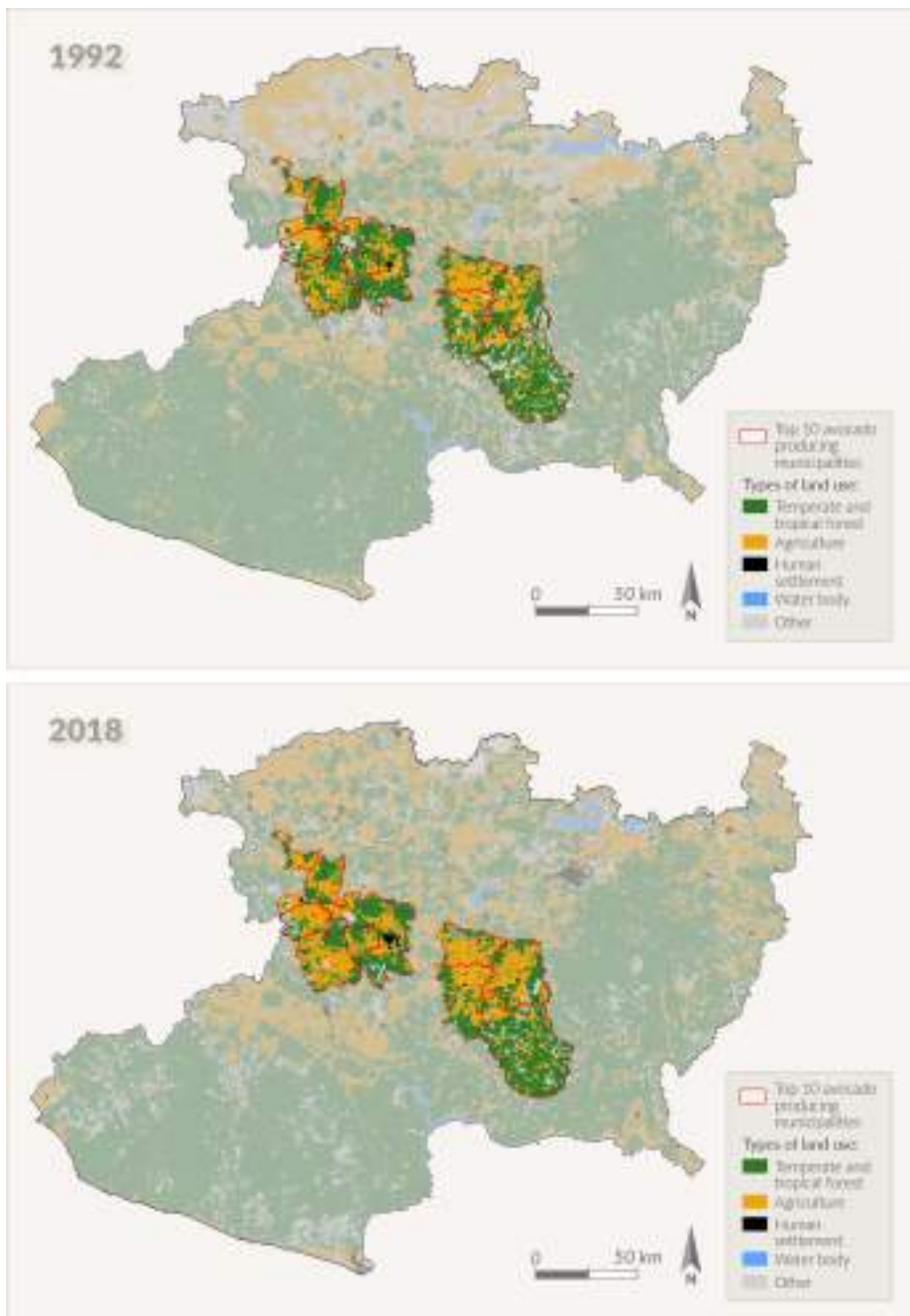


FIGURE 10 Land use change in Michoacán, 1992–2018.

Source: Authors, with data from the INEGI and SIAP

Between 1976 and 2005, the Purhepecha plateau, where a large part of Michoacán’s avocado production is concentrated, experienced net deforestation of 20 032 ha (0.3% reduction each year), while agricultural land increased by 13 902 ha (0.3% increase each year), with 81.69% of the lost forest cover – mainly coniferous trees – becoming agricultural land.⁷² It is estimated that, between 1976 and 2000, every year 365 ha of primary and secondary forest were transformed into avocado orchards, while between 2000 and 2005 (when the USA and EU markets opened up to avocados from Michoacán), this increased to 1 741 ha per year.⁷³

In Tancitaro, which is currently the largest avocado-producing municipality in Mexico, the loss of forest cover to agriculture is particularly visible when comparing land use in 1992 and in 2018 (Figure 11).

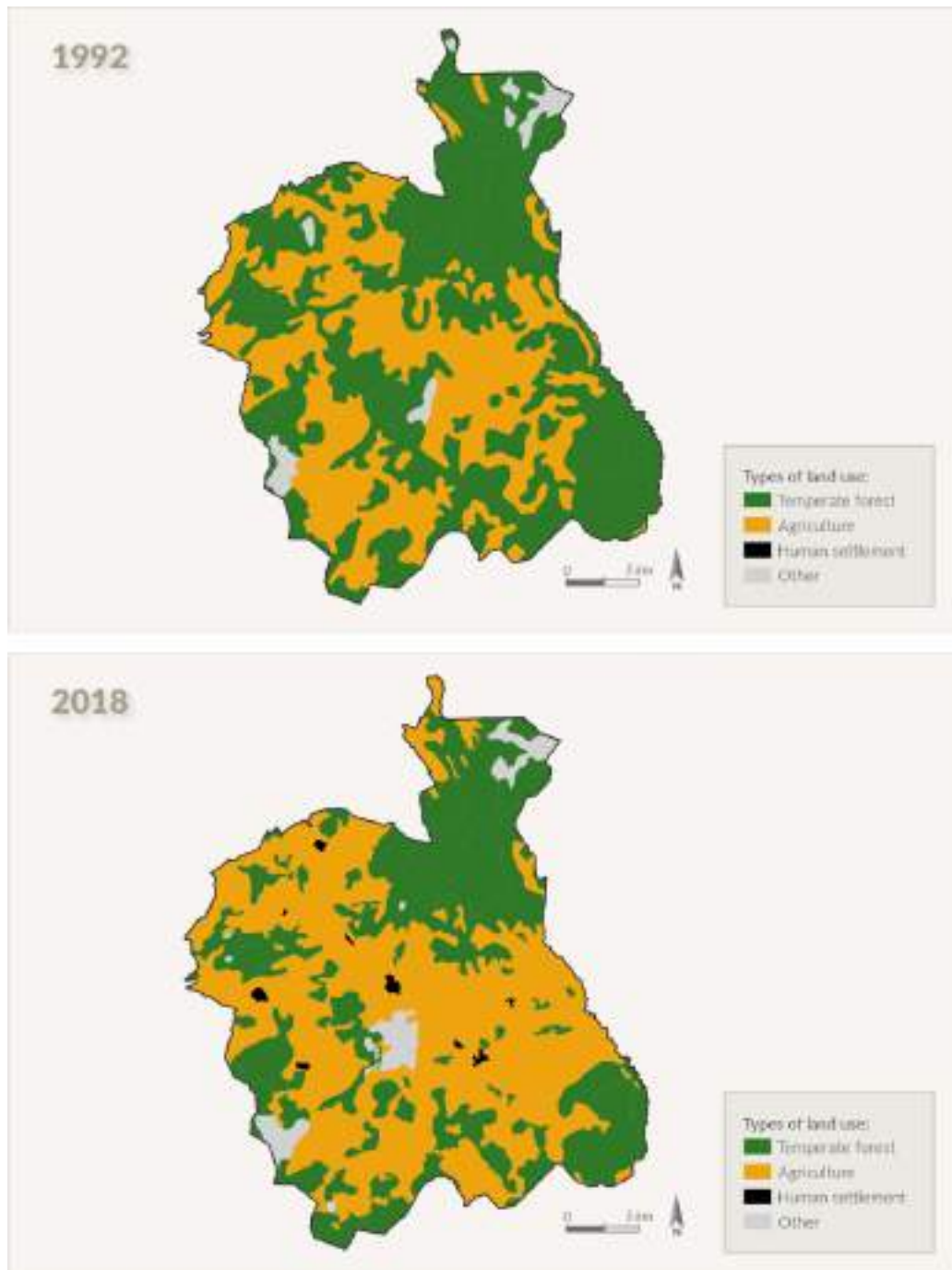


FIGURE 11 Land use change in Tancitaro, Michoacán, 1992–2018.

Source: Authors, with data from the INEGI and SIAP



A bit further north, on the slopes of the hills between the villages of Atapan and Pamatacuaro (in Los Reyes municipality), satellite images also show how the landscape has changed, from pine forests in 1985 to irrigated avocado orchards in 2021. During a field visit in 2021, in the Periban municipality, a group of growers emphasized the environmental transformations brought about by avocado production. The oldest among them said that they no longer recognized their region and complained of rising temperatures due to rampant deforestation and chronic water shortages.⁷⁴

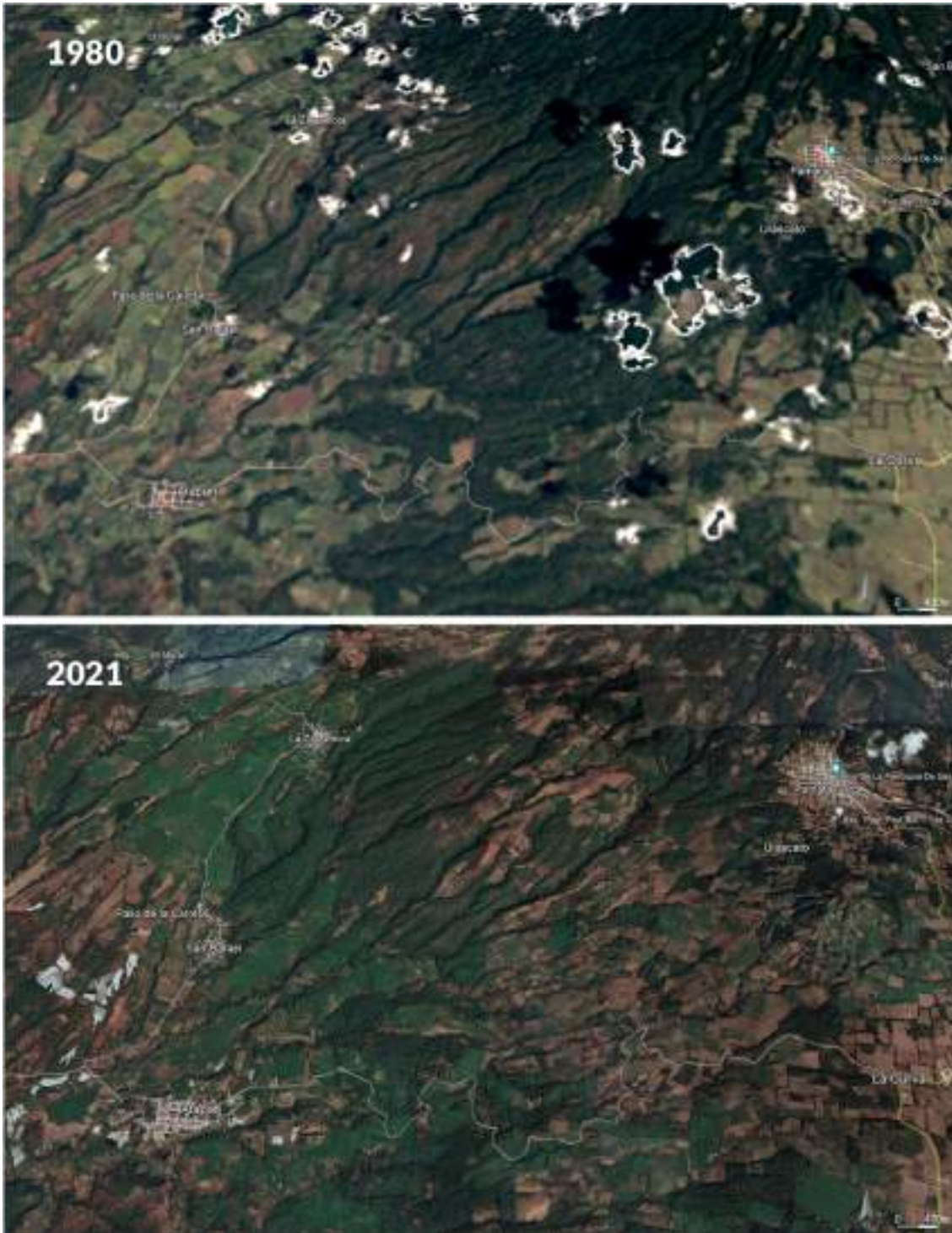


FIGURE 12 Avocado frontier expansion in Los Reyes, Michoacán, 1980 and 2021.

Source: Google Earth images from December 1980 to January 2021



When avocado monoculture replaces coniferous and deciduous forests (comprising about 30 oak and 15 pine taxa)⁷⁵ and many other vegetal species, the result is not only in a loss of flora diversity but also a reduction in fauna species. In 2019, Mexico's National Commission for the Knowledge and Use of Biodiversity (CONABIO) found that illegal forestation and land-use changes were jeopardizing the survival of monarch butterflies, by destroying unique pure stands of *oyamel* fir forest, which provide a unique habitat for these butterflies to overwinter.⁷⁶

Although avocado orchards in Uruapan Municipality were found to have a lower diversity of herpetofauna (amphibians and reptiles) than in deciduous tropical and coniferous forests, they also contained certain species that were not found in forests. This suggests that avocado orchards could potentially contribute to conserving biodiversity conservation if they are non-intensive, cultivated within natural forests and free of chemical pesticides.⁷⁷

The avocado industry also negatively affects soil health and water supply. Intensive avocado production degrades the soil, reducing organic matter, interchangeable potassium and available phosphorus as well as nitrogen in the 5–20-cm-deep soil layer,⁷⁸ while the clearance of weeds (which is a requirement for exporting fruits to the USA) may lead to soil erosion. This decline in soil quality is also expected to have a negative impact on future yields in avocado orchards.⁷⁹ Furthermore, reduced nitrogen and erosion results in increased surface runoff, as the soil develops a higher resistance to water penetration and thus has a lower wet aggregate stability.⁸⁰ In addition, avocado is a water-intensive crop, requiring 100–300 litres of water to produce one kilogram.⁸¹ In several areas of Michoacán, the impact on water supply in turn leads to social conflicts and illegal well digging.⁸² Indeed, a geohydrologic study of Uruapan's aquifer released in 2002 found that 77% of the groundwater was used for avocado production.⁸³ Traces of chemical pesticides used in avocado orchards have also been found in the aquifer, contaminating water intended for human consumption, and may lead to diseases that affect the gastrointestinal system, lungs, the liver, skin or even cancers.⁸⁴

From blood avocados to clean fruits: Delusion or real opportunity?

In recent years, awareness has been growing of the social and environmental impact of the avocado industry in Mexico, and of the links between the industry, public authorities and criminal groups.⁸⁵ Despite some timid advances on the ground, more needs to be done to reduce the negative externalities of avocado production, both now and in the long term, especially as global demand for avocados seems to be growing ever stronger. In light of the lack of existing measures taken by the Mexican authorities, the authors have identified recommendations, based on local best practices and experiences of other global agricultural commodities, which are mainly produced in developing regions and consumed in developed ones, such as coffee, soybeans and cacao.

Recommendations for social and environmental improvements

Figure 13 proposes recommendations to achieve social and environmental improvements in Mexico's avocado industry that can be synthesized around three axes:⁸⁶

1. To reward best production practices at the orchard level, through subsidies or a price premium obtained by persuading final consumers to pay more for a sustainable product.



2. To regulate outside capital investment (mainly from Mexico City or the USA) in packaging and distribution, to protect local small and medium-sized investors who would be more attuned to social and environmental externalities in the long term.
3. To limit 'product abstraction' and build trust at the consumer level through developing niche markets that directly link global consumers who favour environmentally friendly production systems to certified producers (Ecuador's cacao growers is an example of these practices).⁸⁷

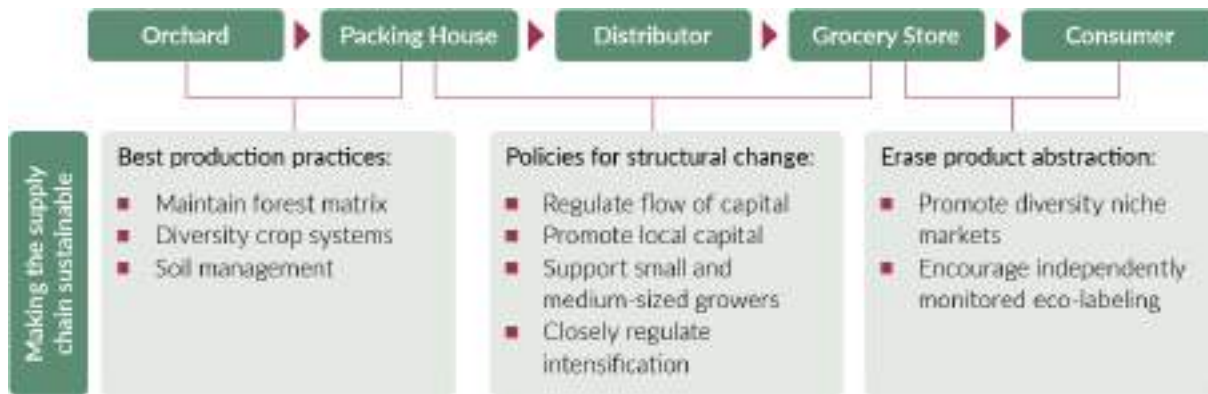


FIGURE 13 Multiple-scale recommendations to achieve social and environmental improvements in Mexico's avocado industry.

Source: Audrey Denvir et al, Ecological and human dimensions of avocado expansion in México: Towards supply-chain sustainability, *Ambio*, 2022, 51, pp. 152–166, 161

Recommendations for sustainable land use

A second set of recommendations arise from the work by Garibay and Bocco who propose public policy improvements, which have been refined to design a pathway for more sustainable land use on the Purhepecha plateau.⁸⁸

1. Define long-term land uses through community-based territorial planning. To ensure correct implementation, obtaining support from the land users through participative mechanisms would be crucial.
2. Articulate the social demands of the population through community-based development programmes. For example, integrate the preservation of the environment and cultural heritage with profitable productive projects, to encourage people to stay, instead of emigrating.
3. Strengthen community governance capacity, through enhancing local institutions, and promote and support transparent community spending to avoid corruption.
4. Encourage forest conservation, through existing subsidies that reward community-based, long-term oriented, sustainable forest management. To act as an effective stimulus, this would require distributing subsidies under transparent rules and monitoring environmental conditions regularly and impartially.
5. Involve local people in public works aimed at controlling soil erosion and recovering water springs.
6. Develop firewood plantations near urban areas, so domestic and artisanal use of firewood does not affect primary forests. In parallel, promote programmes that help people to acquire non-wood-burning ovens or to enhance the efficiency of wood-burning ones.
7. Develop a payment mechanism for environmental services that would allow fruit farmers to reward forest owners for the ecosystem provided by forest cover to the orchards in the same river basin. In particular, forest cover is essential when collecting rainwater, facilitating its infiltration into the soil and thus ensuring a regular water availability in springs or through relative humidity that allows unirrigated avocado production.

Such a mechanism would require designing a certification system for sustainable forest management, a payment system at the micro-watershed level and a regulatory agency involving avocado producers, forest owners, as well as the local, state and federal governments.

8. Promote the production of native maize varieties (*criollas*) through financial aid, to safeguard the genetic diversity of the Purhepecha plateau.
9. Develop intensive and modern agricultural systems that are environmentally and culturally friendly. The avocado boom benefited farmers in the warm lands of the Purhepecha plateau but not those in the cold upper lands, where pine forests are concentrated. Therefore, public policies should provide farmers in the cold upper lands with (e.g.) hydroponic techniques, food technology and manufacturing that would allow them to develop profitable and sustainable agricultural systems. This, in turn, would incentivize farmers from abandoning the land and overexploiting forests.
10. Improve environmental sanitation, through promoting efficient treatment of sewage water and waste, and reducing the use of chemical pesticides in agriculture.

Unfortunately, these inputs find little political echo within Mexican authorities. Although between 2019 and 2022, the Federal attorney general's office for environmental protection (PROFEPA) 'carried out 58 closures of properties, 42 criminal complaints, and 118 various procedures on 852 ha in which the use of forestland was changed without authorization',⁸⁹ the Michoacán avocado industry appears to be doing little to protect the environment.

However, a recent transformation of the avocado market may offer an opportunity for change. In July 2022, Michoacán's almost three-decade-old monopoly ended, when the neighbouring state of Jalisco⁹⁰ was certified to export avocados to the USA. Despite growing alarm about the deforestation underway in Jalisco to plant avocados, various initiatives are trying to advance the environmental cause. The government of Jalisco and the Association of Avocado Producers of Jalisco are working with the Rainforest Alliance certifier, a non-governmental organization based in the USA that promotes sustainability in forests and rural economies. Jalisco is the first Mexican state to be working towards green certification, but the APEAM in Michoacán, the biggest union in the country, has not made any progress towards forest certification.

Although the hope is that the Jalisco example will raise awareness within the Michoacán avocado-growing community, the sources consulted for this report agreed that no local environmental protection initiative seems capable of opposing the expansion of production, despite the damage to the state's image. In their view, only a sustained fall in export prices, coupled with increased international pressure, could tentatively push local players to promote financial, legislative, and normative efforts aimed at changing production schemes. Finally, in the current context, they point out that any announcements made by the government of Michoacán or APEAM are political statements and mild greenwashing, not a genuine desire to go against the market, despite the well-documented consequences on the environment and public health.



CONCLUSION

This policy report has shown that the continuing boom in avocado production in Michoacán, and in Mexico in general, cannot be understood as a simplistic 'market vs violence' issue. On the contrary, as the report illustrates, the avocado industry has developed in contact with violent actors, in particular a succession of criminal organizations that have exerted considerable pressure on avocado-producing populations, notably through racketeering and coercion. Yet, organized crime has also been able to place themselves at the service of politico-criminal networks and to ensure the illegal expansion of agricultural land. As is now well documented, this is based above all on collusion between the public authorities, the avocado-producing economic elites, and the criminal actors.

Avocado production in Michoacán is not an isolated case. It is one of many global examples of thriving economic activities coexisting with predation, extraction, and the primacy of market forces, to the detriment of public safety, human rights, environmental protection, and the fight against organized crime. In this context, the NAFTA and the EU's Global Agreement with Mexico on human rights, corruption, and general accountability have not had a significant impact, contrary to what both texts had promised.⁹¹

While the negative social and ecological impact of avocado production seems irrefutable, from 2017 to 2021, Mexico's avocado exports to the European market grew almost fourfold. In a world concerned about climate change and deforestation, and within the framework of recent EU regulations and Global Agreement's negotiations, Michoacán's avocado industry should become a test case for innovations and the food industry's ability to reform itself. However, despite severe human rights violations, the use of armed violence to support production, and widespread extortion across the entire value chain, both public and private decision-makers and stakeholders appear unable to change direction.

Although a highly regulated industry on paper, particularly in terms of phytosanitary and environmental regulations, these are inseparable from the dynamics of violence and human rights violations that are an integral part of the business. Against this backdrop, the report showed that the last thirty years of free trade agreements between Mexico, the USA and the EU, and the draconian rules imposed to obtain the certifications needed to export fruit, are more conducive to the constant expansion of economic activity than to full respect for good production conditions.

A genuine political will is urgently needed to support bureaucratic processes at EU and multilateral levels, over and above the essential national legislation and certification, and to transform reality on the ground. The new generation of free trade agreements, such as the current EU–Mexico Global Agreement, should go beyond trade facilitation and serve as a tool for regulating, monitoring and promoting human rights, environmental protection, and the fight against organized crime. As the report has shown, none of the agreements signed over the last 30 years has helped advance these issues.

In Mexico, this endeavor presents huge challenges, particularly given the corruption, vulnerability and insecurity within avocado-producing regions. The international community and the EU Commission and Parliament need to tackle the issue of Michoacán avocados in collaboration with the Mexican federal authorities, the Michoacán government, growers' associations, and civil society initiatives. The insatiable global demand for avocados threatens the region and its inhabitants. Without a rapid and profound political awakening and strong measures to change the model of avocado production in Mexico, it seems unlikely that the country's history of violent capitalist development will change in the short term.



POLICY RECOMMENDATIONS

Building on recent legislative innovations, especially the 2023 EU regulation to guarantee that imported products do not contribute to deforestation or forest degradation worldwide, it is crucial that the EU Commission and Parliament push for a change in the way the avocado industry is run in Michoacán – and Mexico. Although the EU regulation does not yet cover avocados, including them would pave the way for significant improvement and policy change. As environmental requirements set by the European private sector and importers become increasingly stricter, suppliers to the European market have to comply with a plethora of environmental initiatives, private standards and certifications.⁹² The renegotiation of the EU–Mexico Global Agreement offers an opportunity to strengthen international transparency mechanisms. In this context, the following policy actions are recommended, aimed at protecting civil society, promoting human rights, enhancing public security and protecting the environment.

To the international community:

1. Donors, the international community and civil society organizations should invest more resources in local studies that examine the complex dynamics linking the avocado industry, violence and environmental impacts.
2. The EU and the European Parliament should advocate for the Mexican federal government to coordinate with the avocado trade unions (especially APEAM), the Michoacán state government and key municipalities to improve due diligence and receive certification related to the sustainability of forests and rural economies, using the example of the Rainforest Alliance certifier.

To the European Union:

1. The EU and its members states should ensure that all goods imported under the renegotiated EU–Mexico Global Agreement are not produced directly or indirectly by illegal actors.
2. The fight against climate change must be a priority of the renegotiated agreement, which inevitably implies changes in means of production and consumption habits.
3. The renegotiated agreement should include a strong democratic clause, which is crucial for ensuring that the human rights of all parties involved are promoted and respected.
4. The EU, the European Parliament and Mexican authorities should allocate strategic funds to promote programmes and certification for fair avocado production locally, and to connect these with consumer awareness. For example, the anti-mafia certification and Libera Terra experiences in Italy could serve as best practices.
5. The EU, the European Parliament and Mexican authorities must engage with the private sector to push for stronger due diligence by private companies at all stages of production, packaging, export and supply chains, both in Mexico and third countries.
6. The European Parliament should push for avocados to be included in the EU's anti-deforestation regulation, and for stricter monitoring of serious human rights violations involving avocado production.

To the Mexican and local authorities:

1. The Mexican authorities should strongly support the action of the Federal attorney general's office for environmental protection (PROFEPa), by ensuring that its mandate is accompanied by sustainable funding, political support and proper enforcement of its rulings.



2. The Mexican federal government, together with the Michoacán state government and key municipalities, should devote more efforts to a strategy of demobilizing privately financed, armed self-defence groups (autodefensas) and guarantee that public forces (particularly police officers) replace the informal armed security providers.
3. The Mexican federal government, in alliance with the Federal attorney general's office and Michoacán's state attorney general, must address the systemic extortion that targets every stage of avocado production and export.



Notes

- ¹ Heriberto Paredes, La fiebre del aguacate. El fruto de la discordia en Michoacan, Gatopardo, 11 April 2021, <https://gatopardo.com/reportajes/la-industria-del-aguacate-en-mexico-esta-en-discordia/>.
- ² For a discussion of these assumptions, see for example: Tilman Brück, Wim Naudé and Philip Verwimp, Business under fire: Entrepreneurship and violent conflict in developing countries, *Journal of Conflict Resolution*, 57, 1, 3.
- ³ Alexander Curry, Violence and Avocado Capitalism, Noria Research, 17 March 2023, <https://noria-research.com/violence-and-avocado-capitalism-in-mexico/>.
- ⁴ See for example: Gustavo Arellano, The Times podcast: How violence taints Mexican avocados, Los Angeles Times Podcast, 24 February 2022, <https://www.latimes.com/podcasts/story/2022-02-24/the-times-podcast-avocado-ban-mexico>; Cat Rainsford, Mexico's cartels fighting it out for control of avocado business, *InsightCrime*, 30 September 2019, <https://insightcrime.org/news/brief/mexico-cartels-fighting-avocado-business/>; Nathaniel Parish, Are U.S. avocado buyers financing the cartel conflict in Mexico?, *Forbes*, 11 April 2019, <https://www.forbes.com/sites/nathanielparishflannery/2023/04/11/are-us-avocado-buyers-financing-the-cartel-conflict-in-mexico/>.
- ⁵ In nominal terms, the exports value increased from US\$29.54 million in 1994 to US\$2 976 million in 2021 – i.e. by 9 974%. To compute the variation in real value, considering the inflation in Mexico (as the analysis is centered on Mexico's producers), we first converted nominal export values from USD to MXN using Banxico's exchange rates for each year. Then, we deflated the nominal export values using the INEGI's National Consumer Price Index and set them in real 2021 MXN. Eventually, we converted back the real export values from MXN to USD using again Banxico's exchange rates of each year.
- ⁶ At the local level, avocado production is very geographically concentrated. In 2022, the state of Michoacán accounted for 70% of Mexico's planted surface area, and 74% of the national production value, while consolidating itself as the world's number one producer of avocado. Michoacán thus receives the largest share of Mexico's exportation value – which was about US\$1.8 million per year.
- ⁷ Data from the Executive Secretariat of the National Public Security System – which is the alternative, though less precise, source of information on that matter – recorded 2 467 victims of murder in Michoacán in 2022, equivalent to 50 homicides per 100 000 people. See Paul Frissard and Daniela Osorio, Atlas de homicidios México 2019, MUCD, December 2020, https://www.mucd.org.mx/wp-content/uploads/2021/01/Atlas_vf_digit_ligera.pdf.
- ⁸ Jens Beckert and Frank Wehinger, In the shadow: Illegal markets and economic sociology, *Socio-Economic Review*, 11, 1, 5–30.
- ⁹ Luis Torres, Mexico seeks to solidify rank as top U.S. trade partner, push further past China, Federal Reserve Bank of Dallas, 11 July 2023, <https://www.dallasfed.org/research/economics/2023/0711>.
- ¹⁰ Mexico–EU trade relations with Mexico: Facts, figures and latest developments, European Commission, https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/mexico_en
- ¹¹ Deforestation-free products, European Commission, https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en.
- ¹² Alfredo Cuarón and Mariana Díaz Avila, The environmental impact of the avocado production and trade with Europe (Focus: Jalisco), The Embassy of the Kingdom of The Netherlands in Mexico, 12 April 2023, <https://www.agroberichtenbuitenland.nl/landeninformatie/mexico/documenten/rapporten/2023/04/12/the-environmental-impact-of-the-avocado-production-and-trade-with-europe-focus-jalisco>.
- ¹³ Transnational Institute, Six reasons NOT to ratify the EU–Mexico Global Agreement, 5 July 2022, <https://www.tni.org/es/art%C3%ADculo/seis-razones-para-no-ratificar-el-acuerdo-global-union-europea-mexico-tlcuem>.
- ¹⁴ Jens Beckert and Matias Dewey, (eds), *The Architecture of Illegal Markets. Towards an Economic Sociology of Illegality in the Economy*, Oxford, New York: Oxford University Press, 2017.
- ¹⁵ Esteban Barragan and Thierry Linck, Producción y sociedades rancheras del Occidente de México, in Hermilio Navarro Garza, Jean-Philippe Colin and Pierre Milleville (eds), *Sistemas de producción y desarrollo agrícola*, Mexico, ORSTOM & Colegio de Postgraduados, Mexico, 1993, p 165–172; Éric Léonard, *De vaches et d'hirondelles. Grands éleveurs et paysans saisonniers au Mexique*, Paris: ORSTOM Éditions, 1995; Luz Nereida Perez Prado, Gente, agua, cultivos y desarrollo desigual en el valle de Tepalcatpec: imágenes, recuerdos y la memoria históricamente instruida, *Relaciones. Estudios de Historia y Sociedad*, 22, 87, 111–155; Victoria Malkin, Narcotraficking, migration and modernity in rural Mexico, *Latin American Perspectives*, 28, 4, 101–128; Hubert Cochet, *Des barbelés dans la Sierra. Origine et transformation d'un système agraire au Mexique*, Paris, ORSTOM Édition, 1993.
- ¹⁶ Pablo Alarcón-Cháires, El desierto verde mexicano, *Laboratorio de Etnoecología*, IIES-UNAM, Winter 2020, https://www.gob.mx/cms/uploads/attachment/file/538901/15_AGUACATE_sin.pdf.
- ¹⁷ Claudio Garibay Orozco and Gerardo Bocco Verdinelli, *Cambios de uso de suelo en la Meseta Purépecha (1976-2005)*, Centro de Investigaciones en Geografía Ambiental UNAM, UNAM, 2011.
- ¹⁸ Armonía Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, *Journal of Latin American Geography*, 2021, 20, 1, 154–184.
- ¹⁹ Alfredo Cuarón and Mariana Díaz Avila, The environmental impact of the avocado production and trade with Europe (Focus: Jalisco), <https://www.agroberichtenbuitenland.nl/landeninformatie/mexico/documenten/rapporten/2023/04/12/the-environmental-impact-of-the-avocado-production-and-trade-with-europe-focus-jalisco>.
- ²⁰ Statistical Annuaries from the General Direction of Statistics, which are currently published by the National Institute of Statistics and Geography (INEGI) at: <https://www.inegi.org.mx/app/publicaciones/default.html?t=0730001000000000&ag=99>.
- ²¹ Secretaría de Fomento, Colonización e Industria, 1900, *Anuario Estadístico*, p.490.
- ²² *Ibid.*, p. 581
- ²³ ML Martín Carbajal, Martín, La formación histórica del sistema de innovación de la industria del aguacate en Michoacán, Tzintzun. *Revista de Estudios Históricos*, 2016, 63, pp. 268-304.
- ²⁴ In Mexico, the communal farmland of a village, usually assigned in small parcels to the villagers to be farmed under a federally supported system of communal land tenure. See Collins: <https://www.collinsdictionary.com/dictionary/english/ejido>.
- ²⁵ Viridiana Hernández Fernandez, Bosques de guacamole: el surgimiento de la franja aguacatera mexicana a mediados del siglo XX, *Caravelle*, 2023, 119, pp. 37-50.
- ²⁶ *Ibid.*

²⁷ Ibid.

²⁸ María Adelina Toribio Morales, César Adrián Ramírez Miranda and Miriam Aidé Núñez Vera, Expansión del agronegocio aguacatero sobre los territorios campesinos en Michoacán, México, Eutopia. Revista de Desarrollo Económico Territorial, December 2019, 16, pp. 51–72.

²⁹ ML Martín Carbajal, Martín, La formación histórica del sistema de innovación de la industria del aguacate en Michoacán, Tzintzun. Revista de Estudios Históricos, 2016, 63, pp. 268–304.

³⁰ Armonia Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, Journal of Latin American Geography, 2021, 20, 1, 154–184.

³¹ Alfredo Cuarón and Mariana Díaz Avila, The environmental impact of the avocado production and trade with Europe (Focus: Jalisco), <https://www.agroberichtenbuitenland.nl/landeninformatie/mexico/documenten/rapporten/2023/04/12/the-environmental-impact-of-the-avocado-production-and-trade-with-europe-focus-jalisco>.

³² Data from the UN FAO, <https://www.fao.org/faostat/en/#data/QCL>.

³³ Data from The World Integrated Trade Solution, <https://wits.worldbank.org/trade/comtrade/en/country/MEX/year/2021/tradeflow/Exports/partner/ALL/product/080440>.

³⁴ Data from the UN FAO, <https://www.fao.org/faostat/en/#compare>.

³⁵ In nominal terms, between 1994 and 2021, the exports value increased by 9,974%, from US\$29.54 million to US\$2,976 million. To compute the variation in real value, considering the inflation in Mexico (as the analysis is centered on Mexico's producers), nominal export values were first converted from US\$ to the Mexican peso (\$MXN) using Banxico's exchange rates for each year. The nominal export values were then deflated using the INEGI's National Consumer Price Index and set in real 2021 MXN. Lastly, the real export values were converted back, from MXN to US\$, again using Banxico's exchange rates of each year.

³⁶ The real value was computed using the INEGI's National Consumer Price Index.

³⁷ The SIAP registers the 'average rural price' (*precio medio rural*), which is the price paid directly to producers when the product leaves the farm or the production location. This excludes any public subsidy, transportation costs, warehousing costs, processing costs or other charges for selling the produce. See https://www.gob.mx/cms/uploads/attachment/file/789519/NTGEBAP_2022.pdf.

³⁸ The real value was computed using the INEGI's National Consumer Price Index.

³⁹ Value obtained through multiplying the average price paid to producers by yields.

⁴⁰ It should be noted that avocado crops are perennial, whereas other crops – such as cereals or vegetables – are cyclical and their land coverage may be measured several times per year by SIAP. Therefore, to properly contrast the land dedicated to avocado with respect to other crops, only land planted with perennial crops or sowed to be collected during the most productive agricultural cycle in Mexico – i.e., during the rainy season in spring and summer –, letting aside the less productive one – autumn and winter.

⁴¹ SIAP's public databases are only available from 1980 to date.

⁴² María Adelina Toribio Morales, César Adrián Ramírez Miranda and Miriam Aidé Núñez Vera, Expansión del agronegocio aguacatero sobre los territorios campesinos en Michoacán, México, Eutopia. Revista de Desarrollo Económico Territorial, December 2019, 16, pp. 51–72

⁴³ The degree of marginalization (DM) calculated by the National Population Council (CONAPO) measures deprivation through four dimensions: education, housing, rurality, and income. The DM has five categories: very high, high, intermediate, low and very low. The full methodology and results for 2020 are available at: <https://www.gob.mx/conapo/documentos/indices-de-marginacion-2020-284372>.

⁴⁴ As defined by the National Council for Evaluation of Social Development Policy (CONEVAL), whose methodology and results are available at: <https://www.coneval.org.mx/Medicion/Paginas/Pobrezalncio.aspx>.

⁴⁵ Salvador Maldonado Aranda, Los márgenes del Estado mexicano. Territorios ilegales, desarrollo y violencia en Michoacán, Zamora, Colegio de Michoacán, 2010.

⁴⁶ Veena Das and Deborah Poole, (eds.), Anthropology in the Margins of the State. University of Michigan, School of American Research Press, 2004.

⁴⁷ Salvador Maldonado Aranda, La ilusión de la seguridad. Política y violencia en la periferia michoacana, Zamora, Colegio de Michoacán, 2018.

⁴⁸ Jens Beckert and Matias Dewey, (eds), *The Architecture of Illegal Markets. Towards an Economic Sociology of Illegality in the Economy*, Oxford, New York: Oxford University Press, 2017.

⁴⁹ Esteban Barragan and Thierry Linck, Producción y sociedades rancheras del Occidente de México, in Hermilio Navarro Garza, Jean-Philippe Colin and Pierre Milleville (eds.), Sistemas de producción y desarrollo agrícola, Mexico, ORSTOM & Colegio de Postgraduados, Mexico, 1993, p 165–172; Éric Léonard, De vaches et d'hirondelles. Grands éleveurs et paysans saisonniers au Mexique, Paris: ORSTOM Éditions, 1995; Luz Nereida Pérez Prado, Gente, agua, cultivos y desarrollo desigual en el valle de Tepalcatepec: imágenes, recuerdos y la memoria históricamente instruida, Relaciones. Estudios de Historia y Sociedad, 22, 87, 111–155; Victoria Malkin, Narcotrafficking, migration and modernity in rural Mexico, Latin American Perspectives, 28, 4, 101–128; Hubert Cochet, Des barbelés dans la Sierra. Origine et transformation d'un système agraire au Mexique, Paris, ORSTOM Édition, 1993.

⁵⁰ Interview conducted in Buenavista with a former Mayor, on 17 September 2015

⁵¹ Between 1990 and 2000, 7.60% of Mexicans emigrating to the US came from Michoacán. This percentage represented 372 592 people, or 1.6 migrants per Michoacán household. Financial remittances rose from US\$1.6 billion in 1989 to US\$6.2 billion in 2000, an increase of 374% – remittances in 2001 were equal to 70% of Mexico's oil exports. In 2017, Mexico was the country with the second-highest emigrant population in the world, after India, and remittances represented 2.7% of GDP. Michoacán was the state with the second highest percentage (15.8%) of households receiving remittances – in 2017, remittances to Mexico amounted to US\$2.9 billion in 2017 and reached an estimated US\$35 billion in 2019. See also Anuario de migración y remesas México 2018, https://www.bbvaesearch.com/wpcontent/uploads/2018/09/1809_AnuarioMigracionRemesas_2018.pdf.

⁵² Revista Proceso Archives, En el centro del narcotráfico en Michoacán, 23 April 1988.

⁵³ Vadim Volkov, *Violent Entrepreneurs: The Use of Force in the Making of Russian Capitalism*, Cornell University Press, 2002.

⁵⁴ Arturo Cano, La Familia, Cártel al que le gustan las asambleas, La Jornada Archives, 18 December 2010.

⁵⁵ Raul Zepeda Gil, Memorias de la Segunda Conferencia sobre Violencia y Paz, Biblioteca Digital del Senado,

2018, http://bibliodigitalibd.senado.gob.mx/bitstream/handle/123456789/3689/violenciapaz_final%20%281%29br.pdf?sequence=1%20&isAllowed.

⁵⁶ Denuncian aguacateros de Michoacán sufrir extorsiones de la Policía Federal, La Vanguardia, Nacional, 23 September 2015, <https://vanguardia.com.mx/noticias/nacional/2938381-denuncian-aguacateros-de-michoacan-sufrir-extorsiones-de-la-policia-federal-CCVG2938381>.

⁵⁷ Story related during a collective interview with a group of men on an autodefensas barricade in Tancitaro on 25 February 2015. We call him Pablo for anonymity and security reasons.

⁵⁸ According to the official data; see: <https://versionpublicarnpdno.segob.gob.mx/Dashboard/Sociodemografico>.

⁵⁹ We have been unable to clarify the terms under which this agreement was reached.

⁶⁰ Interview with the author in Michoacán, March 2021

- ⁶¹ On firearms, violence and internal displacement in Michoacan, see Stephania Corpi and Toya Sarno Jordan, Caliber 60, Texas Public Radio Podcast, March 2023, <https://www.tpr.org/2023-03-08/introducing-caliber-60>.
- ⁶² During various field visits in 2020, 2021 and 2022.
- ⁶³ During interviews held with leaders over the past few years.
- ⁶⁴ Richard Luscombe, US halts avocado imports from Mexico after threat to American inspector, *The Guardian*, 14 February 2022, <https://www.theguardian.com/world/2022/feb/14/us-avocado-imports-mexico-threats>.
- ⁶⁵ Audrey Denvir et al., Ecological and human dimensions of avocado expansion in México: Towards supply-chain sustainability, *Ambio*, 2022, 51, pp. 152–166; Armonia Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, *Journal of Latin American Geography*, 2021, 20, 1, 154–184.
- ⁶⁶ Pablo Alarcón-Cháires, El desierto verde mexicano, Laboratorio de Etnoecología, IIES-UNAM, Winter 2020, https://www.gob.mx/cms/uploads/attachment/file/538901/15_AGUACATE_sin.pdf.
- ⁶⁷ Interview with an avocado farmer and autodefensa leader in Michoacan, March 2021.
- ⁶⁸ According to a study by the Universidad de las Américas de Puebla (UDLAP), Michoacán is among the six states with a high level of environmental impunity, sharing places with Zacatecas, Tlaxcala, Yucatán, Sinaloa and Colima. The model is based on four dimensions: institutional capacity, environmental degradation, environmental crime and intergenerational strategy. The states with the highest levels of unsolved crimes in this area are Guerrero (96%), Oaxaca (95%) and Michoacán (95%). See <https://www.udlap.mx/cesij/files/indices-globales/IGI-MEX-2022-UDLAP.pdf>
- ⁶⁹ The CONAFOR defines deforestation as the permanent loss of forest cover. It is expressed as net deforestation if the natural or induced processes of reforestation are discounted and as gross deforestation otherwise.
- ⁷⁰ Jean Mas, A Velásquez-Montes and T Fernández-Vargas, Monitoreo de los cambios de cobertura del suelo en Michoacán, La biodiversidad en Michoacán: Estudio de Estado, 2005, 204–206.
- ⁷¹ Although the error intervals of these estimations are very large (close to half of the estimated surface area), https://tableros_snmf.cnf.gob.mx/deforestacion_estatal.
- ⁷² Claudio Garibay Orozco and Gerardo Bocco Verdinelli, Cambios de uso de suelo en la Meseta Purépecha (1976–2005), Centro de Investigaciones en Geografía Ambiental, UNAM, 2011.
- ⁷³ Ibid.
- ⁷⁴ Interviews and discussions with avocado farmers in Michoacan, March 2021.
- ⁷⁵ Audrey Denvir et al., Ecological and human dimensions of avocado expansion in México: Towards supply-chain sustainability, *Ambio*, 2022, 51, pp. 152–166.
- ⁷⁶ Plan de acción para la Conservación de la Mariposa Monarca en México 2018/2024, SEMARNAT – CONABIO – CONANP, March 2019, <https://www.conanp.gob.mx/documentos/PlandeAccionMonarca2018-2024.pdf>.
- ⁷⁷ Jorge Alejandro Marroquin Paramo et. al., Diversidad de la herpetofauna en huertos de aguacate y hábitats conservados en Michoacán, México, Revista Mexicana de Biodiversidad, 2017, 88, pp. 234–240.
- ⁷⁸ M. Bravo-Espinosa et al, Effects of converting forest to avocado orchards on topsoil properties in the Trans-Mexican Volcanic System, Mexico, *Land Degradation & Development*, 2012, 25, pp. 452–467.
- ⁷⁹ Armonia Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, *Journal of Latin American Geography*, 2021, 20, 1, 154–184.
- ⁸⁰ This refers to the extent to which soil aggregates resist falling apart when hit by rain drops and wetted.
- ⁸¹ Armonia Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, *Journal of Latin American Geography*, 2021, 20, 1, 154–184.
- ⁸² Audrey Denvir et al, Ecological and human dimensions of avocado expansion in México: Towards supply-chain sustainability, *Ambio*, 2022, 51, pp. 152–166.
- ⁸³ Conagua, Determinación de la disponibilidad de agua en el acuífero Uruapan, Estado de Michoacán. Comisión Nacional del Agua, Gerencia de Aguas, 2002.
- ⁸⁴ Armonia Borrego and Teodoro Carlón Allende, Principales detonantes y efectos socioambientales del boom del aguacate en México, *Journal of Latin American Geography*, 2021, 20, 1, 154–184.
- ⁸⁵ See La fiebre del aguacate. El fruto de la discordia en Michoacán, Gatopardo, April 2021, <https://gatopardo.com/reportajes/la-industria-del-avacate-en-mexico-esta-en-discordia/>.
- ⁸⁶ Denvir et al.
- ⁸⁷ Product abstraction can be defined as the ‘displacement and abstraction of commodities to blind consumers to the processes and places of production This process facilitates commodity consumption by reducing complexity of decision-making and ensuring a predictable, standardized product for consumers, but it creates distorted economic markets, where environmental and social costs are externalized, making the costs of commodities low for consumers but high for producers.’ (Castree, 2003; Greenberg et al, 2012; Gudynas, 2015).
- ⁸⁸ Claudio Garibay Orozco and Gerardo Bocco Verdinelli, Cambios de uso de suelo en la Meseta Purépecha (1976–2005), Centro de Investigaciones en Geografía Ambiental UNAM, 2011.
- ⁸⁹ Agustín del Castillo, Avocados: The green gold that wipes western Mexico’s forests from the map, Mongabay, 16 June 2023, <https://news.mongabay.com/2023/06/avocados-the-green-gold-that-wipes-western-mexicos-forests-from-the-map/>.
- ⁹⁰ The state of Jalisco is the origin of most avocados exported from Mexico to Europe, and the second largest avocado producer state in Mexico with roughly 11% of the national production. It is also the state with the fastest growth in production. A report commissioned by the Embassy of The Netherlands released in March 2023 studied the trends in avocado trade from Jalisco to Europe and the environmental impact of the market: <https://www.agroberichtenbuitenland.nl/documenten/rapporten/2023/04/12/the-environmental-impact-of-the-avocado-production-and-trade-with-europe-focus-jalisco>
- ⁹¹ European Commission Services’ Position Paper on the sustainability impact assessment in support of negotiations for the modernization of the trade part of the global agreement with Mexico, CIRCABC, 5 October 2022, <https://circabc.europa.eu/ui/group/09242a36-a438-40fd-a7af-fe32e36cbd0e/library/7c135563-f648-410e-a2db-6a38a072183b/details?download=true>.
- ⁹² Centre for the Promotion of Imports from developing countries (CBI), Netherlands Ministry of Foreign Affairs, with information coming from Alfredo Cuaron and Mariana Diaz Avila, The environmental impact of the avocado production and trade with Europe (Focus: Jalisco), The Embassy of the Kingdom of The Netherlands in Mexico, 12 April 2023, <https://www.agroberichtenbuitenland.nl/landeninformatie/mexico/documenten/rapporten/2023/04/12/the-environmental-impact-of-the-avocado-production-and-trade-with-europe-focus-jalisco>.



GLOBAL INITIATIVE

AGAINST TRANSNATIONAL
ORGANIZED CRIME

ABOUT THE GLOBAL INITIATIVE

The Global Initiative Against Transnational Organized Crime is a global network with over 600 Network Experts around the world. The Global Initiative provides a platform to promote greater debate and innovative approaches as the building blocks to an inclusive global strategy against organized crime.

www.globalinitiative.net

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