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Climate change, illicit economies and community resilience: Niokolo-Koba National Park, Senegal

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Summary

In West Africa, communities increasingly engage in illicit economies to cope with the severe impacts of climate change. However, the environmental impacts of illicit economies magnify the harms of climate change. This report explores these interlinked phenomena in communities peripheral to Senegal's Niokolo-Koba National Park and proposes responses.

Recommendations

Local communities have a major role to play in any measures to address the interlinked challenges of illicit economies and climate change. Moreover, their exclusion has impacts beyond conservation and climate change, threatening the legitimacy of the state. Such measures should seek to:

- Strengthen the social compact between communities and local governance authorities.
- Address corruption in the management of national parks and protected spaces.
- Mitigate the negative impacts of securitising protection in national parks.
- Support community resilience to climate change impacts through adaptation projects and/or climate resilient livelihoods.
- Advance policies to provide feasible pathways to formalise artisanal gold mining.

OCWAR-T
Organised Crime: West African Response to Trafficking

Introduction

In West Africa, a region severely affected by both climate change and illicit economies, communities increasingly engage in organised crime as a strategy to cope with the climate crisis. In turn, the environmental impact of organised crime contributes to climate change and the harms suffered by communities and ecosystems. Illicit economies and their associated corruption should thus be understood as both causes and consequences of climate change.[1]

Although the impacts of climate change are evident across the world, the related social risks are highest where political and social marginalisation and vulnerability are already structural problems.[2] Putting pressure on local ecosystems and magnifying resource scarcity, climate change increases instability, shapes community tensions and serves as a key vector in human movement, including through forced displacement.

It also contributes to the creation of new illicit markets as criminal actors take over the provision of key commodities such as water distribution.[3] The ensuing tensions and sources of conflict in turn create openings for alternative governance providers in the form of non-state armed groups.[4] Such groups – including violent extremist organisations – control vast swathes of the Sahel and are increasingly threatening West African coastal states.

Abbreviations

ASGM	artisanal and small-scale gold mining
DEEC	Direction de l'Environnement et des Établissements Classés
ECOWAS	Economic Community of West African States
GI-TOC	Global Initiative Against Transnational Organized Crime
OCRF	Organized Crime Resilience Framework
OCWAR-T	Organised Crime: West African Response to Trafficking
PNA-FEM	National Adaptation Plan
SDG	Sustainable Development Goal
FGD	focus group discussion

More broadly, environmental crime – and broader environmental damages – pose major threats to development. Environmental damage has been found to undermine progress towards 80% of the targets of the Sustainable Development Goals (SDGs),[5] while Global Initiative Against Transnational Organized Crime (GI-TOC) research shows that crime poses a major cross-cutting challenge to at least 15% of SDG targets.[6]

At the nexus of these two threats, environmental crimes erode Africa's 'natural capital' and, consequently, its ability to achieve inclusive sustainable economic growth. This poses significant challenges in West Africa, which already lags behind other African regions in progress towards the SDGs.[7]

The multilateral system has recognised climate change as a 'threat multiplier'.[8] In 2009, the United Nations (UN) Security Council traced five channels through which climate change affects security.[9] This case study, with its attention to the intersection of climate change and illicit economies, adopts a narrow focus within one of these channels:

> Coping and security: migration, competition over natural resources and other coping responses of households and communities faced with climate-related threats could increase the risk of domestic conflict as well as have international repercussions.[10]

Focusing on community livelihood strategies around Senegal's Niokolo-Koba National Park, it analyses a growing reliance on illicit practices and the implications for conflict in the Kédougou region.

Across West Africa, states have established and expanded national parks to help preserve biodiversity.[11] National parks constitute key bulwarks against climate change, lowering air temperatures, absorbing floodwaters and operating as carbon sinks, absorbing and capturing carbon dioxide from the air.[12] Yet the enforcement of regulatory frameworks that criminalise resource extraction from these protected areas – simultaneously rendering many traditional practices illegal – has given rise to community grievances across West Africa, and indeed globally.

With agriculture being the economic mainstay of communities across the region, climactic impacts drive many communities to increasingly rely on illicit economies – most prominently, artisanal and small-scale gold mining (ASGM) and other forms of resource extraction in protected areas. The corridors around national parks are therefore crucial spaces in which to examine the interrelated challenges of climate change and illicit economies.

National parks are key bulwarks against climate change, lowering air temperatures, absorbing floodwaters and operating as carbon sinks

In order to assist regional policymakers in adopting evidence-based approaches to mitigate the harms arising from this complex intersection, this report scrutinises the nexus between climate change and illicit economies and the available response frameworks, with an emphasis on community-based solutions. The research focuses on Kédougou, a significantly affected region in the south-east of Senegal, one of the four countries in the world most vulnerable to climate change.[13]

There are also growing concerns that non-state armed groups operating in neighbouring Mali will seek to develop operations in Kédougou, a gold-rich area. Regional grievances, in part linked to growing resource scarcity, could be leveraged by these groups to gain legitimacy, as has occurred in other parts of the Sahel.

Within the Kédougou region, this report focuses on the corridors skirting the Niokolo-Koba Park, one of the largest protected areas in West Africa,[14] building on existing research on national parks as spaces where climate change impacts are highly visible and where illicit economies and conflict dynamics intersect.[15] The goal of this report is not only to provide a case study that is useful in the local context, but also to extrapolate broader regional lessons that can be applied in other protected areas facing similar challenges.

The report first considers the environmental changes that are increasing reliance on illicit practices. It then explores the illicit practices themselves, most prominently environmental crimes (poaching and illicit logging), and illicit economies (artisanal gold mining) that indirectly harm the environment. Finally, current and potential response frameworks are examined.

Methodology

This is one of three case studies that form part of the Organized Crime Resilience Framework (OCRF), a tool developed by the GI-TOC as part of the Organised Crime: West African Response to Trafficking (OCWAR-T) project. The OCRF, and each of the associated deep dives, focuses on priority illicit economy threats facing West Africa, scrutinising response frameworks outside of criminal justice approaches. This case study focuses on community-resilience responses to the intertwined threats of climate change and illicit economies.

Taking a mixed-methods approach, the research combines analysis of both qualitative and quantitative data, drawing on primary data collection alongside a review of secondary sources. The primary data collection assessed the impact of climate change on communities in the outskirts of Niokolo-Koba National Park, how it affected their involvement in illicit economies, and the responses which were being adopted.

Rising temperatures and decreased rainfall in the Kédougou region have had a heavy toll on local communities, with diminished crop yields worsening food insecurity

The fieldwork in Kédougou, which was conducted in May and July 2023, consisted of six semi-structured focus group discussions (FGDs) along with additional interviews in three villages on the periphery of the park: Oubadji in Salémata department and Badon and Niemenike in Kédougou department. Two FGDs were conducted in each village: one men's group and one women's group. Each FGD included between 12 and 18 participants between the ages of 18 and 65, including teachers, health workers and representatives of community associations for women, youth and environmental preservation.

'It's hard to find water. We have to go very far to find water and forage. Rain comes but it goes away very fast and we have wells but they dry up.' Woman, Oubadji village

FGDs were complemented by bilateral interviews in and around Kédougou with retired officials, authorities from the Ministry of the Environment and the national park, park agents, journalists, woodcutters, sand transporters, gold miners (of extremely small and larger sites), and civil society organisations working on climate change or illicit economies, together with two remote interviews with a Niokolo-Koba park official based in Tambacounda and an official in water and forest services based in Salémata. Overall, the research team engaged with about 70 stakeholders in and around the Kédougou region.

Field data collection was complemented by an extensive review of literature relevant to climate change and illegal activities in the Kédougou region and West Africa more broadly. The report also drew on previous GI-TOC research on national parks in West Africa and analysis of existing responses to environmental crimes and their intersection with climate change.

The impact of climate change on livelihoods in Kédougou

Bordering Mali in the south-east of Senegal, Kédougou has long experience of the impacts of climate change.[16] In the face of rising temperatures[17] and decreased rainfall,[18] communities in the corridors of the Niokolo-Koba Park have seen agriculture – traditionally the most prevalent livelihood by far – become more difficult, with diminished yields[19] exacerbating food insecurity.[20] More erratic rainfall has also led to flash floods and increased water scarcity.[21]

In the words of one Oubadji community member, 'Harvests are much less than before … [N]ow we need to go into the park to find what we need. We have problems with water scarcity – it pushes us into the park.' Others in Oubadji shared that, since around 2016, they have had to dig much deeper wells to find water. At that time, 9 to 10 metres was sufficient; by 2023, they needed to go down 15 metres.[22]

The expansion of protected areas in Niokolo-Koba Park, in response to biodiversity threats, has limited the land available to local communities for agriculture

In addition to climatic impacts, the expansion of protected areas in the national park has limited the land available for agriculture, contributing to overcultivation of land and negatively affecting crop yields. Limited land for pasture has also increased the scarcity of livestock, with meat becoming a rare commodity in many communities.[23]

A woman in Oubadji said, 'The food that we are able to eat and our livelihoods have changed. What used to be cultivated is no longer cultivated.'[24] The chief of the village of Badon set out their conundrum: 'The cultivable land is no longer profitable as it has been over-exploited by cultivating the same area for years on end, and access to the park's fertile land for farming is prohibited.'[25]

Ever-increasing demographic pressures compound these challenges: the population of the Kédougou region more than doubled from 71 125 in 1988 to 184 276 in 2019.[26] As communities clear land for agriculture, bushfires have become increasingly frequent and harder to control in the increasingly dry landscape, causing significant damage.[27] With evolving climactic conditions driving these livelihood changes, illicit economies are becoming increasingly important, as explored below.

Peripheral communities and the Niokolo-Koba National Park

The park was first established as a hunting reserve in 1926, and later expanded and increasingly protected. This involved the relocation of predominantly Malinke villagers from park lands to park peripheries.[28]

The expansion and heightened securitisation of the park have severely affected livelihoods. As the protected areas expanded, land for agricultural and pastoral use became increasingly scarce, with communities penned in between national borders and the national park limits.[29] In Niemenike, the increasing expansion of the park left the population with no suitable land to cultivate.

Community representatives noted that the small portion allotted to agriculture is full of stones and not fertile.[30] A woman working as a health official in Oubadji noted, 'In the 1990s, the park gave as all. Even for raising children, we would go to get goods from the park to sell and pay for their education. Now we can't go into the park. We get imprisoned. The women suffer.'[31]

'If we can't enter the park, what are the solutions? We don't want violence here.' Man, Oubadji village

The rising cost of living, population growth and the impact of climactic shifts on traditional livelihoods have driven incursions into the national

park by communities living in the corridors that skirt it ('peripheral communities') and their increased reliance on illicit activities. While some of these markets are intrinsically illicit, others are rendered so by their breach of regulations protecting the park, pitting community interests against those of environmental protection within the park.

A vicious cycle: Illicit economies and climate change

The illicit markets most prominently mentioned by communities in the context of discussions around climate change and livelihoods constitute both crimes against the environment – fauna crimes (poaching in the national park) and flora crimes (predominantly illegal logging) – and illicit economies which have environmental harms, namely artisanal gold mining and, to a far lesser extent, sand dredging. These constitute the fourth, fifth and seventh largest criminal markets in West Africa, according to the Organized Crime Index.[32] All are intricately tied to climate change.

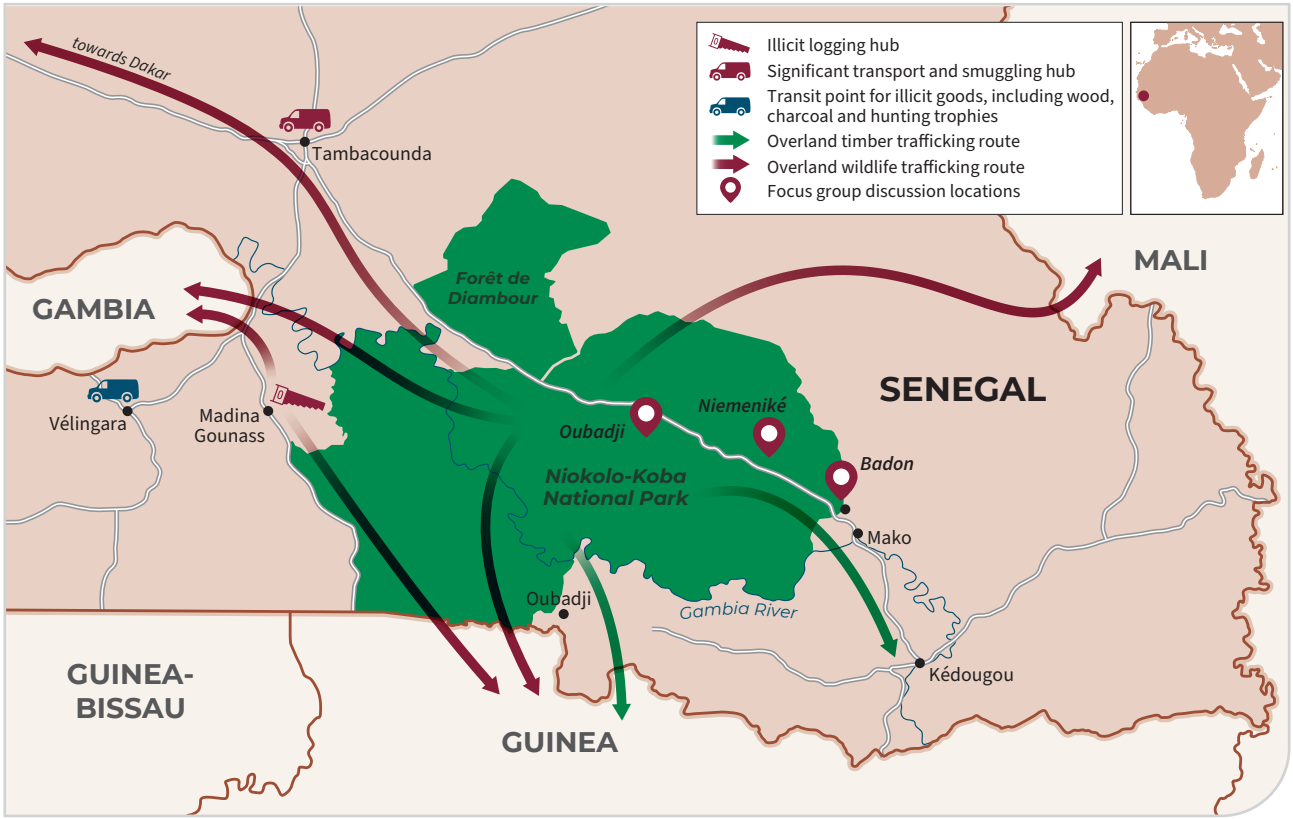
Fauna crimes: Poaching

A growing body of research points to the role of poaching in both contributing to climate change and obstructing adaptation efforts.[33] Similarly, the role of climate change in threatening biodiversity and driving a range of species to extinction is well documented.

While poaching is a long-standing practice in the Niokolo-Koba Park, it spiked in the late 2000s. In 2007, the park was included on the UN Educational, Scientific and Cultural Organization's (UNESCO) List of World Heritage in Danger.[34] By 2016, analysts were identifying poaching, for both financial gain and bushmeat, as the greatest threat to the protection of the national park.[35]

According to park officials, poaching has remained at a similar level since,[36] involving communities around the park and foreigners.[37] The practice is also driven by the high prices fetched by some illicit wildlife products in the park (Chart 1).

Chart 1: Focus group discussion research sites, and main trafficking routes and hubs



Source: Author interviews, and GITOC Hotspot Mapping Initiative: https://wea.globalinitiative.net/illicit-hub-mapping/

Chart 2: Prices for poached illicit wildlife products

Animal	Price	Main purpose/market
Skin of a kob (the park's emblem)	<300 000 XOF	Malian and Nigerian fetishists. It is reported, for example, that if you pray on the skin of this animal, all your prayers will be answered.
Lion teeth and claws	XOF 250 000 per item (EUR 381.21)	Nigerian marabouts, Mourid, especially the Mbacké Mbacké who are known to be very mystical. They use lion teeth and claws for protection.
Lion skin	XOF <900 000 (EUR 1 372.34)	Used in Senegal and other countries for black magic (for those seeking protection, power). Also exported to Gulf countries, where it is used for decoration.
Crocodile skin	XOF <900 000 (EUR 1 372.34)	Shoemakers and artisans in Senegal, Mali, Guinea, Gambia, etc. Also used by the Lebou community in Senegal during the Ndeup ritual.
Leopard skin	XOF 1.2 million (EUR 1 829.88)	Sold to Lebanese and Chinese who export to Gulf countries for decoration.

Source: Data drawn from interviews conducted in 2022 for the Kédougou crime hotspots in the GI-TOC's Hotspot Mapping (https://wea.globalinitiative.net/illicit-hub-mapping/map), updated by interviews in Kédougou in May and June 2023

In 2022, a seizure of 800 kilograms of kob was linked back to peripheral communities, demonstrating their involvement in poaching.[38] However, most poachers are reportedly foreigners, mostly Guineans, described as well armed and sophisticated. In some cases, locals act as intermediaries for foreign poachers, leveraging their intimate knowledge of the park. Sometimes foreign groups arm and equip locals, commissioning poaching for a fee.[39] In one case, a Guinean poacher and his three Senegalese accomplices were apprehended in the village of Dialakoto in 2022.[40] According to the park warden, the group had been camping in the village for days.[41]

Widespread poaching – for both high-value species and bushmeat – constitutes a central threat to the biodiversity of the Niokolo-Koba Park. Research has shown that forested areas with less biodiversity are less resilient to climate change and also absorb less carbon dioxide, contributing to global warming.[42] As agricultural livelihoods and livestock availability decrease, increasing reliance on bushmeat and income from poaching is likely to continue driving this vicious cycle.

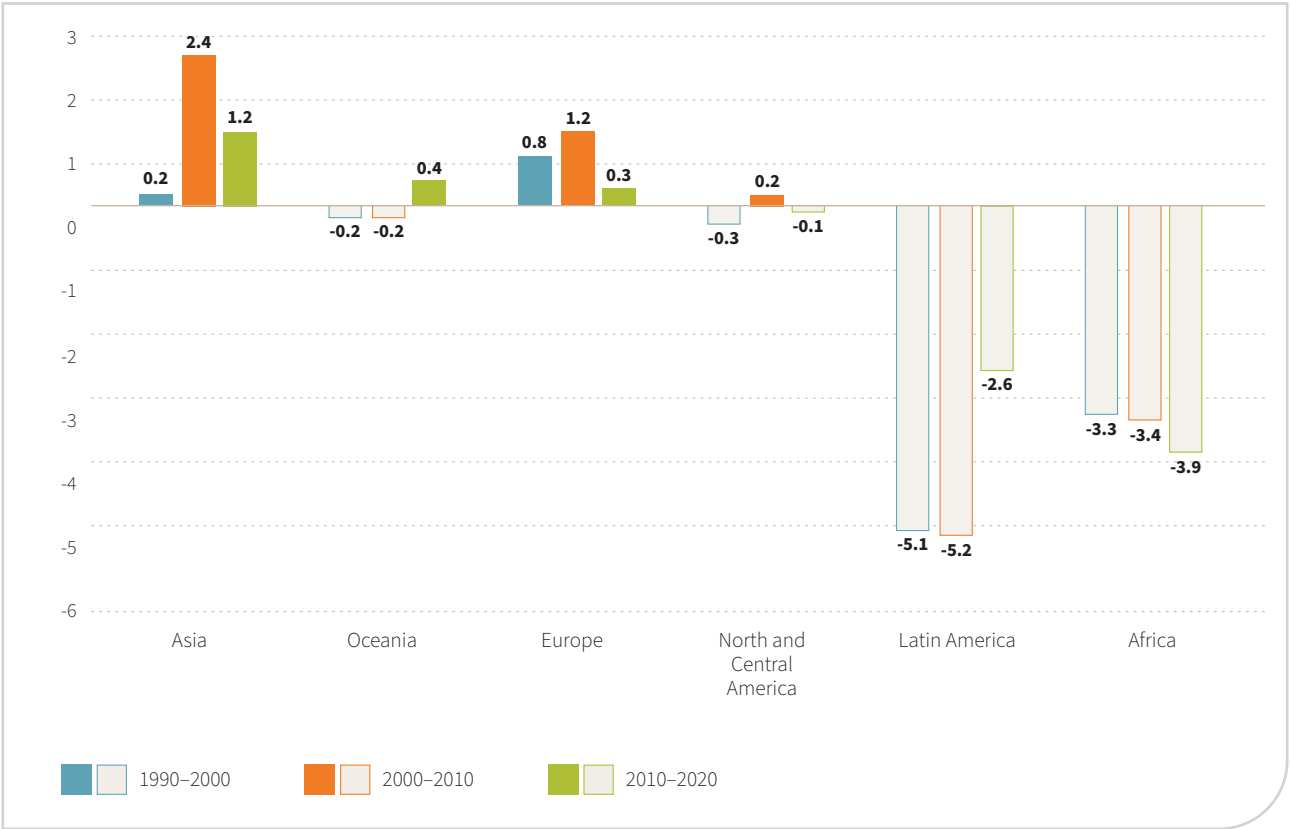
Biodiversity in the Niokolo-Koba Park is at risk from widespread poaching, for high-value species and bushmeat, with repercussions for global warming

Rosewood harvested in the Ziguinchor region in the Casamance area of Senegal

Flora crimes: Timber trafficking

Illicit logging – among the most profitable natural resource crimes globally – constitutes a serious threat to the environment, undermines the stability of climate systems and is a key driver of climate change.[43] The role of forested areas in sequestering carbon dioxide from the atmosphere is central to mitigating climate change. Deforestation and, to a lesser extent, the degradation of forested areas reverse carbon flows, releasing trapped carbon.[44]

Chart 3: Annual forest area net change, by decade and region, 1990–2020



Source: FAO, Global Forest Resources Assessment, 2020

The Kédougou region had 673 hectares of forest land cover in 2010; some estimates suggest a 78% loss of tree cover between 2001 and 2022.[45] This decrease is mainly due to the expansion of ASGM (with timber trafficked to sites) and construction sectors, alongside the intensive use of wood for cooking and furniture.[46]

Setting deforestation in Kédougou in its global context, between 2010 and 2020, Africa experienced the sharpest annual rate of net loss of forested areas (3.9 million hectares) in the world (Chart 3).

According to authorities, illicit logging is currently relatively limited[47] and concentrated in the western part of the park. Medina Gounass, which borders Guinea, is the epicentre of timber trafficking in the park's peripheral zone.[48]

In the early 2000s, the most trafficked wood was rônier (palmyra palm), largely destined for Guinea, but 'vène', also known as rosewood (although the common species is not seen as a 'real' rosewood), is now increasingly targeted by timber traffickers, who are mostly Senegalese and Guinean nationals.[49] High-quality timber logged in the park and peripheral areas – with the complicity of bribed park agents in some cases[50] – is sold to sawmills and carpenters within Kédougou and trafficked to Guinea and Gambia.

Kédougou's steep population growth over the past two decades has driven growing household demand for wood, as most cannot afford gas.[51] Charcoal production, which provides many households' energy needs, is another driver of felling across the Kédougou region.[52]

This activity is concentrated in Fadiga, historically a leper community authorised to produce and sell charcoal,[53] but occurs across villages in Kédougou. The price of a 50-kilogram bag of charcoal varies between XOF 3 500 and 4 000.[54] Charcoal production also leads to methane and black carbon emissions from fuelwood burning and traditional charcoal-making processes, a further contribution to climate change.[55]

Non-renewable resource crimes: Illicit gold mining

Illicit ASGM started expanding in Kédougou in the 1990s and accelerated further in the 2000s. It has transformed from a supplementary activity to an economic necessity for many across the Kédougou region.[56] Gold mining has caused devastating environmental impacts, including significant deforestation due to the timber needed for mine pits, and the contamination of water sources and agricultural land,[57] with severe implications for traditional fishing and farming livelihoods.[58]

The area's gold deposits have also drawn people from elsewhere in Senegal, other West African countries and beyond, most notably China, allegedly including within the park, further increasing the demographic pressure on natural resources.[59]

Illicit artisanal and small-scale gold mining has become an economic necessity for many in the Kédougou region, but with devastating environmental consequences

Mining sites range from hundreds of miners at places like Tenkoto, Bantako and Sambranbougou to groups of five temporarily practising alluvial mining on the banks of the river.[60] Senegalese authorities have made some effort toward formalising ASGM,[61] but most miners in Kédougou continue to operate informally.[62] ASGM inside the park is reportedly mostly alluvial and does not use mercury or cyanide in the amalgamation process.[63] Small groups, typically of the same nationality, move quickly between sites, following deposits.

Park authorities reported a substantial decrease in annual mining-related arrests in the park since 2021, attributing this to enhanced enforcement.[64] However, members of the peripheral communities said that ASGM activity is increasing. The Oubadji community reported a steep expansion in the park since 2022 and particularly since April 2023, due to the discovery of a rich vein which has drawn miners from other countries, especially Mali and Burkina Faso.

Another draw is rising gold prices, with the gram price topping XOF 33 000 in Kédougou region in 2021, and the visible wealth of local miners, reflected in motorbike purchases and home improvements. A woman in Niemenike village said that most village members (including women) now mine in the park because of the steep rise in the price of gold (Chart 4).[65] Oubadji community members also said the 'youth are being pushed into the park to find gold' and 'all the youth want to work in gold.'[66]

Informal buyers, reportedly mostly Senegalese and Malian nationals, purchase gold directly at the mine sites, and in villages near the park. For example, one gold buyer was known to visit a village near Oubadji every Tuesday.

Chart 4: Informal price of artisan-mined gold, 2019–2023 (per gram, in XOF)

Village	Price in 2019	Price during COVID-19 pandemic (2020–2021)	Price in June 2023
Niemenike	25 000	20 000	32 000
Badon	25 000	15 000–20 000	30 000
Oubadji	22 000	22 000	34 000

Source: Based on community interviews

Note: Prices are those offered by informal buyers.

Participants repeatedly noted that gold panning is the only viable source of income, with many relying on ASGM to pay for emergencies and special occasions. A Niemenike woman said it was thanks to her gold-panning earnings (XOF 200 000 in 2017) that she could pay for an ambulance for her daughter to give birth by caesarean section in Kédougou town.[67] In Badon, earnings from ASGM in the park contributed to the important Tabaski holiday celebrations in June 2023.[68]

The state has granted mining companies, including Petowal Mining, a small number of licences at the edges of the park, but people widely believe that they are mining within protected park limits. Authorities say this is probably a misperception of peripheral mining activities, but it nonetheless drives significant resentment.

A youth leader said, 'It's unfair that we are denied access to the park, which is the land of our ancestors, and that they allow companies to mine gold. They have to let us mine the gold. In any case, we will continue to enter the park and mine the gold.'[69]

Gold-mining sites have also stimulated an expanding range of secondary illicit markets, including the trafficking of women (almost exclusively Nigerian) for sexual exploitation, exploitative working conditions, child labour, mercury smuggling and drugs.[70]

The links between ASGM and climate change in the Kédougou region mirror those across West Africa: ASGM becomes more important as a livelihood strategy in the context of diminishing agricultural yields. This in turn

drives environmental damage, further hindering agricultural livelihoods and fuelling climate change processes such as deforestation.

Responses to illicit economies and climate change

Government responses

Responses to illicit economies and the impact of climate change in the area broadly fall into two categories: the enforcement of regulations to protect the park and programmes to support the resilience of peripheral communities and thereby decrease incursions into the park. These typologies of response are prevalent across protected spaces globally.

Securitisation of park protection

Poaching, logging, timber trafficking and informal artisanal gold mining all carry prison terms under Senegalese law (Chart 5).[71] Encroaching on protected natural areas similarly carries both a jail term and a fine.

The Senegalese government has consistently increased its investment in protecting the park's resources and preserving its enormous biodiversity. The number of rangers patrolling the park increased from 178 in 2020 to 900 agents in 2023 and the equipment they patrol with has become more sophisticated.[72] The growing securitisation of the park from the mid-2010s is in line with global conservation trends that have, in many contexts, created tension between local communities and enforcement agents.[73]

Chart 5: Illicit activities and legal provisions

Activity	Law	Provision and penalties
Poaching	Law no. 86-04, Hunting and Nature Protection Code, 1986	Anyone who deliberately hunts in a classified wildlife reserve, nature reserve or a national park is liable to a fine of 240 000 to 2.4 million francs and imprisonment of one to five years. (Art. 30)
Incursions into national park lands	Law no. 86-04, Hunting and Nature Protection Code, 1986	Anyone who wilfully contravenes the regulations governing movement and residence in national parks is liable to a fine of between 12 000 and 120 000 francs and imprisonment for between one month and one year, or to one of these two penalties only. (Art. 25)

Activity	Law	Provisions and penalties
Logging	Law no. 2018-25 of 12 November 2018 on the Forestry Code	Anyone who exploits, removes, cuts or removes the bark without authorisation, one or more trees or other forest products in a classified forest, a restoration perimeter, a national park, a wildlife reserve, an integral reserve or a special reserve, is punished by imprisonment of three to five years and a fine of three million to five million XOF francs. (Art. 56)
Timber trafficking	Law no. 2018-25 of 12 November 2018 on the Forestry Code	Anyone who engages in domestic timber trafficking shall be punished by from four to eight years' imprisonment and a fine of seven million to ten million XOF francs. When the trafficking is international, the penalties will be five years to ten years' imprisonment and a fine of 15 million to 20 million XOF francs. For the purposes of the present Code, illicit timber trafficking is defined as any irregular activity involving the harvesting, transporting, concealment with a view to trade in timber or timber products, sponsored by a natural or legal person or a group of persons according to the same distinction. (Art. 57)
Gold mining	Law no. 2016-32 of 8 November 2016 (Mining Code)	Illicit mining activities are punishable by imprisonment of at least one year and not more than five years and by a fine of between 5 million and 125 million XOF francs, anyone who engages, without authorisation, in mining or quarrying work in violation of this Code. (s127)*

Note: * The Forestry code (2018-25) also contains provisions regarding offences relating to the disturbance of the soil, which could also be applied to mining offences within the park.

The growing securitisation of Niokolo-Koba Park, as part of conservation efforts, has led to tensions between neighbouring communities and park rangers

Programmatic support of peripheral communities in Kédougou

The Senegalese government has increasingly invested in and invited support for a wide range of programmes to support communities in the Kédougou region faced with shrinking livelihoods in the face of climate change.[74] Undertaken by the government, multilateral institutions and bilateral development and civil society agencies, these recognise the communities as important actors in the response to conservation concerns and local environmental crime.

Many seek to build the resilience of peripheral communities through two types of strategies:

- *capacity building for sustainable ecosystem management*[75] includes ways to sustainably (and legally) make use of resources in the park's buffer zone;[76] environmental protection, including raising awareness of the dangers of land clearing, bushfires and logging and of the existing regulatory codes);[77]
- *enhancing income-generating activities in a more environmentally friendly framework* includes developing market-garden areas served by a well, a solar-powered water pump and solar panels, with many activities focused on women.[78]

Some resilience programming engages directly with the impact of illicit economies on the park. For example, the Senegal National Adaptation Plan (PNA-FEM) attempts to enable limited artisanal fishing in the park to improve relations between communities and rangers and diminish illegal fishing. The project commenced in 2022, so it is too soon to assess.[79]

Building the capacity of youth is a key pillar of the state's response in Kédougou, where unemployment rates hover around 16.4%.[80] Mining companies are required to give Kédougou residents priority in recruitment[81] but this is not always enforced, causing grievances.[82] Community members in both Badon and Niemenike noted that such policies were relatively effective and resulted in a good level of recruitment,[83] although the positions are typically junior ones.

A key complaint of community members was that they do not benefit from income generated by the park through tourism. While such figures can be relatively significant – in 2019, the park received 2 995 tourists and generated XOF 26.2 million[84] – the revenues are relatively low, given the park's size and the number of peripheral communities.

Addressing the interrelated threats of climate change and criminality in Kédougou should involve support for community-led conservation initiatives

Autonomous community resilience measures

Interviewees also reported the autonomous development of resilience responses within communities. For example, some women's groups have been testing the use of organic fertilisers to mitigate the impact of soil contamination from ASGM.[85] Farmers are also trying out different farming methods to adapt to variable climactic conditions, such as including trees on farmland.[86]

One initiative common to each of the villages of Oubadji, Badon and Niemenike was the establishment of tontine associations. Tontine members contribute a fixed monthly amount and, at the end of each month, that money is paid out to one member by turns.[87] Although tontines are commonly women-only associations, they are also practised by men in Badon and Oubadji. Members said that they invest their share of tontine proceeds in alternative income-generating activities – such as processing and reselling honey, fonio (millet, similar to couscous) and vegetables – so lessening their reliance on illicit activities.

Other communities, recognising the threats of deforestation, have established observation marches to deter and report logging activity within the park.[88]

Key challenges to the response

Problematic protection: Legitimacy and legality in conservation efforts

Across the world, the establishment of protected areas and the enforcement of these protections have stood at odds with community practices of resource extraction.[89]

Across West Africa, disjuncts between what states consider to be legitimate ('legal', by law) and what local communities and actors in transnational networks consider to be legitimate ('licit', by custom) are a source of tension between governments and their citizens.

They also complicate the formation of effective responses to illegal economies.[90] Many illegal but licit markets face limited social taboos among West African communities, where 'illegitimacy' is often tied to harm done to the communities themselves.[91]

The criminalisation of the use of resources within the Niokolo-Koba Park – including logging, hunting, grazing and foraging in the park more broadly – is at odds with local communities' widespread perception that the resources are rightfully theirs.

Many communities, including those of Niemenike and Badon villages, were relocated from their lands in 1975 to accommodate the park's expansion. These communities relied on the land for livelihoods and

cultural practices, including hunting for ceremonial reasons, such as the Bassari ethnic group's use of leopard and lion skins for certain rituals.[92] Statutory delineation of the park's boundaries has not affected community perceptions. As one woman in Oubadji noted, 'We go into the park, it's the earth of my grandfather in there, and we get arrested.'

A positive relationship between communities and enforcement actors correlates with areas experiencing the most successful outcomes for biodiversity

Since 2019, the increasing enforcement of park conservation measures has further heightened tensions between communities and authorities.[93] Grievances are multiplied when park agents are perceived to use excessive force.

Communities in Oubadji recounted a 2021 incident where a group of young people from the village had entered the park in search of dead wood – a practice they perceived to be legitimate – and were beaten by park agents of the mobile brigade. This event led to unrest in the village that required the intervention of customary and administrative authorities to settle.

Similar stories were shared in Niemenike, including a 2022 incident involving the arrest and ill treatment of a group of women who had entered the park: park agents transported the women 10 kilometres from their village, forcing them to walk back. While these clashes are partly due to law enforcement, an interviewed park agent also attributed them to the limited training and monitoring of park staff, some of whom are former soldiers.[94]

The gap between the law and community concepts of legitimacy has also both shaped the role of some park agents as mediators and created opportunities for corruption. Park agents in some peripheral communities reportedly permit villagers to undertake small-scale subsistence activities within park limits, including harvesting some fruits and vegetables to sell on Saturday markets and collecting straw for use in their own homes.[95]

Similarly, during the daaka, an annual religious event held at Medina Gounass, the park warden authorises access to the park to cut bamboo for the construction of huts for pilgrims.[96] Park officials affirmed that, while some activities are permitted in the buffer areas, these are not permitted within the park itself.[97] In such cases, agents appear to mediate across community and state positions, diminishing tensions and adopting a pragmatic and nuanced approach to park management.

More extortionate practices of access regulation have also emerged. Community members reported that those who are caught operating illicitly within the park often pay bribes or have the goods appropriated. A more organised system has emerged in the regulation of gold mining and grazing within some elements of the park. Each miner reportedly pays XOF 1 000 (EUR 1.53) per week to the relevant ranger in exchange for an informal authorisation to mine.

Similarly, herders reportedly pay a fee per head of cattle for extended entry. A herder with a large number of cows could pay around XOF 50 000 (EUR 76.26) for access to grazing within the park for a few months. Some rangers are also reportedly involved in corruption with timber traffickers around Wassadou and Kalifourou, bordering Guinea.[98]

Such arrangements are made with park agents located in the park peripheries but do not include mobile brigades. Consequently, some stationed rangers reportedly try to warn community members when brigades are patrolling.

Perceptions of inequitable access to park resources

Park management regulations stipulate that exploitation of the park's resources is prohibited in all its forms. However, the peripheral communities widely believe that some such exploitation is being authorised. This is denied by authorities, who suggest it is a misunderstanding of activities that are permitted in the buffer zone. The communities' beliefs may also reflect the informal issue of 'permits' by corrupt park employees.

Community members gave evidence in support of their views. Voicing a sentiment echoed by many, one person said,

> Malians come to fish [in the Gambia River inside the park] and we are not allowed inside. Trucks come here from the outside to get baobab … maad [a local fruit] … and we are not allowed to harvest anything. They have exploitation permits. Permits which are refused to us.[99]

Similarly, some external stakeholders, including Chinese actors, are permitted to mine within the park through authorisations linked to corruption.[100]

The president of the youth association in Badon said, 'Faced with the difficulties we are experiencing, we have no choice but to enter the park to practise gold panning. We find it unfair that they forbid us access to the park while other people are authorised to exploit the resources.'[101]

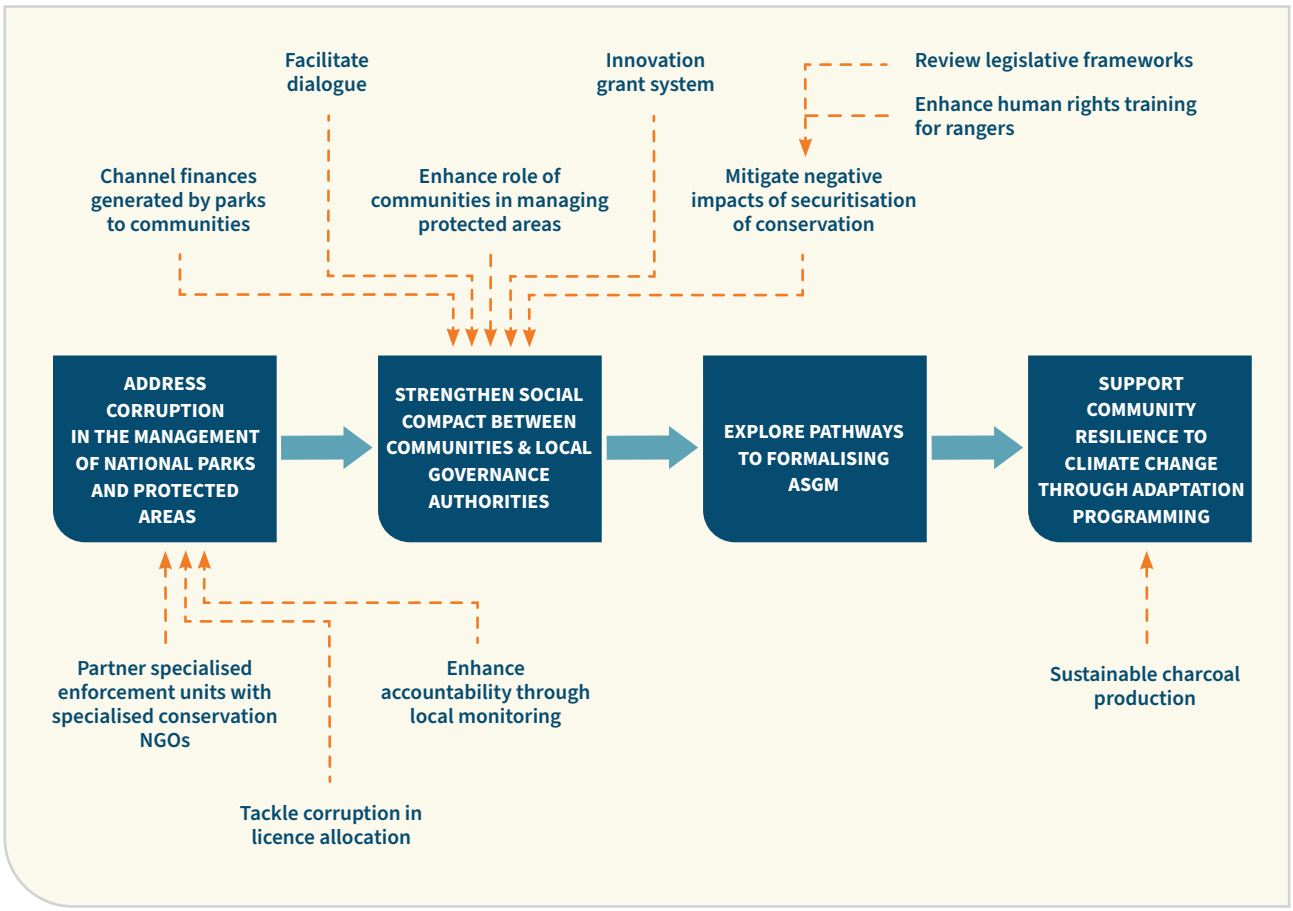
This perceived unfairness has repeatedly led to unrest. In 2019, for example, protests reportedly erupted in several peripheral communities, including Samal, against Chinese nationals who were illegally mining inside the park and using mercury, which polluted the Gambia River that the local people use for washing and drinking.[102]

There have also been repeated clashes between communities and authorities in an area known as 'Angola', near the village of Niemenike, which village members perceive to be rightfully theirs but park authorities confirm is part of the protected areas of the park.[103]

Lessons learned: Recommendations for the ECOWAS region

The Kédougou case study highlights common challenges pertaining to the interlinked threats of climate change and environmental crime in the context of protected areas. The recommendations outlined below can provide a

Chart 6: Structure of proposed interventions



Source: Authorial analysis

Efforts should be made to formalise artisanal and small-scale gold mining in Kédougou, to reduce the negative impacts of this growing sector

basis for responses across the Economic Community of West African States (ECOWAS) region.[104] In line with the OCRF's emphasis on preventative response strategies, our approach looks beyond criminal justice enforcement.

The crime/climate change nexus joins two wicked problems. The responses are therefore difficult to implement, unlikely to work in isolation and often target sensitive areas. They are, however, urgently required to avoid short- and long-term crises of state legitimacy, the destruction of livelihoods and regional conflict.

Across interventions, data-sharing on successes and, crucially, failures is essential to build towards increasingly effective programming.

Strengthen the social compact between communities and local governance authorities

Local communities have a major role to play in the response. While there is significant discussion about involving them in strategies to counter environmental crime, there are few good examples of success. This failure has been a missed opportunity to disrupt the link between environmental crimes and climate change.

In or near biodiverse areas, local communities may use, protect or otherwise manage the areas, or simply cohabit with wildlife in ways that can give rise to conflicts with government regulation. Ensuring that state approaches are aligned with communities is central: research demonstrates that a positive relationship between communities and enforcement actors correlates with areas experiencing the most successful outcomes for biodiversity, even where there is high risk of poaching or overharvesting.[105]

By contrast, excluding communities has impacts beyond conservation and climate change, threatening the very legitimacy of the state. The criminalisation of community livelihood practices through laws that prohibit resource extraction from protected areas and are deeply at odds with community norms of resource use has undermined conservation efforts and multiplied community grievances.

In West Africa – where many states face threats from non-state actors offering alternative governance structures, and with resource management in protected areas repeatedly playing a central role in these narratives – there is renewed urgency to incorporate communities into the response.[106]

Difficult questions remain about how or whether the management of protected areas should be devolved, or how natural resource benefits should flow back to local communities. However, regional and global

> Corruption acts as a systematic enabler for environmental crime, poses vast obstacles to effective response and multiplies community grievances

practice points to promising areas for intervention in the issues listed below that can work towards:

- building the legitimacy of authorities' mandate to enforce laws against environmental crime;
- building bridges between communities and the state, which can lead to more dialogue;
- supporting community priorities in the form of tangible, community-led projects with clear benefits.

> The largely informal nature of ASGM leaves it vulnerable to exploitation by criminal and conflict actors, robs states of vast revenues and enables practices which harm the environment

Facilitate dialogue and build relationships to align communities and conservation enforcement actors

Facilitated community dialogues generate increased trust between communities and local governance authorities and enhanced community resilience to crime. Participation in these dialogues should be inclusive, including women and young people, and should generate discussion documents that report on the substance and outcomes of these conversations, to which all parties have access for reference and accountability.

Create an innovation grant for local communities in biodiverse areas

Community dialogues can also form the basis for a grant-making system to fund innovative community-level projects. The dialogues could identify projects that form links between enforcement actors and local communities or between different communities or generate community support for conserving environmental commodities.

While the shape of such projects would be determined by communities themselves, they might include protecting against damage by wildlife or assisting communities to improve local services that are not directly tied to conservation but improve their incentive to support enforcement.

Enhance the role of peripheral communities in managing protected areas

Enhanced employment in park management could help to address challenges related to unemployment, repositioning the park as a source of livelihoods rather than a restriction. In our research, community members reported being involved in occasional low-paying activities like creating paths and building huts but felt excluded from other higher-level positions, such as park rangers or tourist guides.[107]

The nature of engagement must be tailored to local realities. For example, GI-TOC research found that there were several successful examples in Asia of turning poachers into patrollers, but practitioners in southern Africa did not know of any similar success in their region. However, Sapo National Park in Liberia has a similar project, along with community surveillance teams, which is reportedly seeing some positive results.[108]

The structural challenges faced by peripheral communities need to be considered within this approach. Issues like limited access to the educational opportunities that enable employment into higher-level park management positions have also been a factor in national parks where relations with peripheral communities are tense.[109] Park management structures should consider what services they can provide to help peripheral communities, such as renewable energy through the provision of solar panels or assistance with salaries for schoolteachers.

Another avenue for positive engagement is to pay for conservation or ecological restoration efforts. Payment for ecosystem services or conservation basic-income schemes or simply financial support for the adoption of sustainable livelihoods like agroforestry are all potential ways to advance both ecological goals and improved community relations.[110]

Greater channelling of finances generated by the park to peripheral communities

There is significant evidence to suggest that strong community relations have, for too long, been undervalued as an investment in the operational efficiency and security of national parks. While national park margins are often narrow, park authorities should not consider revenue spent on communities as charity but rather as an investment in their infrastructure.

Where protected areas generate revenues – through tourism, hunting concessions or otherwise – structures that direct a proportion of these towards the peripheral communities can help to align state and community interests in conservation.

Revenue sharing is a complex issue, with questions around the transparency of park revenues, the consistency with which this funding can be maintained, and how it should be allocated. Rather than splitting off portions of the park's operating budget, an additional 'tourism fee' to offset community losses is a possible approach.[111] As another option, communities can take a greater role in the management of tourism and generate revenue for themselves by supporting a private conservancies model.[112]

Mitigate the negative impacts of securitising protection of national parks

The 'militarisation of conservation' is generating a new crisis of legitimacy, with drastic impacts on the effectiveness of strategies and state–community relations. It can criminalise low-level participants who could rather be diverted into other livelihoods. Furthermore, it drives human rights abuses in protected areas.

This compounds the contested legality of laws to protect flora or fauna and so, in a broader sense, undermines the legitimacy of the institutions that uphold these laws. In fragile and conflict-affected states in particular, this aggravates already difficult challenges of state legitimacy, opening potential areas of vulnerability for alternative governance providers, including non-state armed groups, to exploit.

Excessive use of force by park rangers is repeatedly linked to resentment and conflicts with surrounding communities.[113] Many ECOWAS states, including Benin and Liberia, have seen repeated incidents of communities attacking park rangers for perceived (and in many cases real) ill treatment.[114]

Across West Africa, regulations that govern activities in national parks recognise the needs of peripheral communities to some extent. The establishment of buffer zones where some activities are permitted is one common mechanism.[115] However, additional scrutiny of regulatory structures and their enforcement could help to ease the resentment arising from the disjunct between community norms and regulatory positions.

Review legislative frameworks governing protected areas

Regulatory frameworks should explore effective alternatives to lengthy jail sentences for low-level violations, perhaps through the use of restorative justice approaches for those at the bottom of the trade chain or who poach or harvest to supplement subsistence livelihoods.

Enhance focus on human rights in training programmes for park agents

Preparatory training programmes, educational courses and on-the-job capacity building for park enforcement agents should be bolstered to avoid the use of excessive force, particularly when engaging with peripheral communities, with a focus on regional case studies of the widespread damage that such practices cause. Encouraging intra-agency monitoring and the reporting of incidents of excessive force can drive a cultural shift away from such practices.

Address corruption in the management of national parks and protected spaces

Corruption acts as a systematic enabler for environmental crime, poses vast obstacles to effective response[116] and multiplies community grievances in protected area management. When corruption happens in remote areas of high biodiversity – as is the case in national parks across West Africa – there are typically fewer means for external accountability, such as significant media coverage of big court cases.

Corrupt allocation of 'permits' and 'licences', many of them in breach of the regulatory framework, magnify community perceptions of inequitable access to resources and undermine the state's conservation efforts.

It is vital to break these deadlocks as impunity or tolerance of environmental crime undermines the response to climate change. Targeted and locally embedded programmes that increase accountability and corruption resilience and improve the governance of key protected areas are central to meeting its objectives.

Research indicates that the greatest success in responding to environmental crimes has emerged from the support of locally embedded and trusted civil society groups partnering with mandated government enforcement units over the long term.[117] Programming areas feeding into these goals include the following.

Partner specialised enforcement units with specialised NGOs

Wildlife crime units, including park agents or rangers and local non-governmental organisations (NGOs), can support and invite support from each other. The work of such partnerships should be monitored to draw lessons to learn from and to share. In particular, interventions should focus on building corruption resilience within wildlife crime units and the broader institutions they are embedded within. This can include tackling institutional cultures without singling out individuals, raising the cost of corruption through monitoring, and so on.

Enhance accountability through local monitoring

Provide support, including grant funding, to local civil society organisations to improve systems for monitoring that increase the accountability of state actors, such as park agents, specific courts dealing with environmental cases and departments that issue quotas, permits or licences. Ensure that these efforts can be amplified, or protected, through links to international media or international public campaigns or targeted financial, legal or exfiltration support. Central state support for such initiatives, which are sensitive and often prone to resistance, is key to maximise effectiveness.

Tackle corruption in licence allocation

The issuing of licences must be transparent and sensitive to local community perceptions. Ensure that breaches of licensing and permit-granting regulations are identified through enhanced accountability mechanisms, leveraging local media partnerships to enhance their symbolic power, and that penalties are fully applied.

Support community resilience to impacts of climate change

Adaptation projects and climate resilient livelihoods should be in line with Goal 7 of the African Union's Agenda 2063: 'Environmentally sustainable and climate resilient economies and communities.'[118] In recent years, government, third party and civil society support for community adaptation and climate change mitigation has significantly increased. This is welcome and should be lauded.

To ensure maximised results, programming needs to build on evaluations of climate adaptation projects implemented elsewhere, and communities need to be given ownership of projects.[119] Livelihood programming that focuses on women, including through enhancing women's role in natural resource management, has repeatedly been demonstrated to be effective not only in achieving the specific project goals, but also in supporting gender equality.[120]

Programmes that seek to reduce charcoal reliance by replacing it with cleaner energy sources or supporting more sustainable charcoal production that mitigates the impact on forest cover could be important responses to deforestation and timber trafficking, mitigating their interlinked climactic impacts.

Strengthen efforts to formalise gold mining

In the Kédougou region, and across West Africa more broadly, climate change is contributing to ASGM's increasingly central role as a regional livelihood. As the practice proliferates, its environmental impacts multiply, contributing to climate change while undermining ecosystem resilience.

The largely informal nature of the trade leaves it vulnerable to exploitation by criminal and conflict actors, robs states of vast revenues and enables practices which harm the environment, including the unregulated use of mercury and cyanide in processing and the trafficking of timber to mining sites.

Formalisation, 'a process that seeks to integrate the ASGM sector into the formal economy, society, and regulatory system,'[121] is a precondition for reducing these negative impacts.[122] While there have been numerous efforts to support formalisation in Senegal, and across ECOWAS more broadly, these could be further strengthened.

As explored in other OCWAR-T research, approaches seeking to support and regulate ASGM, rather than prohibit it, are gaining traction. The establishment of mining corridors, and regulation of amalgamation processes, are promising elements of emerging pathways towards formalisation being pioneered within West Africa.[123]

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