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## Diffusion, diversion, displacement – but not disruption

The challenge of responding to synthetic drug markets, through the lens of tramadol in West Africa

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## Summary

Across Africa, the GI-TOC has documented the proliferation of synthetic drugs, the resulting transformation of drugs markets and the escalation of drug-related harm. The nature of synthetic drug markets – with their low barriers to entry and flexible supply chains – makes them attractive to criminal actors and difficult to respond to. The response in Africa is further hampered by a dearth of evidence regarding the scope and scale of the synthetic drug market. This report explores how synthetic drug markets respond to programming seeking to disrupt them. Tramadol is used as a lens through which to consider existing response frameworks to synthetic drugs in the ECOWAS region and more broadly.

## Key findings

- Supply-side responses should target sites close to the point of production of the synthetic drug.
- It is key to harmonise enforcement and regulation of synthetic drugs across different jurisdictions.
- Policy-makers must consider demand, in particular Tramadol's role as a painkiller, in shaping responses.
- Responses to synthetic drugs in Africa are far behind the curve: the proliferation of substances poses a significant challenge to identification, and interdiction.
- We cannot see what we are not looking for: there is an urgent need for more data on synthetic drug markets in Africa.



**OCWAR-T**

Organised Crime: West African Response to Trafficking

## Acronyms and abbreviations

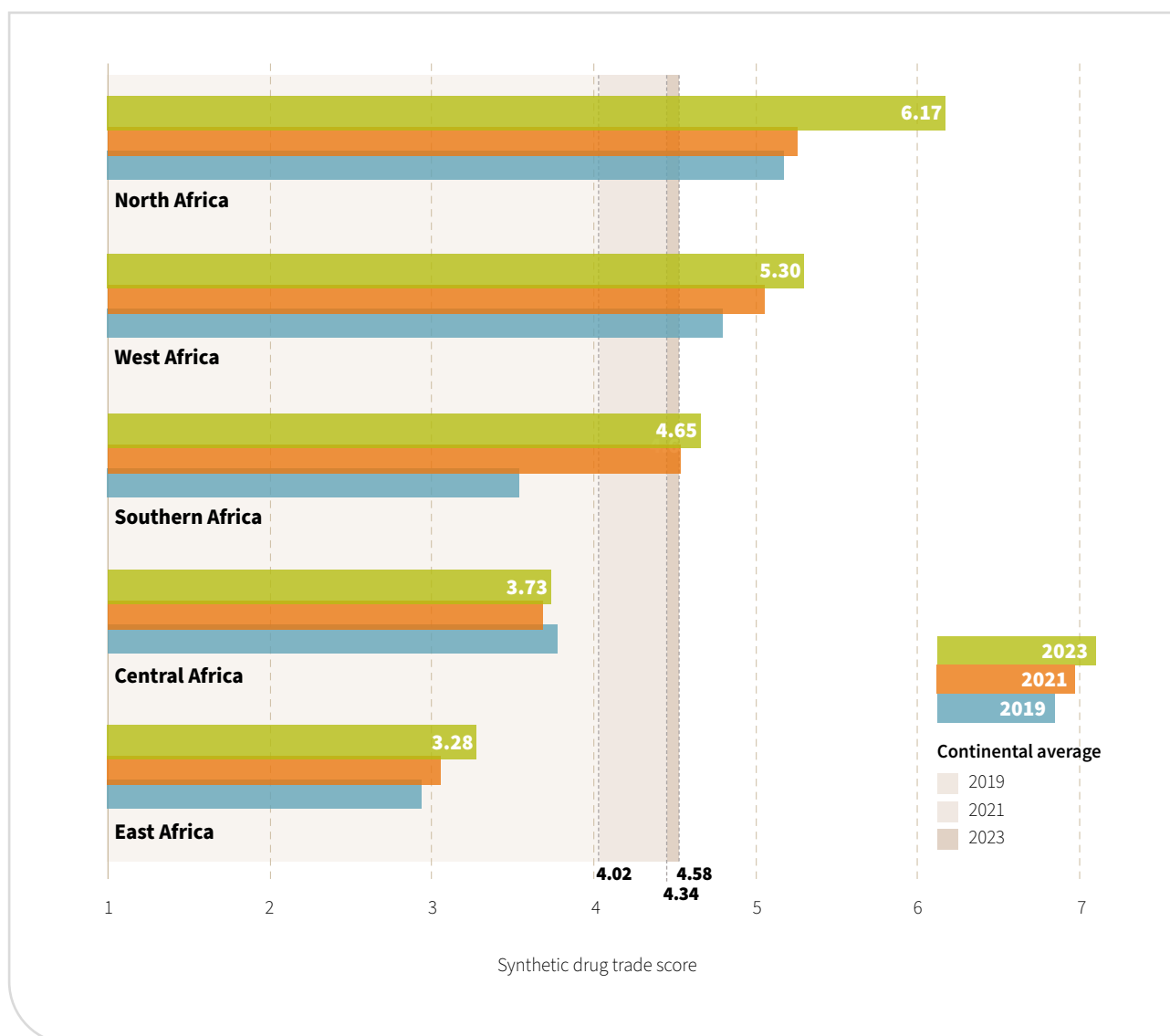
<b>AIRCOP</b>	Airport Communication Programme, UNODC
<b>ECOWAS</b>	Economic Community of West African States
<b>GI-TOC</b>	Global Initiative Against Transnational Organized Crime
<b>INCB</b>	International Narcotics Control Board
<b>NDLEA</b>	National Drug Law Enforcement Agency, Nigeria
<b>NPS</b>	New psychoactive substances
<b>OCRTIS</b>	Central Office for the Repression of Illicit Drug Trafficking, Niger
<b>PWUD</b>	People who use drugs
<b>UNODC</b>	United Nations Office on Drugs and Crime
<b>WENDU</b>	West African Epidemiology Network on Drug Use
<b>WHO</b>	World Health Organization

## Introduction

The harms of synthetic drug markets have been recognised for decades. In 1971, the UN Convention on Psychotropic Substances set out a protocol for the control of drugs such as amphetamines, barbiturates and psychedelics. Since then, and particularly since 2010, the number of synthetic drugs and their precursors has multiplied far beyond those under international regulation. New psychoactive substances (NPS) that are considered to be public health risks have increased six-fold since 2009, reaching 1 047 unique substances by 2020.<sup>1</sup>

Across Africa, the Global Initiative Against Transnational Organized Crime (GI-TOC) has documented the proliferation of synthetic drugs ranging from synthetic opioids to methamphetamines and synthetic cannabinoids, the resulting transformation of several drugs markets and the escalation of drug-related harm.

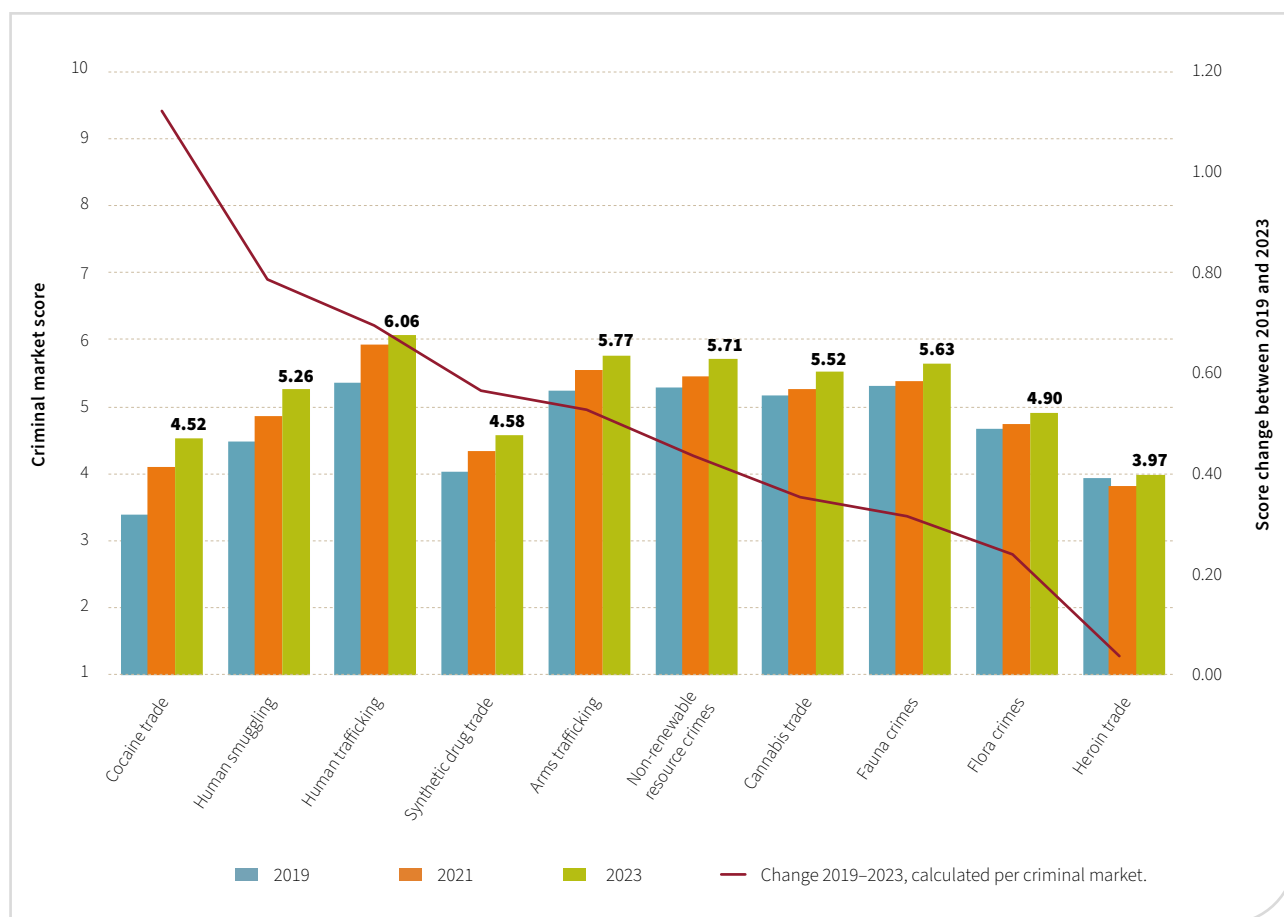
Chart 1: Regional reach of synthetic drug markets in Africa, 2019–2023.



Source: GI-TOC, Global Organized Crime Index

**Note:** As with other illicit drug markets, the Index score takes in the production, distribution and sale of synthetic drugs, which includes synthetic opioids such as tramadol, amphetamine-type stimulants, methamphetamines and fentanyl, as well as any narcotics included in the three main international drug control conventions.<sup>2</sup> Consumption of such drugs is not itself a form of organised crime, but the Index considers consumption in determining the reach of the illicit drug market. The category of ‘substandard and falsified medical products’, as defined by the World Health Organization, has been excluded.

Chart 2: Evolution of criminal market prevalence in Africa, 2019–2023.



Source: GI-TOC, Global Organized Crime Index

Underscoring this, the 2023 Organized Crime Index, an expert-led biennial assessment of criminal markets and state resilience, scores the synthetic drug trade in West Africa as higher (at 5.30) than the global average (4.95), and the second-highest in Africa, after North Africa (6.17).<sup>3</sup> Further, and perhaps even more concerning, the Index indicates that the market is among the fastest growing both in West Africa (from 5.07 in 2021 to 5.30 in 2023) and the African continent more broadly (4.34 in 2021 to 4.58 in 2023). Only the cocaine trade, human trafficking and human smuggling have increased in prevalence more than the synthetic drug trade since 2019.<sup>4</sup>

In West Africa today, a pharmaceutical opioid called tramadol is among the most trafficked and consumed synthetic drugs. Between 2013 and 2018, it was among the regions with the largest seizures of tramadol.<sup>5</sup> By 2017, 77% of global tramadol seizures occurred in West Africa.<sup>6</sup> This marked an ongoing trend. Between 2016 and 2020, Africa accounted for half the volume of pharmaceutical opioids seized globally, largely owing to the non-medical use of tramadol.<sup>7</sup>

While reliable quantitative data on drug use in West Africa is lacking, interviews with people who use drugs (PWUD) and law enforcement, civil society and health professionals in West Africa emphasise the prevalence of tramadol consumption, with many reporting tracked increases in retail markets in their countries.<sup>8</sup> According to the West African Epidemiology Network on Drug Use (WENDU), eight West African countries reported tramadol as the main drug of concern for individuals seeking treatment for drug-related disorders during the 2020–2022 reporting period – up from two countries (Benin and Togo) in the reporting period of 2020–2021.<sup>9</sup> (It is key to recognise that while non-medical use of tramadol – the focus of this report – is a concerning trend, tramadol is also an important tool for the treatment of pain in surgical and other medical settings in West Africa and globally, and that access to pain relief in West Africa remains a significant challenge.)

Yet tramadol is only the most visible face of West Africa's challenge with synthetic drugs. The nature of synthetic drug markets – with their low barriers to entry and flexible supply chains – makes them both extremely attractive to criminal actors and extremely difficult to effectively respond to. Compounding these inherent challenges, the response in Africa is further hampered by a dearth of evidence regarding the scope and scale of the synthetic drug market, which leads to a consistent underestimation of its presence and impact.

The late 2010s were pivotal in the response to tramadol markets in West Africa, and consequently to the evolution of the criminal market. From 2016, law enforcement actors increasingly focused on tramadol across much of the region, while 2018 marked the enactment of regulatory reform in India, the major source of the drug up to that point, governing its export.

This report explores how criminal markets respond to policies and programming that seek to disrupt them, particularly synthetic drug markets, by tracking five distinct tramadol market reactions since 2018.<sup>10</sup> The report focuses on tramadol markets in Niger, Benin and Togo, while also drawing in broader trends across the ECOWAS region. These market shifts are placed in a broader analysis of synthetic drug market trends and dynamics. Consequently, tramadol is used as a lens through which to consider existing response frameworks to synthetic drugs, not only in the ECOWAS region, but also more broadly.

## Methodology

This report draws on a wide range of primary and secondary data resources. The primary source of data is fieldwork undertaken between February and March 2023 in Benin, Togo and Niger. These three countries were selected for their central role in the regional tramadol market. Before 2018, both Benin and Togo were significant import points for the illicit trade in tramadol while Niger was an important corridor for the intraregional transport of tramadol destined for the domestic market, and onwards traffic towards Libya and Mali.<sup>11</sup> The criteria for selecting fieldwork locations included the perceived importance of the location to regional tramadol markets; its role in the regional illicit trade network; the strength of the local civil society network that could support the fieldwork; and considerations of personal security and fieldwork accessibility.

In Benin, semi-structured interviews were conducted in Cotonou, the country's largest city and de facto administrative capital. In Togo, interviews were carried out in the nation's capital, Lomé, and Cinkassé, a town on the border with Ghana and Burkina Faso and a main transit point for a range of illicit products entering and leaving Togo.<sup>12</sup> In Niger, interviews took place in the capital, Niamey, and the city of Agadez, a transit point for many illicit economies and an increasingly important drug consumption hub.<sup>13</sup>

In addition, two focus group discussions were held with tramadol users in Togo and Benin. Participants included motorbike taxi drivers, known in Lomé as the Djemidjan, and garage workers in Cotonou. Members of these two professions are perceived to be among the largest non-medical consumers of tramadol. Additional interviews were conducted with a range of other drug market stakeholders, including tramadol consumers, traffickers, transporters and dealers; medical doctors and pharmacists; police, customs and other national security authorities; members of civil society; and political decision makers. Data was also collected remotely through interviews with national, regional and international experts. In total, almost 50 interviews were conducted.

Secondary sources of data and findings come from the GI-TOC's wider research programmes on African drug markets, especially recent work on synthetic drug markets which used retail market data to explore supply chains, distribution and consumption dynamics and identified subsequent trends in regional drug trafficking. Other useful datasets include those found in the illicit hub mapping initiative of the GI-TOC's Observatory of Illicit Economies in West Africa<sup>14</sup> and the Organized Crime Index.<sup>15</sup>

Finally, we draw on datasets and case studies available in the broader literature. These include studies of the economic behaviour of synthetic drug markets and the ways that drug markets have reacted to shocks across

time and place. These resources serve to situate West Africa's tramadol markets in the broader global context. This in turn reinforces the study's interpretation of market dynamics observed in Benin, Niger and Togo and the ways that the current tramadol work reflects and reinforces lessons from the implementation of response frameworks – which, to this day, the global community is largely still failing to accept.

This research was coordinated as part of component 4 of the Organized Crime: West African Response to Trafficking project. The GI-TOC, in partnership with the Institute for Security Studies, is one implementing partner in this project. The topic was approved by the Economic Community of West African States (ECOWAS) Commission before research began. It was coordinated in partnership with three members of the West African Research Network on Organised Crime, which was launched in March 2022 and includes West African civil society organisations, research and applied policy institutes and other networks that focus on organised crime in the region. Local research partners included the Association Nigérienne de Lutte Contre la Drogue et l'Immigration Illicite in Niger, the Association des Volontaires pour le Secours et l'Assistance Humanitaire in Benin, and the Alliance Nationale des Consommateurs et de l'Environnement in Togo. These three organisations contributed to the design of the research and led the in-country data collection with the support of GI-TOC staff, both in the field and in programme design and data analysis.

### **The synthetic attraction: Analysing the synthetic drugs criminal market**

The nature of synthetic drug markets makes them extremely attractive to criminal actors: from their perspective, the barriers to entry are low.

In contrast to traditional plant-based drug markets, many synthetic drug markets do not need established transnational relationships, complex and expensive logistics, large spaces of cultivable land or significant start-up capital.

Many composite synthetic drugs and their precursor chemicals can be purchased on the internet (both the dark net and surface web) and imported in small quantities by air, land or sea. With internet penetration in Africa<sup>16</sup> creating increased access to virtual marketplaces, online purchase and shipping is a growing contributor to local synthetic availability.<sup>17</sup>

The profit margins are also attractive, with precursors widely available and very cheap, and small quantities often making significant volumes of retail synthetic drugs.<sup>18</sup>

Further, the proliferation of precursors and the generally low cost of production and import means that criminal actors don't need much financial capital to enter many synthetic drug markets. These are characteristic of a 'bridge' criminal market: new entrants can use them to build capital before entering other, more capital-intensive, markets (either licit or illicit).<sup>19</sup>

The ease with which new players can enter the market, the low price of many synthetic drugs – often undercutting traditional plant-based substances – and the ability of manufacturers to quickly scale up production to meet demand means that new synthetic entrants have repeatedly captured a large share of the drug retail markets extremely quickly, with devastating impact. The cases of methamphetamines in South Africa<sup>20</sup> and synthetic cannabinoids in Mayotte and Mauritius<sup>21</sup> illustrate these trends.

## **Tramadol policy and response developments: India and West Africa**

While tramadol has been around since the 1970s, its material entry into the informal drug market in West Africa has only been tracked since the mid-2000s.<sup>22</sup> The late 2010s saw a surge in tramadol imports in sub-Saharan Africa, along with commensurate growth in consumption. In several ECOWAS countries, this gave rise to stronger government efforts to disrupt the supply of tramadol to illicit markets in West Africa.

In this research, we focus on two significant developments in these responses. First, the 2018 reform of tramadol export regulations in India, a pharmaceutical production country that had been the origin of much of West Africa's supply of tramadol until then. The second response was an increased law enforcement effort. Here we focus on the case studies of Niger, Togo and Benin.

### **Regulatory reform in India**

China and India were two of the three largest origin points for pharmaceutical products imported into ECOWAS countries in 2021.<sup>23</sup> China is the world's largest manufacturer of pharmaceuticals (by volume), with around 25% of global output,<sup>24</sup> and India is the second largest.<sup>25</sup> The UN has noted that the scale and rapid expansion of industrial pharmaceutical production, particularly in countries operating as large-scale producers, poses challenges to the effective regulation of the synthesis of illicit substances.<sup>26</sup>

In its 2021 report on tramadol, the United Nations Office on Drugs and Crime (UNODC) noted that 'available data show that most of the tramadol seized in West Africa in and prior to 2018 originated in India and, to a much lesser extent, China'.<sup>27</sup> Ghana's Food and Drug Authority indicated that at least 87% of tramadol seized in that country in 2017 originated in India.<sup>28</sup>

Official data on tramadol exports from India to West African countries<sup>29</sup> show that over 70% of declared shipments of tramadol between 2013 and 2018 had a dosage that exceeded approved medical thresholds.<sup>30</sup> By the late 2010s, Indian politicians were increasingly concerned about reported abuses and diversions of tramadol sourced from India and pushed for domestic regulatory reform.<sup>31</sup> In May 2018, tramadol was added to the Indian government's list of controlled substances under the Narcotic Drugs and Psychotropic Substances Act of 1985.<sup>32</sup>

This new regulation significantly restricted the export of tramadol from India by requiring importing countries, where the drug was under national control, to provide an import authorisation to the exporting company in India. Thus, tramadol shipments without the required authorisation, including tramadol which exceeded authorised dosages, were illegal. The Act also granted greater powers to law enforcement, empowering authorities to enter tramadol laboratories and to prosecute unlicensed tramadol manufacturers.<sup>33</sup>

In the immediate wake of this regulatory reform, Indian authorities blocked a number of tramadol consignments destined for West African countries, including Benin and Nigeria.<sup>34</sup> Some countries in the region – including Ghana and Nigeria – saw a quick drop in tramadol seizures,<sup>35</sup> but this was not uniform across West Africa. For example, official seizure data in Niger demonstrated greater annual fluctuations in tramadol seizures following India's regulatory reform.<sup>36</sup>

### **West African governments step up repression**

From the late 2010s, the governments of Benin, Togo and Niger took an increasingly firm stance on the non-medical use and illicit trade of tramadol, albeit to varying degrees. PWUD and civil society advocates in these three countries similarly reported an uptick in enforcement efforts.

Benin had long led initiatives against the trafficking of pharmaceutical products, with the 2009 Cotonou Appeal Against Fake Medicines a notable example.<sup>37</sup> The election of President Patrice Talon in 2016, however, marked a strong escalation in the response to tramadol markets, with increased law enforcement interdiction operations, seizures and public awareness-raising measures.<sup>38</sup>

On 24 February 2017, President Talon launched the domestic implementation of Operation Pangea 9, a vast programme run by Interpol since 2008, which aims to raise awareness of the harmful effects of fake medicines and prosecute traffickers and others involved. One element of increased repression has been repeated large raids, including at Dantokpa market, one of Cotonou's largest markets and a known hub for the sale of illicit pharmaceutical products. In a single raid in March 2017, 84 tonnes of pharmaceutical products were seized



and 109 people were arrested.<sup>39</sup> More recently, a 2021 raid reportedly resulted in the arrest of 99 people.<sup>40</sup> Such operations are typically conducted by the Office Central de Répression du Trafic Illicite de Drogue et Précurseurs and the Agence Béninoise de la Régulation Pharmaceutique.

The establishment of a special court for financial crime and terrorism (Cour de Répression des Infractions Économiques et le Terrorisme) in 2018 was a key factor in deterring corrupt practices at the main port, other transport infrastructure and official entry points.<sup>41</sup> Tramadol seizures at the Port of Cotonou significantly decreased from 2019.<sup>42</sup> As noted above, however, interpreting seizure data as an indicator of trafficking volume is a fraught endeavour. A decline in the volume of seizures of a particular substance through the port is not, in and of itself, conclusive evidence of a decrease in the volume flow, even though government officials repeatedly assert a positive correlation.

Niger listed tramadol in 2013.<sup>43</sup> An increase in police raids and operations in the cities of Niamey, Agadez and Maradi reportedly led to the dismantling of tramadol trafficking operations, as well as the closure of many shops on the outskirts of the various towns.<sup>44</sup>

Togo enacted its regulatory reform in 2015, aiming to enhance the national response to the illicit market in pharmaceutical products in particular, and the domestic illicit drugs market more broadly.<sup>45</sup> Around the same time, Togo established additional security and control structures at its international points of entry, including the autonomous maritime Port of Lomé and the international airport.<sup>46</sup> However, local civil society organisations point to 2021 as the real milestone, when raids escalated and law enforcement began to wage ‘a war against sellers’.<sup>47</sup>

## Tracking the changes in criminal market dynamics

The supply-side actions taken by states seem to have contributed to five key discernible trends in West Africa’s markets of tramadol for non-medical use, which can be categorised into first- and second-order impacts. The former are, by their nature, marginally simpler to verify and have a stronger supporting evidence base.

Since 2018, illicit tramadol markets:

- (in the focus countries) have become less visible and operate more clandestinely;
- (in the focus countries) have tracked an increase in retail prices;
- (in some countries in West Africa) are increasingly being supplied with tramadol (licit or illicit) manufactured in and shipped from Pakistan.

The second-order impacts flow from these three. As both rely on testing, they may be attributable to shifts in testing approaches rather than material changes to the market itself. Nonetheless, given the similar trends in reporting in the focus countries and other ECOWAS countries, we make these assessments with some degree of confidence:

- a range of synthetic drugs with chemical compositions similar to tramadol (e.g. Tafrodol) has entered the West African consumption market since 2018;
- tramadol has, in some cases, been replaced or complemented by synthetic drugs which bear limited chemical resemblance. This is interpreted as part of a tendency for new synthetic drugs to emerge as substitutes for other (synthetic or plant-based) drugs that have become more expensive or scarce or both.

We consider each of these in turn, embedding this analysis in the broader landscape of tracking the behaviour of criminal markets – particularly synthetic drug markets – in reaction to supply-side response interventions.

## First-order impacts

### The market becomes less visible

Stakeholders interviewed for this research – including PWUD, civil society, and law enforcement – concurred that illicit tramadol markets in all three countries had moved underground, becoming more clandestine.

In Togo, one civil society representative reported that tramadol sellers now required a codeword from customers to protect them from arrest.<sup>48</sup> The visibility of the tramadol trade in public spaces where it was previously conspicuous, including public transport stations, has reportedly substantially decreased.<sup>49</sup>

In the wake of stepped-up enforcement in Niger, one tramadol seller reported the absence of visible tramadol retail activities in locations where they previously had been readily and openly available: ‘In the city of Agadez, there is a market called Hilin Sarki and there is another called Rotchi. There is also the bus station called Tacha [...]. Now there are no dealers there.’<sup>50</sup>

Some tramadol traffickers reported a greater reliance on corruption – an extremely common feature of retail drug markets. Several dealers, both small sellers and higher-level wholesalers, reported paying bribes to law enforcement in Agadez.<sup>51</sup> One seller in Agadez, who reported that his activities were not impacted by an increase in repressive activity, paid FCFA 30 000–50 000 (€46–76) per month in bribes to government officials in 2023.<sup>52</sup> A different seller explained that rotations of officials stationed in Agadez sometimes resulted in a temporary increase in anti-tramadol trafficking operations and arrests when the new officers were not familiar with the existing arrangements.<sup>53</sup>

As is the case with many interventions premised on enhanced law enforcement, the widespread arrests, raids and police operations predominantly impact the most visible elements of the market. This means that disproportionate harms accumulate towards the lowest rungs of the criminal market hierarchy: lower-level players and PWUD. According to one seller in Agadez, ‘[the police] do raids but they only pick up small consumers to send them to jail.’<sup>54</sup>

These market reactions – intensified enforcement driving illicit markets underground and increased reliance on corruption – have been tracked in other illicit markets, including human smuggling markets in Niger since criminalisation and greater enforcement since 2015 (noting that this has decreased following the July 2023 coup).<sup>55</sup> Criminal markets that become less visible can also become more harmful, both for clients of the criminal market (PWUD or migrant smugglers’ clients) and for governance, as corruption can become further entrenched.

The pernicious consequences of law enforcement supply-side responses to criminalised substances are well documented, particularly as they relate to the exacerbation of health-related harms to PWUD,<sup>56</sup> community-based violence<sup>57</sup> and social instability.<sup>58</sup> In Africa, these issues have arisen time and again as enforcement agencies struggle to implement supply-reduction measures while new illicit substances continue to emerge, traditional drug transit markets transform to drug consumption markets, domestic criminal groups grow to embrace drug trafficking as an economic enterprise, and illicit financial flows from these markets undercut the resilience of national governance institutions.<sup>59</sup>

### Increase in retail tramadol prices

There has been a noticeable upward trend in prices since 2017 in the three focus countries. This mirrors tracked price increases in several other West African countries over the same period.<sup>60</sup>

In Agadez, the price of a 225-milligram pill increased from FCFA 100–200 (€0.15–0.30) in 2010 to around FCFA 500 (€0.75) in 2018–2019 and FCFA 1 000–2 500 (€1.52–3.81) in 2023.<sup>61</sup>

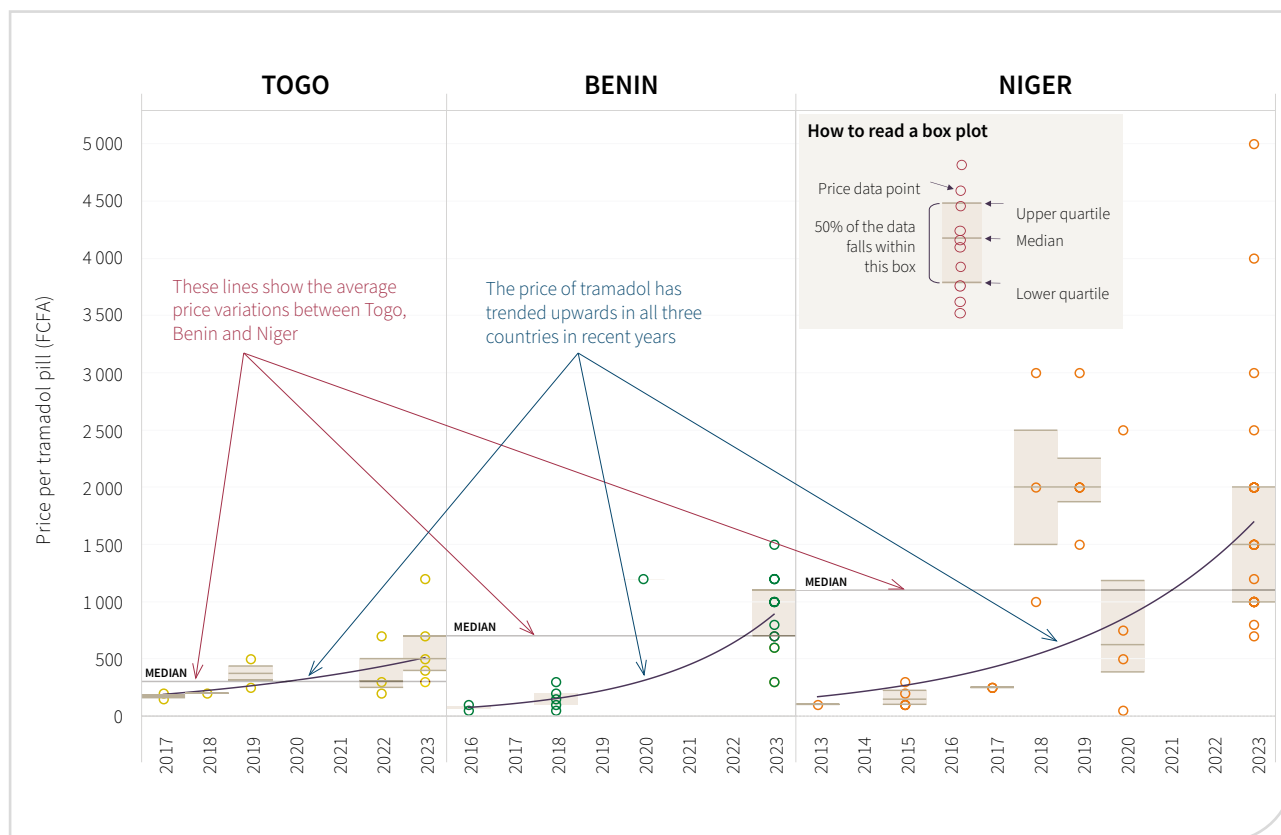
As highlighted by Figure 3, prices vary depending on location<sup>62</sup> and the quality and strength of the tramadol.<sup>63</sup> They also fluctuate within a given year, purportedly reflecting shifts in supply. A tramadol dealer in Agadez explained:

When about 50 boxes enter the circuit, tramadol is available in large quantities. At this time, the price drops, and when it begins to be rare, the price increases [again]. And it depends on the dealer: there are some who keep it with them for a long time in order to sell it expensive, and there are those who are not greedy; if they earn a little profit, it is OK for them, they get rid of the goods quickly.<sup>64</sup>

Figure 3 shows a clear upward trend in tramadol pricing data since 2017. While establishing causality is complex, most interviewees attributed the overall increase to intensified law enforcement action against the illicit trade. PWUD and dealers also reported short-term price rises in response to particular spikes in law enforcement activity.<sup>65</sup> An increase in retail drug pricing as a result of supply-side law enforcement interventions would also be consistent with the literature.<sup>66</sup>

Extant research tracking tramadol pricing in West Africa also traced an increase in price from 2018 and into early 2019 – before and after the export regulations changed – in Côte d’Ivoire and Benin, among other countries.<sup>67</sup>

Chart 3: Tramadol prices in Togo, Benin and Niger.



Source: Fieldwork in Togo, Benin and Niger, and prices quoted in existing grey literature

**Note:** Prices vary considerably depending on the dose, but consumers (and sellers, to a lesser degree) are often unable to determine prices for specific dosages. As such, this graphic includes all data points, whether the dosage was specified or not.

### Snapshot: Tramadol dynamics in Niger

Niger, a landlocked country, is a major player in the trafficking of tramadol in West Africa as both a destination and transit point, leveraging its strategic position as the gateway between sub-Saharan Africa and the Maghreb.

The capital, Niamey, is a main destination for trafficked tramadol from coastal countries. From Benin, for example, tramadol is transported through the north-east town of Malanville, a major transit and supply area for illicit products, including tramadol.<sup>68</sup> The two hubs are well connected by major road networks, with traffickers also sometimes using the Niger River for part of the journey. When tramadol shipments arrive in Niamey, a significant proportion is stockpiled in Le Grand Marché de Niamey, the city's main market, which has been repeatedly raided by law enforcement.<sup>69</sup> Much of the tramadol stocked in warehouses and markets in the capital is intended for local consumption, but some is kept for transit towards Libya.<sup>70</sup>

In the south, two of Niger's largest towns, Maradi and Zinder, are important redistribution hubs for tramadol imported from Nigeria.<sup>71</sup> Largely imported through ports and airports in southern Nigeria, particularly Lagos, this tramadol moves northwards to Agadez, often via Maradi and Zinder. From here, a proportion is trafficked onwards towards Libya. This latter stage is mostly carried out by Libyans of the Toubou ethnic group, but also by locals who act as drivers.<sup>72</sup>

Some former migrant smugglers turned to trafficking tramadol in the wake of the 2015 criminalisation of human smuggling in Niger and the subsequent spike in enforcement action.<sup>73</sup> (Notably, the law was repealed in November 2023, and enforcement has significantly decreased). Using the same routes used for smuggling migrants and opioids, some smugglers moved migrants and tramadol between Niger and Libya at the same time.<sup>74</sup>

But security sources in Niger also said that, following the application of the law against smuggling migrants, the old routes are being abandoned for new ones.<sup>75</sup> Fewer and fewer smugglers pass through Agadez, which used to be the traditional route (a trend which may reverse in the wake of the November 2023 repeal of Loi No. 2015-36 criminalising human smuggling in Niger). From 2022, a new tramadol route leaves Maradi, transits through Tahoua in the north and returns directly to Libya. A second route, which has grown in prominence, leaves Maradi or Zinder and passes through Dakoro Department on its way to Algeria.

Niger's borders with Benin and Nigeria have been closed since the coup in Niger in July 2023. No vehicles have thus been able to cross the Malanville bridge. In response, smuggling across the river using pirogues (smuggling of people and goods) has surged. Further research is needed to assess what impact the border closures have had on trafficking of tramadol and other drugs.<sup>76</sup>

### Pakistan a more important export point for tramadol to West Africa

Since 2020, seizures of tramadol originating from Pakistan have increased in West Africa. These have been concentrated in Nigeria, a major entry point for tramadol in the region.<sup>77</sup> In 2020, Nigeria's National Drug Law Enforcement Agency (NDLEA) publicly named Pakistan as a 'new manufacturing hub for drug traffickers smuggling tramadol into the country', noting the shift from India as the point of origin for tramadol.<sup>78</sup>

Curiously, while tramadol has largely been imported by maritime routes, most reported seizures of tramadol from Pakistan in Nigeria have been at airports.<sup>79</sup> Repeated seizures at Murtala Muhammed International Airport in Lagos have targeted flights originating in Karachi, with flight routes typically via Doha or, to a lesser extent, Istanbul. This suggests that it may be a preferred trafficking route.<sup>80</sup>

Other regional airports have been used as trafficking routes into Nigeria. In July 2021, 50 kilograms of tramadol originating from Pakistan were seized by agents of Togo's Airport Communication Programme (AIRCOP) task force.<sup>81</sup> The shipment was destined for Nigeria.<sup>82</sup> Lomé is also a significant regional air-transit hub.

Criminal drug markets frequently shift supply points when an original site of cultivation or production is disrupted. For example, the Taliban's opium ban in Afghanistan in 2000 and the resulting global heroin shortages in 2001 prompted a surge of cultivation in Myanmar.<sup>83</sup> This was despite the relocation complications for plant-based drugs, like opium poppy, due to the need for an appropriate climate and significant cultivation space.

Relocation of manufacture is far simpler for synthetic drugs. Precursor supply chains are easily rerouted and know-how is increasingly mobile in a globalised world. When political pressure forced China to restrict fentanyl supply chains that started from industrial pharmaceutical production within its borders, synthesis enterprises quickly shifted to Mexico, where cartels faced increasing government pressure seeking to disrupt the flow of cannabis and methamphetamine. Precursors were increasingly imported to Mexico from China, and Chinese chemists – allegedly including those linked to the Zheng Cartel – reportedly travelled to Mexico to share production techniques.<sup>84</sup> The relocation of a portion of methamphetamine manufacture from Mexico to Nigeria is another example of the flexibility of precursor supply chains and the ease of knowledge-sharing.<sup>85</sup>

## Second-order impacts

### Growing range of tramadol-like substances enters West African consumption markets

The regulatory framework for tramadol has been repeatedly discussed by international drug control bodies such as the Commission on Narcotic Drugs, the UNODC and the WHO. Unlike other analgesic opioids, like morphine, tramadol is not under international control by the International Narcotics Control Board, in spite of some states' efforts to have it included.<sup>86</sup> In fact, the WHO Expert Committee on Drug Dependence recommended in 2018 that the WHO should *not* place tramadol under international control, 'in order to avoid a negative impact on access to this drug'.<sup>87</sup> Despite the absence of standardised international controls, many countries have introduced their own domestic controls on the production, import, export, distribution and use of tramadol.

In Benin, Niger, Nigeria and Togo, the importation of tramadol is heavily regulated. A limited number of importers are authorised to place orders with an approved laboratory in a producer country and then to distribute the drug to public health enterprises, including public and private pharmacies. Further, tramadol is permitted only up to a certain dosage.<sup>88</sup>

Tweaking the chemical composition of synthetic drugs in order to evade such regulation is a common tactic of criminal networks. Minor changes can make drugs harder to identify through visual checks and chemical testing and chemists have an 'almost infinite scope to alter the chemical structure'<sup>89</sup> of synthetic substances, with regulations governing supply chains of certain chemical compounds – like tramadol – quickly evaded by new compositions.

Seizure and testing data in West African states suggest that, since 2018, synthetic opioids similar to, but marginally different from, tramadol have entered the retail market. Perhaps the most prominent is labelled 'Tafrodol', an opioid analgesic whose active ingredient is tapentadol. With similar properties and effects, it appears to be an intentional imitation of tramadol. Tafrodol, however, carries significant health risks as it combines tapentadol with carisoprodol, a muscle relaxant. The combination of these two substances can cause serious side effects in consumers, including coma and death.<sup>90</sup>

Tafrodol has been seized in coastal countries in West Africa and in the Sahel.<sup>91</sup> Officials from the Ghanaian port of Tema said that Tafrodol shipments have become increasingly prevalent since 2020.<sup>92</sup> In 2021, Tafrodol

was seized at the Port of Lomé, Togo, en route from India to Nigeria.<sup>93</sup> Tafrodol seizures by the NDLEA in Lagos in 2020, also reportedly exported from India, indicate a similarly timed uptick.<sup>94</sup>

In Côte d'Ivoire, a drug branded 'Tramaking' or 'Royal', with street names 'apple' '225' and 'khadafi', became increasingly popular across 2023. 'Tramaking' is also reportedly a mix of carisoprodol and tapentadol.<sup>95</sup> PWUD in Abidjan reported preferring Tramaking to tramadol due to its lower price and more durable effects.

In Nigeria, which has seen growing reports of seizures of Tafrodol, law enforcement agencies can seize Tafrodol, but report that they currently cannot prosecute related offences. This is because Tafrodol is not yet a scheduled substance, despite being more dangerous to health than the original tramadol.<sup>96</sup> Reflecting growing concerns, the meeting of Heads of National Law Enforcement Agencies, Africa held in Abuja in September 2023 proposed that Tafrodol be classified as a synthetic substance requiring scheduling across the continent.<sup>97</sup>

In response to synthetic drug innovations, some states (e.g. New Zealand and the UK) have moved to prohibit all psychoactive substances unless they are explicitly defined as legal.<sup>98</sup> However, this legislative approach remains the exception, with most states listing specified prohibited substances, often by chemical family groupings.

The regulatory approaches of states in Africa and across the world have struggled to keep up with fast-changing synthetic substances. In Mauritius, which saw synthetic cannabinoids explode into retail markets from 2011, the Forensic Science Laboratory reportedly identified 40 new synthetic substances between 2013 and 2019.<sup>99</sup> As a result, the anti-drugs law was reformed three times in this period.<sup>100</sup> Similarly, law enforcement and health officials from the Indian Ocean island of Mayotte, which experienced a similar wave of synthetic cannabinoid consumption, initially expressed helplessness in the face of the growing market for a drug known on the street as 'chimique', noting that traffickers change the composition of the drug as soon as the previous composition is prohibited.<sup>101</sup>

This illustrates a key challenge in regulating synthetic drugs: traffickers can quickly adapt the chemical compounds of a scheduled synthetic substance to frustrate law enforcement responses. GI-TOC research has begun to reveal that the array of synthetic drugs available across the continent is far wider and more diverse than current general views can account for.<sup>102</sup>

The contamination of staple drug-market products such as heroin, cocaine and MDMA (Ecstasy) by unrelated synthetic adulterants also appears to be growing significantly in southern and eastern Africa, according to ongoing community-based chemical analysis of drug market substances. Some of the synthetic adulterants are novel substances rarely seen in other tested markets.<sup>103</sup>

The capacity of law enforcement agents to detect, identify and seize are greatly hampered by the sheer diversity of synthetics now available in West Africa, and the African continent more broadly, and particularly those precursors (scheduled and unscheduled) that retain both licit and illicit uses. Frontline law enforcement officers face significant challenges in identifying whether a substance is legal or illegal, or even identifying a substance once it has been detected.<sup>104</sup> These challenges have been repeatedly raised by law enforcement representatives from Benin, Togo, Côte d'Ivoire, South Africa and elsewhere.<sup>105</sup>

The increased diversity of new synthetic substances also poses an elevated health risk (as with Tafrodol), with health professionals struggling to understand and respond to their potential health impacts. Drug markets evolve to include myriad new and novel synthetic substances among their inventories and, in many cases, market these substances as something other than what they really are. In Tanzania, a wide variety of benzodiazepines and amphetamine-type substances have emerged recently alongside the more traditional presence of cannabis, khat and heroin.<sup>106</sup> South Africa's long-standing methaqualone market now exists alongside newer synthetic variations of MDMA, cathinone and methamphetamine that include psychoactive substances such as n-ethylpentylone, 4C-D (also known as Ariadne) and 3-Methylmethcathinone.<sup>107</sup>

## Innovations in synthetic drug manufacture complicate regulation and enforcement

Synthetic drug manufacturers' ability to make changes in chemical synthesis allows them to rapidly adapt to supply and demand factors. When supply of the original precursors is closed off by regulation and enforcement, such adaptation forces authorities to identify, track and interdict new precursors and substances, along with their supply chains, manufacturers and traffickers. Jason Eligh's account of the 2016 development of industrial-level methamphetamine manufacture in Nigeria illustrates this point.

While meth can be synthesised using several different cooking methods, most clandestine synthesis uses one of two major precursors: pseudoephedrine/ephedrine (PE) or benzylmethylketone (BMK). Historically, the conversion of meth using PE has been the most common method. Difficulties in acquiring the quantities of PE necessary for industrial production of the drug has seen a shift in recent years (with observers indicating the shift occurred somewhere between 2016 and 2018) from a PE model of synthesis to one grounded in the manufacture of BMK and the subsequent synthesis of meth. This is a less expensive process that yields larger amounts of highly pure meth. Today this reductive amination method [...] using BMK is the approach favoured by Mexican cartels. [...] Importantly, it is not uncommon for meth production to alternate between methods of synthesis depending on wider contextual factors, including law enforcement interdiction or other disruptions (e.g. the closure of borders due to pandemic control measures) that may interrupt the availability and flow of particular precursors. [...]

[T]he development in 2016 of industrial-level meth production in Nigeria and neighbouring West African states, alongside Mexican cartel technical and human resource-based assistance, precipitated a rapid shift in the origin and supply chain of regional meth. This was complemented by widely available commercial supply chains of precursor chemicals (both licit and illicit) flowing to and through West Africa from the chemical and pharmaceutical industries of India and China.<sup>108</sup> [...]

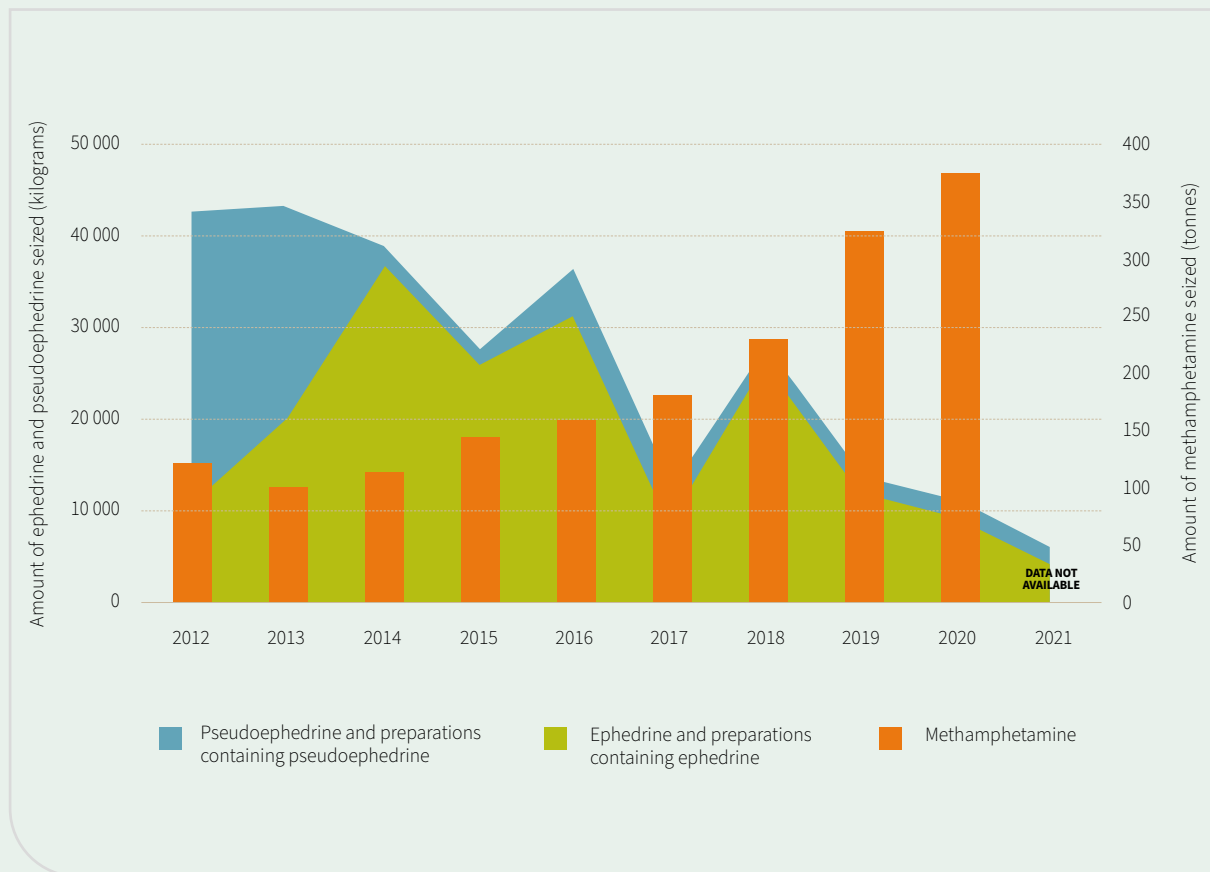
Further, the presumed ephemeral use by Nigerian producers of the BMK meth production technique has improved their risk profile by reducing the need for the more strictly-monitored precursor substances (e.g. ephedrine and pseudoephedrine) and enabling them to focus instead on synthesis using unscheduled substances (e.g. sodium cyanide and benzyl cyanide).<sup>109</sup>

The role of Mexican cartels in the Nigerian methamphetamine market underscores the use of global connectivity and travel to transfer skills between criminal networks across the globe – particularly with synthetic drugs that can be manufactured wherever the necessary infrastructure and resources are available.

Since the first methamphetamine laboratory in Nigeria was dismantled in 2011, Nigerian networks have moved up the supply chain to dominate the continental methamphetamine trade. By 2016, Nigerian-produced methamphetamine was supplying South Africa – Africa's largest methamphetamine consumption market – and Mexican meth cartels had established a foothold in Nigeria and West Africa as a production and supply point for the East Asian and Australian markets.<sup>110</sup>

Notably, these manufacturing changes also explain why the global seizures of ephedrine plummeted to 6.1 tonnes in 2021, half the volume seized in 2020 and the lowest in 10 years. Seizures in Nigeria also fell dramatically from 2019.<sup>111</sup> However, global seizures of methamphetamine increased at least threefold between 2015 and 2021.<sup>112</sup> When drug law enforcement actors are not able to keep up with changing processes, indicators are sometimes wrongly interpreted – such as taking reduced ephedrine seizures as indicating a decline in methamphetamine production.

Chart 4: Global seizures of ephedrine, pseudoephedrine and methamphetamine.



Source: Seizures of pseudoephedrine and ephedrine (as reported by governments) and methamphetamine (as reported by the UNODC), 2012–2021, cited in the INCB, 2022 Annual report on precursors and chemicals frequently used in the illicit manufacture of narcotic drugs and psychotropic substances

### Rising prices bring cheaper, riskier substitutes to the market

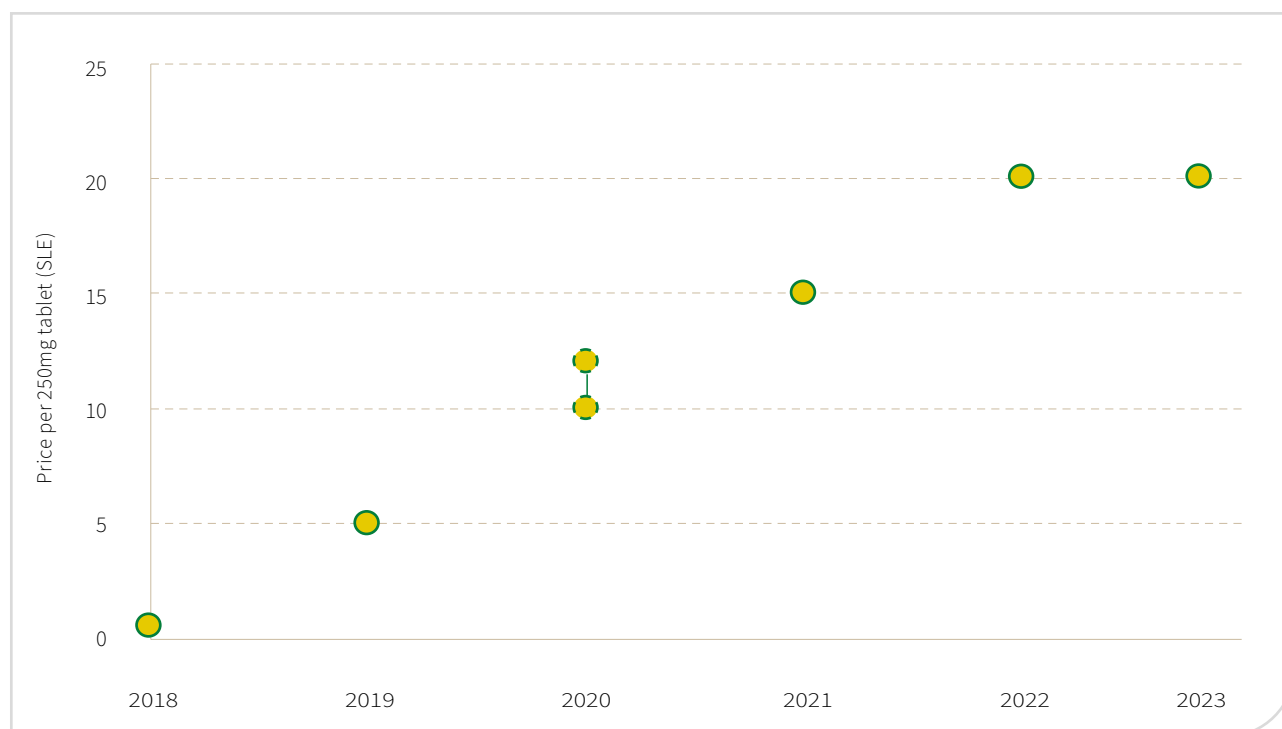
Where responses to illicit drug markets drive up the price of a specific drug, this often opens a window for other, unrelated synthetic drugs at a lower cost. In Niger, dealers reported moving away from tramadol to Diazepam, which has not been classified as an illicit substance in domestic legislation.<sup>113</sup> These new entrants have sometimes been far more harmful to health than their predecessors.

Beyond the focus countries, two case studies serve to illustrate such trends. In Sierra Leone, tramadol was extensively used in the late 2010s, particularly by young people.<sup>114</sup> In 2016, the country’s pharmaceutical regulator declared tramadol abuse a national health emergency<sup>115</sup> and the Pharmacy Board listed the drug in 2018. Prices skyrocketed. By 2023, single 250-milligram pills that had cost SLE0.50 (€0.02) when they could be purchased over the counter, now cost SLE20 (€0.82)<sup>116</sup> – a rise of almost 4 000%.<sup>117</sup>

Around this time, a new synthetic drug with the street name of ‘kush’ began to appear. The Sierra Leonean Drug Law Enforcement Agency believes it is a synthetic cannabinoid (like ‘chimique’ mentioned above), but there remains a degree of uncertainty regarding its exact chemical composition and origin.<sup>118</sup> Consumption of kush has expanded at lightning speed, in part facilitated by its low price: SLE5 (€0.20) per dose in November 2023 (notably, while the price has remained constant, PWUD reported receiving less kush for the same price).<sup>119</sup> PWUD interviewed by civil society in Sierra Leone reported previously using tramadol but shifting to kush when tramadol prices surged, finding it more available and cheaper.<sup>120</sup> According to drug network members, retailers and wholesalers in Freetown now outsell tramadol with Kush at a ratio of approximately 5:1.<sup>121</sup>



Chart 5: Price of tramadol in Sierra Leone.



Source: Discussion with Aiah Nabieuh Mokuwah, executive director of the Institute for Drug Control and Human Security, November 2023, with prices derived from ongoing engagements with PWUD and monitoring of tramadol markets.

The health consequences have been severe. The Sierra Leone Psychiatric Teaching Hospital in Freetown reported that the number of individuals treated for drug-related disorders spiked from 47 in 2020 to 1 101 in 2022, mostly men between 18 and 25, with many using kush.<sup>122</sup> As there may simply be an increase in individuals receiving treatment, such figures alone cannot indicate either the scale of drug consumption or a growth in consumption. However, it is clear that kush became a bigger health concern in Sierra Leone at this time and PWUD, civil society and law enforcement interviewees reported a dramatic growth of kush consumption in Freetown, concentrated among the youth.

A second illustration is the displacement of cannabis by synthetic drugs – including crystal meth – in a large range of retail markets in Africa.<sup>123</sup> In Mauritius, significant law enforcement efforts targeting cannabis cultivation and consumption brought changes to the drug ecosystem that synthetic drug traffickers were quick to exploit.<sup>124</sup>

Cannabis was principally grown on the slopes of the mountains surrounding Chamarel, in the island’s south-west, often in the middle of sugar cane fields to disguise the crop. However, this had limited success against the Mauritian law enforcement’s use of helicopters to spot and spray crops, alongside more traditional uprooting techniques. A significant proportion of domestic cultivation was destroyed.

This drove up the price of cannabis, which increased almost fourfold between 2015 and 2020, from MUR800 to MUR2 675 (€15–57) per gram, making cannabis far more expensive in Mauritius than in neighbouring Indian Ocean islands and transforming it into a ‘luxury item’.<sup>125</sup> Stakeholders interviewed by the GI-TOC in Mauritius in 2020 consistently identified this as a key driver of the use of far-cheaper synthetic cannabinoids.<sup>126</sup>

As with kush in Sierra Leone, the emergence of synthetic cannabinoids in Mauritius, Mayotte and the Comoros triggered highly visible impacts on public health, particularly among young people. It catalysed a spike in admissions to public health institutions, with health professionals initially unsure of how to treat patients. This increase was particularly acute when synthetic cannabinoids first entered the market. Admissions related to synthetic drugs, predominantly cannabinoids, increased fourfold between 2015 and

2016 but levelled off by 2018.<sup>127</sup> In Mayotte, admissions similarly spiked when synthetic cannabinoids entered the market in 2015, but then decreased significantly.<sup>128</sup> PWUD and health professionals interviewed attribute the initial spike to the inexperience of the local ‘chemists’ who created excessively high concentrations of the drugs.<sup>129</sup> Once the right dosages were achieved, overdoses decreased.<sup>130</sup> Similar dynamics have been tracked with the introduction of new psychotropic substances in Europe, such as ketamine and GHB (gamma hydroxybutyrate).<sup>131</sup>

There is widespread awareness that enforcement responses to certain drugs – most prominently cannabis – may lead to the emergence of other substances, often more harmful. However, international drug experts often present this as a ‘potential risk’, something that might happen. This is misleading: the trend has already crystallised in many contexts in Africa and elsewhere.<sup>132</sup> Looking forward, it is key to recognise that responses to illicit drug markets and the resulting shifts in drug ecosystems – particularly price increases in widely consumed drugs – can make drug markets vulnerable to the entry and fast growth of NPS.<sup>133</sup>

## Implications for the response

### Target sites close to the point of production

Supply-side response interventions that aim closer to the point of production/manufacture (like India’s export regulations) can yield significant impacts.

The impact of India’s addition of tramadol to the Narcotic Drugs and Psychotropic Substances Act 1985 in May 2018 was magnified by the relatively consolidated supply chain of tramadol imported into West Africa at that time.<sup>134</sup> The existing body of evidence indicates that the regulatory reform yielded a number of market effects.

Maritime ports, as pinch points in global supply chains of synthetic drugs and their precursors, are thus strategic spaces for intervention. Interventions targeting land-transit, or consumption hubs, where the market is far more diffuse and transit supply chains can more quickly displace and adapt, are less likely to have material impacts.

GI-TOC research in Benin, Niger and Togo in 2023 pointed to the diffuse and dynamic overland trafficking routes which adapted to shifts in law enforcement responses.<sup>135</sup> That tramadol is the third most commonly identified drug trafficked through the postal systems across Africa further highlights the dispersed nature of small-scale trafficking.<sup>136</sup>

### Harmonise enforcement and regulation

Synthetic drug manufacture can easily relocate to take advantage of regulatory loopholes or to move closer to end markets. The indications of growth in the export of tramadol and similar compounds from Pakistan to West Africa in the wake of India’s regulatory reform illustrate this dynamic. They also underline the need for harmonised regulatory approaches to synthetic drugs in order to avoid creating safe havens where manufacture can easily be transplanted.

In light of this, regional and international efforts to move towards a harmonised approach to regulating synthetic drugs in Africa are to be welcomed. The African Union’s 2023 Continental Technical Experts’ Consultation on Strengthening Synthetic Drug Supply Reduction has recognised it as a goal,<sup>137</sup> while the US Global Coalition on Synthetic Drugs is similarly designed to support a more harmonised and collaborative global response.<sup>138</sup> These efforts are pivotal to enhancing the effectiveness of responses to synthetic drugs in the future.

### Consider demand: Tramadol’s role as a painkiller

However, isolated supply-side interventions are never sufficient and demand must also be considered. Although a significant proportion of demand comes from outside the health sector (e.g. taxi drivers, gold miners), the demand for illicit painkillers, and tramadol in particular, is certainly shaped by limited access to

medication. While these are substances of significant concern, we should also recognise that tramadol and similar synthetic opioids are important treatments for pain in surgical and other medical settings, particularly in West Africa.<sup>139</sup>

The fact remains that the availability of and easy access to pharmaceutical opioids in such medical settings is a recurring challenge around the world, and especially in Africa. One significant limitation on their availability is the existence of many formulations of controlled substances, and the conflation of licit supply chains and ‘war on drugs’ enforcement. This is particularly true in Africa, with the ongoing criminalisation of the illicit tramadol market, as well as related global drug control efforts against opioids such as fentanyl and its many analogues. Too often these medicines end up being excluded from national lists of prescribable medicines because they are stigmatised by law-enforcement-driven drug control efforts and regulatory and import restrictions.

The licit availability and consumption of medical narcotic analgesics is lowest in African countries, and rates are even lower for palliative care demand.<sup>140</sup> National authorities mention ‘fear of diversion’, ‘fear of addiction’ and ‘fear of prosecution or sanction’ as reasons for this deficiency.<sup>141</sup> Whether there is a bureaucratic reluctance to engage with tramadol and other opioids from a medical treatment perspective or structural challenges related to the importation of and access to these medications, the situation remains. This unresolved paucity of controlled medicines will continue to have a profound effect on the region and its ability to treat acute and chronic pain.<sup>142</sup>

### **Responses to synthetic drugs in Africa are far behind the curve**

While perhaps the most well-known synthetic substance in West Africa, tramadol is by no means the only one. Methamphetamine use and production originated in South Africa in the early 1990s and has expanded rapidly throughout the continent. Production started a decade ago in West Africa, and the region today is a primary production point in Africa.<sup>143</sup> Other synthetic stimulants, including fenethylamine and methcathinone, have emerged as drug market commodities, along with a collection of synthetic cannabinoids and diverted and falsified pharmaceuticals such as benzodiazepines and psychotropics.<sup>144</sup> National responses to this increasing proliferation are wanting. Many countries fail to recognise or acknowledge the diversity of synthetic substances available within their borders. While some have little to no capacity to detect them, others are simply reluctant to invest in such surveillance at the cost of diverting limited financial resources from other critical tasks.

### **We cannot see what we are not looking for**

These words of a South African security consultant in the field of methamphetamine markets address the urgent need for more surveillance data.<sup>145</sup> African drug markets as a whole are vastly under-researched, but especially so in the context of synthetic drug markets which have not been prioritised in terms of focus and resource allocation and lag behind the others. While the evidence base on West African drug markets is growing – partly through the work of WENDU – further data must be gathered to underpin evidence-based responses to burgeoning regional synthetic drug markets. Currently, there is no reliable way to determine some of the basic marketplace denominators necessary to assess a drug market environment. These unknown basics include the illicit drug commodities that are available, the number of consumers, how they are consuming and the frequency of their consumption.<sup>146</sup>

There have been several attempts at quantification, but often based on imperfect premises that lead to imperfect results. For example, many national government agencies use drug seizure data as a common measure to understand the drug markets and develop their specific drug policy responses accordingly. However, this data is of limited utility to measure markets.<sup>147</sup> For example, if a drug is not seized in a particular place, it does not mean that it is not available in that place. Nor does the volume of seizure have any definitive correlation to the characteristics of use within that particular place. Drug seizures are adequate metrics to

monitor and measure law enforcement presence and ability, but they are poor foundations on which to build information on markets or flows more generally.<sup>148</sup>

The challenges arising from the use of seizure data to monitor market developments in Africa are even more acute, given the extremely low rates of reported law enforcement detection of such substances. For example, according to data from the World Customs Authority Africa is by far the region with the lowest proportion of synthetic drug seizures reported, with only 4% of the worldwide total.<sup>149</sup> However, this is almost certainly due to poor detection capacity and under-reporting, rather than the relative absence of such substances or a drastically smaller consumer market. For West African countries, we know this to be a misleading correlation simply by the information we derive from other epidemiological data collected in the region: data which confirms the chronic presence and use of synthetic substances.

By extension, it can be argued that the over-reliance on law enforcement seizure data as a drug market surveillance metric has hampered the ability of policymaking bodies to develop appropriately targeted responses. The lack of developed, science-based drug monitoring systems makes it a fundamental challenge for countries to assess their local drug market environments in order to see if or how they are growing, adapting and evolving.

Without vastly expanded testing capability, it is impossible to understand what synthetic substances are emerging or expanding across West African retail markets (which is pivotal to effective treatment and response), where they are coming from (which is central to tracking supply chains and identifying regulatory loopholes and spaces for intervention) or the interrelationships between markets. For example, current anecdotal evidence suggests a spike in consumption of a powerful synthetic substance in northern Niger in 2023. It seems likely that this reflects both an increase in heroin consumption and the emergence of a particularly potent synthetic, with similar effects to Tramadol, allegedly trafficked to Niger from Nigeria.<sup>150</sup> This case illustrates the challenges in shaping a response to synthetic drugs in the region. The lack of testing at consumption points makes conclusive determination impossible and any other analysis simply conjecture – with severe implications for the response.

To plug this ongoing data gap, steps taken must be to significantly step up substance-testing capabilities in the ECOWAS region and to provide more support to non-governmental stakeholders that can make use of it. International and regional initiatives to enhance drug testing capacities in the field and at forensic laboratories are to be lauded. The UNODC's draft Strategic Framework for Engagement with Countries from West Africa (2024–2030)<sup>151</sup> and its global Strategy for Synthetic Drugs<sup>152</sup> rightly emphasise such support.

## Notes

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It should be noted that this data is for electronic data interchange (EDI) ports only and does not include any information on non-EDI ports.

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