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Research Article

Armed Conflicts in Africa and Environmental Intelligence for Sustainability

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Armed conflicts cause considerable human and economic impacts, resulting in economic decline, social dislocation, and ecological disaster. In addition to being humanitarian disasters, armed conflicts cause considerable environmental damages to vital infrastructures and resources, some of which are irreversible or persist a long time after the end of the war, compromising potential sustainable recovery and reconstruction. Anticipation or risk of occurrence of conflicts may impair the sustainable development of involved countries if it was planned as if conflicts did not exist or would not occur. This paper introduces the notion of Environmental Intelligence for Sustainability as a tool to manage and possibly incorporate those risks within the sustainability agenda with particular emphasis in Africa. In this paper, the concept of Environmental Intelligence for sustainability (EIS) is defined as a strategic approach to analyze and manage the relationship between anticipated or on-going armed conflicts and sustainability. It may range from a pre-conflict strategic environmental and social assessment to governance and management tools developed as a three-dimensional framework operationalized through preventive, prospective and reactive measures. In view of the regional, and global effects of conflicts, coordinated Environmental Intelligence for Sustainability in African countries should be viewed by the international community as one of the main components of peace building globally, and a primary condition for sustained economic development and achievement of 2030 sustainability goals.

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Introduction

Armed conflicts cause considerable human and economic impacts, resulting in economic decline, social dislocation, and ecological disaster (Couteau-Bégaire, 2017). In addition to being humanitarian disasters, armed conflicts cause considerable environmental damages to vital infrastructures and resources, some of which are irreversible or persist a long time after the end of the war (Busset 2009), compromising potential sustainable recovery and reconstruction. Dorsouma and Bouchard (2006) grouped the environmental, social, and economic consequences of armed conflicts into pre-conflict impacts, direct and indirect impacts during the kinetics of armed conflicts (synconflict) and post-conflict impacts. Post conflict and synconflict impacts on sustainability are relatively straightforward and have been discussed in numerous studies (Dorsouma and Bouchard 2006, Reuveny at al., 2010, UNEP series of desk studies on post-conflict environmental assessments). Synconflict impacts to vital infrastructure and resources generally lead to deeply compromised post conflict sustainable development and are therefore a particular challenge for long term sustainability management (see also Maertens, 2016, Pathak, 2020). Surface combat, aerial strikes, and troop movements can be highly damaging to the environment in terms of both harmful emissions and direct contact. For instance, troop movement in Ukraine near Chernobyl have led to significant rise in radiation levels in the area, with unknown long-term consequences. Anticipation or risk of occurrence of conflicts may as well impair the sustainable development of involved countries if it was planned as if conflicts did not exist or would not occur. Therefore, in pre-conflict, and in fact in all three-time phases of conflict's impacts, sustainability is at risk.

This paper introduces the notion of Environmental Intelligence for Sustainability as a tool to manage and possibly incorporate those risks within the sustainability agenda with particular emphasis in Africa (Dorsouma 2022). The paper is based largely on a case study of the situation in Cote d'Ivoire, but conclusions are extended to West Africa while providing some continent-wide perspectives in the context of regionalization and internationalization of conflicts.

Environmental damages

In modern times, actions of state and non-state actors involved in conflicts directly and indirectly impact or destroy a wide array of civilian infrastructures, including water, energy, and food systems (Sowers and Weinthal, 2021). The most emblematic ones were undoubtedly the bombing by the US Army on the Red

River dikes during the Vietnam War in the 70s, which caused major flooding on the Mekong plains and led to the starving of Vietnamese populations (Lacoste, 2011; Lacoste, 2014). Major air pollution impacts were also caused by the firing of Kuwaiti oil wells by the Iraqi army in 1992 and damages to agriculture were brought in following the destruction of dams in Croatia the same year during the Kosovo conflict (Mourier, 2010). More recently, damages on water pumping stations in Aleppo in Syria and at the Great River in Libya, did put at risk water supply for numerous people (Zucchetti, 2011), compromising possible re-development of irrigated agriculture. Prolonged health and environmental concerns may be tied to land contamination, as was shown by the use and persistence of depleted uranium in the soils of former Yugoslav Republic of Macedonia and Kosovo (Haavisto, 2003, Burger, 2013). Vast areas of potential agricultural, pastoral or tourism development in Lebanon are still barren from being productive due to large unmapped mine fields or unexploded cluster bombs. Century-old Cedar forests in norther Lebanon are still being inaccessible to tourism development from leftover mines as a result of a succession of civil wars, conflicts with the Syrian Army or from Israel occupation.

Pathak (2020) has used the notion of changes in ecological biocapacity (Borucke et al., 2013) and its components—cropland, grazing land, fishing grounds, forest, and built-up land—as a metric of the relative magnitude of conflict-related damages in various countries with differing economic and social contexts. Brito et al (2018) confirmed that the ongoing conflicts in the Sahel and Sahara region alone which account for nearly 50% of African conflicts and 20% of global conflicts, are the main cause of the wildlife decline in the region, with 12 species of vertebrates disappeared or endangered due to conflict situations. Vadrot (2005) already reported the massacres and illicit trafficking of wildlife and endangered species, overexploitation of forests, degradation of protected areas, dumping of hazardous military waste, destruction of agricultural land, water poisoning, among others, as ongoing damages related to armed conflicts in Africa. Khazri (2011) also noted the destruction of infrastructure, soil contamination, disruption of agricultural cycles and overall depletion of critical natural resources.

Conflict and Sustainability Nexus in Africa

Since their adoption in 2015, the 2030 Sustainable Development Goals (SDGs) have become the blueprint for the global community, in a context of major global development and environment concerns, including the challenges posed by extreme poverty and climate change, among others. While various plans, means and assistance funds to achieve these goals are developed and emplaced, generally little consideration is given to severe impediments and possible major setbacks that could be associated with civil unrests,

various upheavals, or outward armed conflicts. With the escalation of armed conflicts at global scale and in Africa in particular, economic growth and development of countries are compromised.

In Africa, as of 2020, conflicts of different nature, including cross-border terrorist attacks were affecting directly fifteen countries, with increased number of new "irregular and asymmetrical" conflicts (Bonnemaison, 2012) combined with the illicit circulation of weapons, the escalation of terrorism, the internationalization of the counter-terrorism fight, and the repercussions of the ongoing war in Ukraine (Di Caracalla, 2022) creating shortages of food supply and undue rise in energy costs. Armed conflicts raise even more complex sustainability issues in Africa given already existing major development challenges, including extreme poverty, social inequality, regional disparities, dependence on global commodity prices, inequality of international trade, and poor governance. The impact on African economies is more severe as it adds up to contracted economic growth due to COVID-19 pandemic and increased rate of terrorist attacks in various parts of the continent (Ide, 2021; Feindouno & Wagner, 2020). Despite these challenges some African countries had made significant socioeconomic progress over the last decade in addressing poverty alleviation, and ensuring access to affordable energy. These progresses are however constantly at risk as armed conflicts may most likely make the achievement of the SDGs uncertain by 2030, as was the case with the failure in meeting the Millennium Development Goals (MDGs) between 2000 and 2015.

In West Africa's Sahel region, armed conflicts and terrorist attacks and raids have significantly increased over the last decade. According to the UNECA (2019), the structural causes of armed conflicts in this region include some historical grievances, population growth and environmental pressure, linked to extreme poverty, food insecurity, frequent droughts, pre-existing civil wars, and poor governance (Mouiche and Ewusi, 2015). Growing situations of upheaval, conflicts and terrorism have led to cross-border insecurity, forced migration, economic decline, social inequalities, and ecological disaster. In a region where 60% of the population is under the age of 25 and where countries are defined by artificial borders inherited from the colonial era, armed conflicts have recently taken a subcontinental dimension and became very complex, with the interconnection between human development challenges and security issues.

Currently, there are two corridors of armed conflict in the region: the conflict in Mali and the insurgence of Boko Haram group in Nigeria, with extension to other countries, including the Sahel and the Lake Chad Basin (UNECA, 2017). The International Crisis Group (ICG, 2019) reported that "Armed conflicts in West Africa are progressing like the desert, from north to south". In Mali, the conflict which was triggered

by the poor post-conflict management of the old Tuareg rebellion in the northern part of the country, was exacerbated by the Libya's explosion in 2011 due to the Arab Spring and followed by the North Atlantic Treaty Organization (NATO)'s attack that resulted in the death of Muhammar Gaddafi, former Libyan President. The situation in Mali affects its neighboring countries such as Niger, Mauritania, Burkina Faso, Cote d'Ivoire. It poses a crucial security risk in a region where most countries are ranked below the UNDP's Human Development Index (HDI). UNDP (2018) reported that this regional insecurity challenge is source of multiple problems, including the displacement of 4.2 million refugees and Internal Displaced People (IDPs), with a significant humanitarian disaster. Similarly, in the Lake Chad Basin, the insecurity situation caused by the emergence of the Boko Haram group in Nigeria since the early 2000s has become a regional challenge amplified by cross-border criminality, socioeconomic difficulties, accelerated circulation of guns, and environmental and climatic challenges (Mouiche and Ewusi, 2015). The situation has resulted in the militarization of the Lake Chad Basin, known as one of the most fragile regions in the world. Currently, the basin which was in the past a model of a vibrant cross-border trade among its member countries, has transformed into a major insecurity "hotspot" (Magrin et al, 2018). This conflict and the related military response by the Lake Chad Basin countries has reconfigured the nature of socioeconomic development and trade relations in the basin, linked to the obstacles in trade exchanges, massive movement of rural populations to urban areas due to insecurity (Magrin et al, 2018). For instance, due to this situation, the trade corridor between Kano/Maiduguri (Nigeria) and N'Djamena (Chad) which is the most important one in the region, has become impracticable, with enormous economic consequences on countries like Chad, Nigeria, and Cameroon. Similarly, the recent military escalation in Niger with the Coup d'etat over President Mohamed and the potential risk of military intervention by the ECOWAS poses a significant security risk in a region already extremely fragile. Combined with the insecurity caused by terrorism, the emergence of military regimes in Mali, Burkina Faso, Guinea and the ongoing war in Sudan, this situation requires a close monitoring, as it may expand to many other countries, with significant regional and global implications on Africa's security and sustainability.

Overall, the security situation in West Africa and its associated military response result in serious budgetary displacement from national governments to deal with the security challenges. In addition, the massive movement of people– (often with their livestock) due to conflicts, significantly increased the pressure on natural resources such as land, water and vegetation which have already been under significant threat. This has already led to increased land competition, and exacerbated environmental

depletion and degradation, with environment becoming a source of conflict between farmers and herders. And all this, in the context of difficult coexistence between the agricultural and pastoral production systems and duality between the official legal system and the traditional customary law. In this regard, it is expected that the future repatriation and re-installation of refugees and Internally Displaced People (IDPs) at the end of the conflicts, will lead to future land access issues and increased social and environmental implications across West Africa.

This conflict situation makes it difficult to invest in key sustainability sectors such as structural economic infrastructure, education and health services, and environmental protection, while eroding the already hard-won development achievements in the region. Recognizing the obstacles caused by armed conflicts to development, the African Union adopted in 2013 the 2063 Agenda "The Africa we want" as Africa's long-term socioeconomic transformation and regional integration agenda, alongside an ambitious plan on "Silencing the guns by 2020" (Khadiagala, 2015; Diatta et al, 2019). We believe and herein propose that the sustainability agenda and governance, in addition to all diplomatic and political measures related to conflict prevention, must include integrated environmental and social assessment as a management tool.

The concept of Environmental intelligence for Sustainability (EIS)

In this paper, the concept of Environmental Intelligence for sustainability (EIS) is defined as a strategic approach to analyze and manage the relationship between anticipated or on-going armed conflicts and sustainability. It may range from a pre-conflict strategic environmental and social assessment to governance and management tools developed as a three-dimensional framework operationalized through preventive, prospective and reactive measures (Dorsouma 2022).

In its most basic form, Environmental Intelligence (EI) is essentially the gathering of environmental and social information and data for some future, sometime undefined, purpose, be it tactical or strategic. Basic form of EI has emerged over the recent decades in response to some of the pressing global environmental challenges, including climate change, biodiversity loss, natural disasters, depletion of natural resources, land degradation and desertification, etc. Based on the use of environmental data in a wide range of areas and sectors, EI contributes to addressing the actual and anticipated consequences of these ecological threats and to monitor human-induced impacts from industrial activities and pollution (Watson and Wuxom,2007; Adams,2015).

According to Pace, O'Connell and Lachman (1997) the notion of "environmental intelligence" was used in the sense of strategic, and possibly tactical, use of environmental information as early as 1992 in the United States, with the establishment within the Central Intelligence Agency (CIA) of a "Task Force" to assess the possibilities of using classified intelligence data to address complex environmental and climate change challenges that may lead, or be related on some way to conflicts. This "Task Force" created within the CIA was then transformed into a research program in 1994 and involved both intelligence agencies, including the Central Intelligence Agency (CIA) and the Defense Intelligence Agency (DIA) and civil agencies such as the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA), the latter two mostly as repository of extensive and unique environmental data. The aim of this agreement was to determine the nature of environmental data to be used for non-military purposes, without compromising the primary goal of military intelligence. Subsequently, it was decided to declassify historical data gathered by intelligence agencies from satellite observation to make it available for sustainable development initiatives. Since then, several other countries have also shown great interest in environmental intelligence, as used above.

Environmental Intelligence for Sustainability (EIS) is intended to provide leaders, decision-makers and managers with an analytical framework to anticipate and in a way, incorporate the risks associated with conflict situations within the governance for sustainability. Casas (2017) defines Environmental Intelligence, much in the same way as EIS is used in this paper, as a systematic approach and as an information management tool for decision-making and planning in the fields of environment and sustainable development.

Use of Environmental Intelligence for Sustainability (EIS) as a management tool

Environmental Intelligence for Sustainability may be useful to African States and their development partners to address security-sustainability risks in a more integrated and comprehensive way. While it shares many of the elements of classical strategic environmental and social assessment, EIS differs in many other ways since it does not require or lead to a specific reporting exercise. Rather, it requires incorporating into principles of sustainability management and governance at various scales, preventive, prospective and reactive measures based on sound environmental assessments (**Table 1**).

Purpose	Preventive	Prospective	Reactive	Sustainability Options
Use of adequate environmental information for sustainable development in conflict situations	Early warning	Diagnostic and Strategic analysis of security-sustainability nexus	Conflict Risk Analysis for Crisis Response	• Anticipative sustainability action • Scenario planning and strategic foresight, and recommendations • Managing Sustainability risks during conflicts
	Pre-conflict measures	Scenario building and sustainable development visioning, planning, and budgeting	Risk Management and Syn-conflict measures	
	Stakeholders' awareness raising on sustainability issues	Strategic Monitoring of conflict-sustainability related scenarios	Implementation of Environmental governance during conflicts	

Table 1. Environmental Intelligence as a three-dimensional tool (from Dorsouma, 2022)

Preventive management

While EIS cannot act as a conflict avoidance mechanism, a preventive component is nevertheless critical given that the cost of ignoring conflict risks is considerable and much higher than the cost of response during crisis or corrective measures after the conflict. Therefore, it follows that any country, regional or international authority or organization has a significant interest in designing and promoting preventive measures to safeguard economic, social, and environmental sustainability.

Preventive measures include capacity to detect and establish a reasonable diagnostic and strategic analysis of security-sustainability nexus within the country and within the regional, or even international, context. It involves the capacity as well to diffuse early warning and propose and emplace other anticipative measures before any conflict arises including special protection of vital infrastructures

or critical resources that could serve as the basis for post-conflict recovery and reconstruction. It seeks to incorporate in scenario-building key strategic issues related to potential conflict situations and their implications on environmental stability and on long-term sustainability.

At this stage, EIS could in fact be based on a sort of report which would incorporate all principles, previsions and recommendations for pre-conflict measures aimed at protecting or safeguarding vital infrastructures and resources as suggested here; however it is hardly conceivable that a state or local authority would have time or would judge appropriate to mandate a working team to prepare such a report in the case of an imminent conflict or in the case of terrorism threats. EIS must then be used in the context of mid to long term planning for sustainability and cannot be a means of conflict avoidance or resolution.

For instance, the exercise which leads to the preparation of common diagnostic and planning documents such as "The State of the Environment" in each country, could be complemented by an analysis of "what if" for each component which is considered vital for the pursuance of sustainable development, provided the latter are clearly identified. These may include all the major issues already considered vital in peace time but may include as well anticipated humanitarian relief situation or specific pollution and access to resources issues related to the presence of refugees or Internally Displaced Persons.

In general, in every country, mapping or inventory of existing or potential resources, such as mineral, wildlife, tourism potential, land and agricultural resources, groundwater, unique forests, is usually done. Various natural habitats, unique landscape, wildlife refuges may even at times already have acquired legal protection status. Vital infrastructures such as water adduction, water treatment, waste management, irrigation facilities, etc. are also well inventoried or planned as part of the overall "environmental data and issues" available to governing or planning bodies. While the existence and gathering of such environmental information is not a problem, sorting and ranking amongst those which are critical for sustainability planning and are particularly at risk should some kind of upheaval, coup d'état, terrorism or outward armed conflict occur is a different exercise. The latter is part of the analytics of EIS.

Finally preventive management may imply promoting sustainability through raising awareness and education of various stakeholders on the links between natural resources, environmental and social issues, and sustainability.

Prospective management

Prospective management is required as a reflection and imagination of the future, considering and integrating conflict risks into the sustainable development planning processes and scenarios. This includes strategic sustainability analysis, scenario planning and anticipation of post-conflict strategic environmental assessments. The prospective dimension enables any country, organization, or corporation to carry out a diagnostic analysis of their current conflict-sustainability challenges and risks, with the view of identifying key risk factors and potential options to overcome them. It is delivered in the form of future scenarios that integrate both conflict and sustainability trends in the sustainable development planning and programming cycles and processes.

Based on available knowledge and information on possible inception and evolvement of conflicts, EIS should therefore contribute to prepare the ground for synconflict impacts and to set up pre-conflict measures such as protecting vital and conflict-sensitive infrastructure, socioeconomic services, and natural ecosystems.

Reactive management

Despite the preventive, foresight and forward-looking measures, a country or organization cannot realistically escape from damages and losses due to conflict or crisis. Reactive management calls for preparing to cope with potential consequences of conflict on factors of post conflict recovery and sustainability. It calls upon crisis management approaches, well-prepared humanitarian assistance and post-conflict environmental assessment. The purpose is to identify potential unmanageable damages to the environment, and ways to avoid or mitigate those.

Case study: Addressing conflict-sustainability challenges in Cote d'Ivoire and in West Africa

The notion of Environmental Intelligence for Sustainability (EIS) presents conflict-affected countries and regional groupings in Africa with a useful framework to put the security-sustainability nexus in the center of their development agendas. In Cote d'Ivoire, for instance, armed conflicts, including the 2002 war and recent events such as terrorist attacks and violent demonstrations have seriously shaken the foundations of country's sustainability. To date, the country lost more than 80% of its forest coverage over the last four decades due to many factors such as extensive agricultural practices, deforestation and

impacts of conflicts. In this country, armed conflicts over the recent years have exacerbated poverty, hampered economic performance, led to the deterioration of social conditions, caused the breakdown of institutional governance, and caused significant environmental damages, among others (N'Dah, 2003; N'Goran, 2010; Yebouet, 2011; Yabile, 2013). This conflict has resulted in the country's inability to achieve the Millennium Development Goals (2000-2015).

Environmental Intelligence for Sustainability (EIS) in Côte d'Ivoire could be materialized through the involvement of, and collaboration among key national institutions and stakeholders such as public entities, the private sector and the civil society as well as local communities. Technically, the coordination of a nation-wide EIS mechanism could be placed under the responsibility of the national agency in charge of the national security council reporting to the Presidency or by the body responsible for coordinating conflict prevention and early warning which reports to the Prime Minister. However, the coordinating agency would need to be strengthened to effectively play its oversight role though compiling environmental intelligence data from various technical bodies, including the national statistics institute, the national spatial observation agency, the national geographic information and remote sensing system, among others. The data and information gathered could be treated and transformed into a national decision-making dashboard which could provide key pointers and indicators on key conflict-sustainability risks, and allow policymakers and sustainability managers to make timely decisions and take pre-strategic actions to secure critical infrastructure and sensitive ecological sites in the eventuality of any conflict to come. This is expected to build sustainability into national economic infrastructure, social services and ecological resources that require specific protection in case of emergence of a conflict situation.

As part of operationalizing the EIS instrument in Cote d'Ivoire, Dorsouma (2022) developed a series of strategic scenarios on the possible projected trends of a Côte d'Ivoire faced with conflict situations but committed to achieving the Sustainable Development Goals by 2030, resulting in three key scenarios. These include (i) a pessimistic scenario of a country caught in a protracted conflict with a failure to achieve sustainability; (ii) a realistic scenario of a country facing sporadic conflicts and able to achieve only a few of the 17 SDGs; and (ii) an optimistic scenario of a country in peace and able to achieve all the SDGs by 2030. The exercise has also shown that major attention must be given to regional contexts, as Cote d'Ivoire is affected by its regional environment, being a key player in West Africa. in this region, armed conflicts have taken a regional dimension, and it is therefore imperative to promote a comprehensive regional approach on top of the national responses. A regional approach may allow for

promoting coordinated sustainable investment beyond the traditional military and humanitarian responses which have so far proven to be inefficient, ineffective and unsustainable.

A regional environmental intelligence response is therefore crucial to address the security and sustainability challenges in West Africa in a more structured and holistic manner. It requires a robust regional cooperation among countries to share relevant information and build strong national coalitions and regional synergies between various groupings and regional economic communities, including the Economic Community of West African States (ECOWAS) and the Lake Chad Basin Commission (LCBC), with the view of avoiding duplications and disintegration of the West African regional system. To be efficient, this approach needs to be expanded to Central Africa and its Economic Community of Central African States (ECCAS), given the interconnectedness of armed conflicts in these two regions and the critical need for cooperation between the two regional groupings. To ensure that the ongoing regional security threats do not lead to a failure to achieve sustainability, national governments and regional groupings (particularly the ECOWAS and ECCAS) need to mainstream conflict risks as an integral part of their sustainable development agenda. This implies revisiting the existing development planning, budgeting and programming processes towards more sustainability as well as prioritizing investments in key sustainable development initiatives across the regions.

Environmental Intelligence for Sustainability (EIS) could therefore provide a framework to rethink the current practices and strategies shifting the focus on regional approaches rather than the confine of national borders. It complements the existing ad hoc military and security responses with clear emphasis on economic, social, environmental and financial sustainability approaches. Currently, the emphasis on security and military solutions has relegated sustainability solutions. In response, environmental intelligence could constitute an appropriate tool to help anticipate conflict situations by focusing on preventive and early warning measures. Given that addressing the security-sustainability nexus goes beyond the capacity of national governments taken individually, there is a critical need for strengthening existing regional institutional frameworks towards a regionally based environmental intelligence approach that prioritizes environmental stability at a regional scale, focusing on common and shared goals and regional cooperation initiatives among countries.

Practically, a regional environmental intelligence system for West Africa will build on, and strengthen the existing ECOWAS Early Warning and Response Network (ECOWARN) created in 2008 as a structural conflict prevention and resolution instrument between the 16 West African States. The initial goal of the system was to provide a strategic response to conflict situations in the region through an early warning

mechanism based on "systematic collection and analysis of relevant information on countries in crisis" (Gnanguênon, 2018). However, this regional system fails to operate effectively and optimally due to some technical and financial obstacles, and due to the theoretical nature of the exercise, the reluctance from national governments to share information due to national security issues, and the long lead time from early warning to decision-making. Though it has proven to be a key tool for conflict prevention and resolution in the region as was the case in Gambia in 2017 when the former President Yaya Jameh did not want to quit power despite re-election defeat. In response to the lack of regional cooperation and information sharing among countries, the mechanism has shifted in 2018 into national coordination centers- being piloted in a few West African countries, with the aim to "reduce the gap between early warning and response" (Gnanguênon, 2018).

In summary, the regional environmental intelligence system in West Africa will consolidate the regional components of the ECOWARN through innovative approaches and joint country initiatives towards addressing the security-sustainability nexus. As it addresses sustainable development challenges compounded by armed conflicts and insecurity in West Africa in a more integrated way, this system offers an opportunity for timely early warning to national and regional decision-makers, focusing on sustainability as a vision and guiding principle.

Africa wide sustainability issues and armed conflicts

The current regionalization of conflicts in Africa and the internationalization of the terrorism threats and global impacts of the Ukraine war call for an African coordinated response beyond one particular country or region. It is worth noting that armed conflicts in Africa are now interconnected, as shown by the recent expansion of terrorist attacks in Southern Africa. The terrorist attack by the Islamic State Organization in the coastal city of Palma in the Cabo Delgado province of Mozambique constitutes a significant threat for Africa as a whole, with possible incidences in other countries such as Tanzania, Rwanda, Burundi, Uganda and Kenya with connection to the ongoing conflict situations in the Horn of Africa where the Somali terrorist group "El Shebab's" is still active, and combined with the volatile situation in the Tigray region of Ethiopia and conflicts in Sudan and South Sudan. As a matter of fact, the terrorist attack in Mozambique has caused considerable human losses and significant economic and social damages on key development sectors such as tourism and energy, causing economic decline in the touristic city of Palma, with negative impacts on the most important natural gas project worth US$ 24 billion operated by the French Total company. This investment which was viewed as an important

economic opportunity for Mozambique and Africa, is currently under threat and will prevent further investments in major projects across the continent, while raising some important concerns about reconciling development and sustainability goals in Africa.

Given the major constraints in accessing financing and investing in sustainability, it is recommended to establish an African continental financing facility as a critical and necessary tool to deliver concessional and non-concessional resources to African conflict-affected countries and those at risk of conflict as well as businesses operating across the continent, to invest in strong sustainability projects, including conflict prevention systems, post-conflict reconstruction and sustainable development programmes such as sustainable and resilient infrastructure, social and environmental services, etc. Such a facility would assist African governments to build a robust security infrastructure, with a particular emphasis on preventive, prospective and reactive measures, based on reliable Environmental Intelligence for Sustainability. It would likely assist them efficiently in strengthening their security architecture, enhancing national and regional institutional frameworks and operational capacity to maintain peace and stability.

More specifically, it could provide sovereign guarantees to de-risk sustainability-linked investments in conflict-affected countries, with the view of attracting private investors who are still reluctant to invest in risky countries, investing in reconstruction programmes including rehabilitation of damaged infrastructure and building new resilient infrastructure. Such facility is also an opportunity for job creation in conflict-affected countries and those emerging from conflicts, with focus on key sustainable development programs and creating enabling environments to invest in riskier projects. Finally, this facility could help African countries alleviate national budgets and reorient resources towards prioritizing strong sustainability programmes away from unsustainable, expensive and ineffective military and security expenditures.

Conclusion

Africa is currently at a crossroad faced with complex conflict situations and confronted with difficult choices to rebuild economies based on business-as-usual development models or choose to develop more sustainably. Addressing regional and global security-sustainability challenges in Africa calls for innovative ways of investing in, and prioritizing the sustainability agenda, in order to avoid that conflict and security issues set back efforts towards achieving sustainable development in Africa by 2030. In this regard, the concept of Environmental Intelligence for Sustainability (EIS) appears to be an essential

component to assess and address the security-sustainability nexus in Africa through a three-dimensional approach comprising preventive, prospective and reactive management solidly based on appropriate environmental assessments. In Cote d'Ivoire and West Africa at large, such a framework needs to build on existing mechanisms such as the National Security Council and the ECOWAS Early Warning and Response Network (ECOWARN).

Moving forward, the Environmental Intelligence for Sustainability (EIS) presented in this paper provides a critical framework to ensure that environmental stability in Africa is associated with social stability which in turn may lead to economic growth without environmental degradation, but promotes an Africa's security-sustainability agenda. In view of the regional, and global effects of conflicts, coordinated Environmental Intelligence for Sustainability in African countries should be viewed by the international community as one of the main components of peace building globally, and a primary condition for sustained economic development and achievement of 2030 sustainability goals.

Statements and Declarations

Author contribution

Dr. Al-Hamndou Dorsouma (Author) and Prof. Michel-Andre Bouchard (Co-Author) jointly wrote the paper.

Competing Interest

- **Competing financial and/or non-financial interests:** We declare that the authors have no competing interests, or other interests that might be perceived to influence the results and/or discussion reported in this paper.
- **Dual publication:** The paper is based on the doctoral dissertation of Dr Dorsouma, which has been published in French titled: "Conflit armé et développement durable en Afrique: le cas de la Cote d'Ivoire" (L'Harmattan Edition).

Data availability

The manuscript is based on both primary data and secondary materials. Data will be made available upon request.

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Declarations