Seed Governance and Peace:
A Conceptual Framework

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1. Executive Summary

This conceptual framework outlines the conceptual basis for ISSD Africa Action Learning Project (ALP) 4 and aims to take a step towards building a **shared language** between Humanitarian, Development and Peace (**HDP**) actors working on **seed governance** in **Fragile and Conflict Affected Situations (FCAS)** in Africa.[1] It is **intended to inform future case-driven exploratory research** on how seed sector governance can contribute to peace in FCAS. This conceptual framework can be used in the following manner:

- To understand the conceptual frame of thinking within ALP4 – what is meant by a contribution to peace in the context of seed governance in FCAS and how this could be operationalized in practice.
- To be used by action researchers within ALP4, who can use this framework in order to inform case selection for future exploratory case-based research and to identify examples of theoretical approaches to inquiry.

This conceptual framework explores the role of seed governance in FCAS, specifically in Africa, and its potential to contribute to peace through the lens of the **Humanitarian Development Peace Nexus**. Building on concepts from literature on peace, peacebuilding, and (seed) governance, as well as expert consultations, the paper investigates how seed governance in FCAS – encompassing policies, institutions, practices, and power relations – could conceptually contribute to peace under certain conditions.

1.1 Key Concepts

- **Seed governance** involves formal, informal, and intermediary actors managing seed production, distribution, and regulation. In FCAS, seed governance is often weakened by conflict, state fragility, and environmental shocks, affecting coordination, trust, and oversight.
- The **HDP Nexus**, though abstract in practice, aims to align humanitarian aid, development efforts, and peace work to improve coherence, reduce fragmentation, and address fundamental needs, the root causes of conflict, and to build resilience.
- The phrase "**contributions to peace**" in the context of seed governance does not imply a direct peacebuilding mandate but highlights the importance of aligning HDP actors to reduce fragmentation and enhance mutually inclusive goals. It refers to mechanisms that, while focused on seed sector development, can be mutually reinforcing to both negative peace (the absence of direct violence) and positive peace (inclusive, peaceful institutions and structures) – depending on the context and response type. But that ultimately, negative peace cannot be the end-goal, as it is a negative state. Instead, positive peace should form the basis of a long-term vision and allows for a meta perspective on contributions to peace.

1.2 Seed Governance in FCAS

Seed governance is complex and pluralistic, involving formal laws and institutions (i.e. seed boards, certification bodies), farmer-managed systems, and intermediary models. Effective governance requires coordination across these diverse systems and actors, which is particularly challenging in FCAS.

In FCAS, formal seed systems are often weak, leaving farmers reliant on informal and intermediary systems. Governance is fragmented, regulations are weak or unenforced, and interventions by humanitarian and development actors are often uncoordinated. This leads to distorted markets, limited access to desired diversity and knowledge, poor seed quality, and exclusion of vulnerable groups, especially women, youth, the elderly and displaced populations. Major knowledge gaps exist around how

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[1] Note that this framework aligns with the World Bank definition of FCAS (see section 3.2), though it is exclusively interested in situations of fragility AND conflict, not either/or.

to govern seed systems in FCAS, particularly regarding the roles of non-state actors, balancing emergency aid with long-term development, ensuring inclusion, and addressing the climate-conflict nexus. These gaps underscore the need to operationalize the HDP nexus in the seed sector to promote resilient and inclusive governance mechanisms that can contribute to peace.

1.3 Five key principles on how seed governance mechanisms could conceptually make contributions to peace in FCAS

1. **Conceptual overlap between seed governance and peace**
   Shared themes like resilience, collective action, and trust indicate that there is a strong basis for shared language and collaboration for HDP actors working on seed governance in FCAS.
2. **Power and governance typologies influence peace and conflict dynamics**
   Seed governance mechanisms can both exacerbate violence or foster peace, depending on how power is distributed. Structural inequalities and politicized control over seed can reflect deeper struggles over power, as well as the broader cultures and structures of violence.
3. **Local agency and hybrid governance are critical**
   Contributions to peace are more likely when local communities have agency and ownership over seed governance arrangements. Top-down, technocratic approaches can undermine these dynamics.
4. **Seeds as potential vehicles for symbolic and environmental justice**
   In some cases, seeds represent identity, sovereignty, and resistance, particularly where access to seed is tied to deeper structural inequalities or historical grievances – but it depends on the context.
5. **Context-specific theories of change (ToCs) are essential**
   Seed sector interventions need tailored strategies that explicitly link governance mechanisms to contributions to peace, supported by conflict-sensitive analysis and systems thinking.

1.4 A conceptual framework on seed governance and peace

- Participant input in an ALP4 partners meeting in Uganda revealed that poorly designed seed governance mechanisms and seed interventions – such as exclusionary governance, low-quality and untimely seed supply, or poorly targeted seed aid – could **reinforce conflict dynamics**. Conversely, inclusive, transparent, and accountable governance mechanisms can improve food and nutrition security, build trust, incentivize collaboration, and could therefore **contribute to peace**. These relationships are presented as **causal feedback loops**.
- Weak seed governance in **South Sudan** – poor regulation and limited recognition of farmer-managed (informal) systems – could reinforce conflict drivers by deepening marginalization, vertical mistrust, and food insecurity. Violent conflict disrupts seed access, livelihoods, and social cohesion, while poor seed quality assurance and exclusionary policies could further strain vertical relations between seed system actors. Conversely, inclusive and localized seed governance mechanisms – such as community seed banks and decentralized quality assurance systems – could strengthen vertical and horizontal social cohesion, improve food security, and contribute to positive peace by addressing both livelihood insecurity and vertical mistrust.
- Participants co-developed four draft **ToCs** showing how seed governance could conceptually contribute to peace. Each requires attention to local conflict drivers, inclusion of key stakeholders, and context-specific strategies, reinforcing the importance of agency, collaboration, and equitable governance.

1.5 Further research and next steps

- **Environmental peacebuilding frameworks** offer a useful entry point for situating seed governance within broader natural resource management and conflict prevention strategies.
- The challenge remains to **operationalize seed governance across the full conflict cycle** – before, during, and after violence – and to identify conditions under which seed systems can support positive peace in the long term.
- Further research is needed to define what **context-specific** contributions to peace could look like in order to build practical approaches for integrating seed governance into HDP-aligned interventions.

The conceptual framework and ToCs that participants co-developed provide a working basis for future case study selection in countries like South Sudan, Mali, Nigeria, and Ethiopia. These case studies will test assumptions, refine causal linkages, and further examine trade-offs and synergies, contributing to an evolving body of applied knowledge on seed governance and contributions to peace.

2. Seed Governance in FCAS

2.1 Seed governance mechanisms

The main governance mechanisms in the seed sector include national seed policies, which provide overarching vision and strategic direction; seed laws and regulations, which establish rules for variety development, release and registration, quality assurance, dissemination, and use (Tripp & Louwaars, 1997); and guidelines and directives, which provide technical instructions to support uniform enforcement across institutions.

Seed governance also encompasses institutional structures such as national seed boards, which typically serve as apex bodies responsible for policy implementation, compliance monitoring, coordination of stakeholders, and strategic planning (Byerlee and Eicher, 1997). Enforcement responsibilities may rest with specialized agencies, or independent authorities, or be distributed among various government departments and committees responsible for crop breeding, variety release, certification, seed trade, and intellectual property rights (Tripp, 2001).

> *Seed governance generally refers to the frameworks, policies, and regulatory mechanisms that guide the development and management of the seed sector. Effective seed governance ensures that quality seed is available, accessible, and affordable for farmers, thereby contributing to national food security goals (Louwaars, 2005; FAO, 2019).*

2.2 Seed sector pluralism

Every country has a pluralistic seed sector in which multiple seed systems coexist (De Boef et al. 2025). The main clusters of seed systems include: 1) Farmer-managed systems – these include traditional practices of selection, saving, reuse, and local exchange, supported by customary rules and social networks (Almekinders and Louwaars, 2002); 2) Formal systems – led by public and private actors, cover crop breeding, certification, and commercial seed production (Pingali, 2012); 3) Intermediary systems – facilitated by NGOs or government projects, operate through various models of community-based seed production schemes, community seed banks, and seed aid/relief programmes (McGuire & Sperling, 2016).

Establishing effective governance across these diverse systems is inherently complex, requiring alignment among multiple decision-making processes and actors. Effective coordination, collaboration, and inclusiveness are critical to sustaining a resilient seed sector (Louwaars & de Boef, 2012).

2.3 The evolution of seed governance

Seed governance mechanisms emerged during the 1960s Green Revolution, when public institutions dominated crop research, variety development, seed production, and distribution to disseminate improved technologies (Pingali, 2012; Tripp, 2001). By the 1980s, liberalization policies and structural adjustment programmes shifted emphasis toward private sector participation (Louwaars and de Boef, 2012; Byerlee and Eicher, 1997).

Nationally, this translated into the promulgation of new seed laws and investments across the formal seed value chain (Tripp and Louwaars, 1997). Many countries also adopted international regulatory frameworks such as the International Seed Testing Association (ISTA) rules and the Organisation for Economic Cooperation and Development (OECD) Seed Schemes, which standardized testing and varietal certification and enabled cross-border trade (Louwaars, 2005; OECD, 2018).

Despite these developments, challenges persist. Small and medium enterprises remain underrepresented in decision-making, while rigid regulations often constrain private sector growth

(Louwaars and de Boef, 2013). Moreover, governance frameworks historically prioritize formal seed systems, overlooking farmer-managed and intermediary systems that remain central in many regions (McGuire & Sperling, 2016). In some cases, formal-sector regulations have even criminalized local practices such as seed saving and exchange (Coomes et al., 2015; Westengen and Winge, 2020).

2.3 Seed governance in FCAS

In FCAS, the formal seed system is often weak or non-existent. Conflict, displacement, and other recurrent and compounding shocks and stressors[2] have undermined the institutions responsible for crop breeding, variety release, certification, and quality control (FAO, 2016; Longley et al., 2023). As a result, farmers largely depend on farmer-managed systems, where seed is saved, exchanged, or purchased through local markets, and on intermediary seed systems supported by NGOs and humanitarian agencies through seed aid, community seed banks, and local seed production schemes (McGuire and Sperling, 2016; Louwaars and de Boef, 2012). These systems provide the majority of seed used by smallholder farmers, particularly for food security crops, but they operate with little formal recognition or support (Almekinders & Louwaars, 2002).

Seed governance mechanisms in these contexts are heavily disrupted. Ministries of agriculture (or similar state institutions) and seed authorities struggle to function, leaving regulatory frameworks unenforced and coordination mechanisms ineffective. Conflict, insecurity, and fragility compound these weaknesses, while climate-related stresses such as droughts and floods further destabilize seed supply (FAO, 2019). In many cases, international standards for seed quality or certification are impractical to implement, and governance is instead shaped by emergency protocols, humanitarian interventions, and local customary practices (Sperling et al., 2008; Louwaars, 2005).

Multiple actors play roles in seed governance in FCAS, but their efforts are fragmented. State institutions may provide some regulatory legitimacy, though capacity is limited. Humanitarian and development agencies step in to deliver seed aid, organize seed fairs, and promote community-based production (FAO, 2016; Sperling and McGuire, 2010). Farmers and local crop markets remain the most reliable sources of seed, while small and medium enterprises, traders, and agro-dealers operate where markets are accessible (McGuire & Sperling, 2016).

These actors operate within shifting priorities and power dynamics, often without coordination, which weakens the effectiveness and sustainability of interventions (Coomes et al., 2015; Westengen & Winge, 2020).

The consequences of this fragmentation of seed sector governance in FCAS are evident. Free seed distribution can distort local markets and undermine the growth of private seed enterprises (Longley et al., 2023). Inappropriate varietal choices in seed aid programs may lead to poor yields or low adoption (Sperling et al., 2008). Weak regulatory enforcement opens space for counterfeit or poor-quality seed (Louwaars, 2005). Exclusion of women, youth, displaced populations, and remote communities further limits the effectiveness of seed governance (FAO, 2019). Of note, community based organizations (CBO) and religious based organizations (RBO) can play a key role when formal seed services have broken down in FCAS as CBO and RBO can become important providers of basic social services. They can improve bottom-up governance by creating partnerships between CBOs and local governments and introduce more participatory approaches to community-level decision-making.

At the same time, the combined pressures of conflict and climate change exacerbates seed insecurity, making recovery and long-term adaptation more difficult (McGuire & Sperling, 2016). Therefore, due to

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[2] "Shocks are usually (but not always) acute (rapid onset, typically short duration) events, while stresses usually (but not always) described as chronic (slow onset, typically protracted duration), which refers to the onset and duration of the event. Acute shocks and stresses occur rapidly at one point in time, whereas chronic shocks and stresses occur over relatively longer periods of time – note that this definition is limited to the event itself and not the effects, which usually persist long after the shock or stress." (Sagara , 2018, p. 4)

the fragmentation and complexity of seed governance in FCAS, we suggest a specific definition to account for such contexts.

> *Seed governance in FCAS is the ensemble of formal and informal rules, policies, technical standards, customary practices, and organizational arrangements – along with the coordination and accountability processes through which state and non-state actors apply them – that allocate power and responsibilities over the seed sector. This includes variety maintenance and new variety development, seed multiplication, seed quality, seed distribution and trade, and use. Seed governance in FCAS should function across co-existing pluralistic seed systems (formal, farmer-managed, and intermediary) to deliver timely, affordable, and appropriate-quality seed of locally adaptive crops and varieties to farmers, to keep the seed sector inclusive and resilient (ISSD Africa 2025, Rietberg et. al 2014, Hassena et al. 2016)*

2.4 Key knowledge gaps: Seed governance in FCAS

While seed governance has been widely studied in stable environments, its dynamics in FCAS remains poorly understood. Conflict, fragility, and insecurity fundamentally alter how seed systems function (Sperling, Lambert, Otim, & March, 2025), yet much of the existing policy and research continues to focus on formal systems that are often absent or dysfunctional in these settings. As a result, significant knowledge gaps persist regarding how governance can effectively support pluralistic seed systems, balance emergency aid with long-term development, and promote inclusive, resilient, and accountable structures in the context of fragility. The following areas highlight where evidence and practice remain particularly limited:

- First, there is little clarity on how to govern pluralistic seed sectors in FCAS. Most governance frameworks are designed for formal systems, yet in FCAS, farmer-managed and intermediary systems are predominant. How governance mechanisms can be organized to recognize, regulate, and support these systems without undermining local practices remains unresolved (McGuire and Sperling, 2016; Westengen and Winge, 2020).
- Second, the question of balancing emergency aid and long-term seed sector development is underexplored. Seed aid is often indispensable in FCAS, but poorly designed interventions can distort markets and weaken emerging enterprises. Alternatives such as seed vouchers or seed fairs are promising but not always well integrated into governance strategies (Sperling and McGuire, 2010; Longley et al., 2023).
- Third, the roles and legitimacy of non-state actors are insufficiently studied. In FCAS, humanitarian and development agencies, community groups, and local traders often take on governance functions such as quality control and distribution. Yet their accountability, sustainability, and relationship with state institutions remain weakly institutionalized (FAO, 2016; Coomes et al., 2015).
- Fourth, there is a lack of evidence on how seed policy should function under weak state capacity. Conventional systems of variety release, registration, and seed certification are often unworkable in FCAS, but it remains unclear whether temporary or flexible alternatives can bridge gaps while supporting long-term development (Tripp and Louwaars, 1997; Louwaars, 2005).
- Fifth, issues of inclusion, equity, and power dynamics are poorly addressed. Women, youth, displaced populations, and rural farmers often face barriers in accessing seed through both formal and aid-driven systems, yet little is known about governance arrangements that could effectively redress these inequities (FAO, 2019; Sperling et al., 2008).

- Finally, the climate–conflict–seed nexus is underexplored. Climate change and conflict interact to intensify seed insecurity and vulnerability, yet governance strategies for promoting resilience – through climate-resilient varieties, knowledge exchange, maintaining crop diversity, and rapid recovery mechanisms – remain limited.

Looking to address these knowledge gaps in seed governance in FCAS, ALP4 also aims to take a further step towards trying to explore and understand what the Humanitarian Development and Peace (HDP) Nexus means in relation to the seed sector and to inform how to operationalize that nexus in practice, with a particular focus on how seed governance can make contributions to peace in FCAS.

Indeed, the underpinning logic within HDP nexus thinking (detailed in section 3.1) closely aligns with the knowledge gaps outlined above. For instance, while emergency seed aid is often necessary, poorly designed interventions can undermine local markets and long-term resilience – underscoring the importance of linking humanitarian action with development objectives.

The knowledge gaps also point to the critical role of non-state actors and informal seed systems in FCAS, where state capacity is weak, and stresses the need for inclusive, accountable governance structures that recognize local practices. Furthermore, exclusion, inequity, and the interaction between climate change and conflict exacerbate seed insecurity, pointing to broader peace and resilience challenges. Overall, the knowledge gaps highlight the need for governance strategies that bridge short-term aid and long-term development while supporting stability and resilience – core goals of the HDP nexus that will be explored in detail in the next section.

3. The HDP Nexus and Contributions to Peace

3.1 The HDP Nexus and its relation to the seed sector

Emerging as an outcome of the 2016 world humanitarian summit to ensure strong cooperation, collaboration and coordination between the humanitarian, development and peace sectors (UNDP, n.d.), the HDP nexus has been touted as a way of thinking that "seeks to capitalize on the comparative strengths of humanitarian, development, and peace efforts to address unmet needs, reduce vulnerability, and address drivers of conflict" (Hegertun, Mæstad, & Nygård, 2023, p. 4).

In practice, the HDP nexus is quite an abstract concept, with many practitioners working across the three sectors struggling to interpret and operationalize it (Redvers, 2019). Indeed, there are also conceptual questions asked as to whether "humanitarian principles impose either strict limits upon or irreconcilable obstacles to the mixing of H with either D or P" (DuBois, 2020); while others – for both good and bad – highlight the overlap between HDP nexus thinking and conflict sensitivity (Hörler, Schmidlin, & Wehrle, 2023).

Moreover, some organizations emphasize that a lot of the thinking behind the HDP nexus is not new, and instead is a continuation of similar efforts such as disaster risk reduction, linking relief rehabilitation and development, the resilience agenda, or conflict sensitivity – though that the added value of the HDP nexus is that "it relates to ongoing structural shifts across the aid system that are changing how aid is planned and financed" (Fanning & Fullwood-Thomas, 2019, p. 3).

Importantly, the fundamental problem that HDP nexus thinking seeks to address is still ongoing – that humanitarian, development and peace interventions are too fragmented and lack coherence, and therefore do not effectively meet people's needs and strengthen resilience.

However, due to the potential ambiguity and difficulty of operationalizing the HDP nexus overall; this ALP is taking an exploratory and case-driven approach so as identify and understand context-specific dynamics and explore how seed governance can contribute to peace in FCAS in Africa – particularly focusing on the relation between HD and *P* in the HDP nexus. Therefore the primary action learning question for ALP4 is as follows:

> **Action Learning Question: How can seed sector governance be organized in fragile and conflict affected situations in order to contribute to peace?**

3.2 The Action learning question, the aims of the Conceptual Framework, and its intended users

The above action learning question summarizes some of the core assumptions within ALP4 as well as outlining some of the key concepts that will be explored in this conceptual framework. Firstly, it is a qualitative question, asking "how", which lends itself to the exploratory case-based approach taken within this ALP. Secondly, the term "organized" here assumes a design intentionality (i.e., purpose, mission, or goal), in this case, the design intentionality being a contribution to peace in FCAS. Thirdly, the phrase "fragile and conflict affected situations" aligns with the world bank definition[3] (World Bank, 2025), but also acknowledges that fragility and the dynamics of violent conflict are often not bound by state borders (i.e., cross-border or regional dynamics for example).

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[3] Countries with high levels of institutional and social fragility, identified based on indicators that measure the quality of policy and institutions, and manifestations of fragility. Countries affected by violent conflict, identified based on a threshold number of conflict-related deaths relative to the population (World Bank, 2025).

Lastly, the phrase "contribute to peace" requires operationalization, i.e., what is a contribution to peace? This last point will be explored in the subsequent sections in order to further operationalize this action learning question.

This ALP aims to build on the identified knowledge gaps in seed governance in FCAS; publications and initiatives within ISSD Africa such as the recent publication by Sperling, Lambert, Otim, and March (2025)[4]; and to strengthen the evidence base for the HDP nexus in relation to seed governance with a particular focus on contributions to peace. Specifically, this conceptual framework is an attempt to build a shared language between HDP actors working in relation to seed governance in FCAS, and to provide the conceptual basis for further exploratory case-based research within ALP4. The intended users are partners to ALP4 and the ISSD Africa community as a whole who are interested in learning more about the conceptual basis for ALP4, but the primary intended users are action researchers in ALP4 who can use this document to inform case selection and the development of research protocols for future exploratory case-based research.

3.3 Peace, Peacebuilding, and Sustaining Peace

Having established the underlying logic behind expanding the evidence base that underpins the HDP nexus in relation to seed governance in FCAS, and the underpinning assumptions within the overarching action learning question for ALP4, it is important to consider what peace and contributions to peace mean conceptually within this context.

The most commonly cited definition of peace is in relation to Johan Galtung's distinction between negative and positive peace (Galtung, 1969). Galtung argues that as there is a distinction between direct and indirect violence, it follows that peace can broadly take two forms: A) *Negative peace* being the absence of direct violence such as violent conflict, civil war, or physical violence; B) while *positive peace* refers to the presence of conditions that support a just and sustainable society, including equality, human rights, and access to basic needs, therefore addressing dynamics of indirect violence (Galtung, 1969).

Though a negative peace would be reached if a direct episode of violence, such as a civil war, ended, the situation could still allow for the conditions that underpin violence. Whereas a positive peace would mean the presence of attitudes, institutions and structures that create and sustain peaceful societies, therefore addressing the structures and cultures of violence that drive relapses into direct violence or new dynamics of violence (Vision of Humanity, 2020). Galtung urges that peace researchers should aim for both negative and positive peace in order to "make a real contribution" (Galtung, 1969, p. 186).

If working towards both negative and positive peace is the ideal outcome and process for peace researchers and practitioners, then it follows that a contribution to peace would be the *action* of contributing towards this.

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[4] For further details see the attached link to the full report.

Positive Peace

Defined by a more lasting peace that is built on sustainable investments in economic development and institutions as well as societal attitudes that foster peace.

Can be used to gauge the resilience of a society, or its ability to absorb shocks without falling or relapsing into conflict

Positive Peace opposes what is known as the 'structures and cultures of violence'. These structures and cultures can cause people to behave violently, or impose violence on others.

Taken from [Positive Peace](#) (2025).

Negative Peace

The absence of violence or fear of violence.
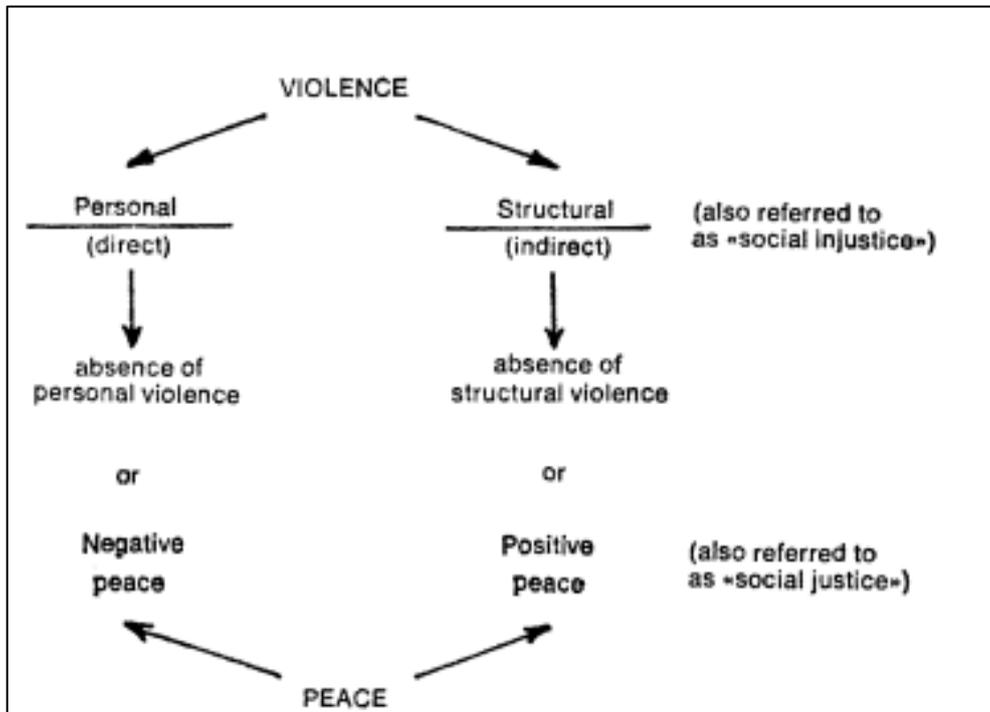
Taken from [Vision of Humanity](#) (2020)

Figure 1 - The extended concepts of violence and peace (Galtung, 1969)

Peacebuilding is an area of practice and research that is actively engaged with contributing to peace.[5] Though many schools and definitions of peacebuilding exist, most have emerged out of Galtung's concept of peace, where peacebuilding literature and practice has gone through several turns.

The major two turns have been in relation to A) a critique of liberal peacebuilding – where the underpinning logic was that countries with democratic institutions, market economies and economic development tend to have fewer conflicts; the primary criticism of this school of thought being that liberal peacebuilding was often perceived as an external imposition of Western values and governance structures in post-conflict contexts (Gamboa Vesga & Quijano Mejía, 2025). The second major turn in peacebuilding, and partly in response to the critique of liberal peacebuilding has been B) a push towards the localization of peacebuilding efforts. This turn, the local turn,

> *"focuses on the local and societal level and advocates locally designed peace processes, according to the particularities of the territory. However, these authors warn that this idealized vision may end up ignoring the importance of national institutions, domestic politics, formal institutions and the State" (Gamboa Vesga & Quijano Mejía, 2025, p. 5).*

Following (or in tandem with) these two turns, more recent schools of thought in peacebuilding have emerged, such as hybrid peacebuilding (Mac Ginty & Sanghera, 2012), adaptive peacebuilding (De Coning, Saraiva, & Muto, 2023), and environmental peacebuilding (Dresse et al., 2018).[6]

Partly rejecting the terminology of peacebuilding – following UN Security Council and General Assembly resolutions in 2016 – the UN adopted the terminology of "sustaining peace" rather than peacebuilding (see resolutions A/RES/70/262 and S/RES/2282). The review process for these resolutions highlighted that peacebuilding had "come to be narrowly interpreted as time-bound, exogenous interventions that take place "after the guns fall silent" in fragile or conflict-affected states" (Mahmoud & Makoond, 2017, p. 1). The terminology of sustaining peace instead places the emphasis on the context by seeing peace as an endogenous process (Mahmoud & Makoond, 2017), that should be a priority during all stages of the conflict cycle – before, during and after – and is a long-term, rarely linear, and sequential process (United Nations Sustainable Development Group, 2017). Indeed, De Coning, Saraiva, and Muto (2023) emphasized that "sustaining peace and peacebuilding are evolving concepts in continuous transformation and depend on the interpretation of both external and domestic stakeholders" (p. 4) – so whether the architecture of peace is in relation to sustaining peace, peacebuilding, or contributing to peace, peace needs to be defined by and within its context.

> *"Context-specific approaches are synonymous with nonlinear models of peacebuilding that underline the importance of local agency for a peace process to become sustainable. These approaches are guided by the theory of complexity, which refers to the self-organization capabilities of systems affected by conflict, demonstrating that peace needs to emerge from within and consider local agents, local cultures, and local socioeconomic contexts first" (De Coning, Saraiva, & Muto, 2023, p. 6-7).*

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[5] Note that peacebuilding (sometimes referred to as little-p peace) is not the only approach to working on peace, generally speaking, there is also peace-making and peacekeeping (sometimes referred to as big-P Peace) (Brown, Mena, & Brown, 2024). "We can sometimes distinguish between 'little p' actions focused on building the capacity for peace within societies, and 'Big P' actions that support and sustain political solutions and securitised responses to violent conflict" (Inter-Agency Standing Committee, 2020, p. 1).

[6] Hybrid peacebuilding and environmental peacebuilding are discussed in the subsequent section, while "adaptive peacebuilding is a pragmatic and complexity-informed approach where peacebuilders and communities affected by conflict actively engage in a structured process to sustain peace. This framework relies on an iterative peacebuilding process of experimentation, learning, and adaptation" (De Coning, Saraiva, & Muto, 2023, p 9).

This understanding of peace as happening with complex and contextually defined systems underpins the exploratory and case-based approach that will be taken in subsequent studies within this ALP, as well as the causal feedback loops that form the backbone of the conceptual framework in this paper.

3.4 Governance and Peace

Overall, the link between governance and peace (building) is quite well established – the normative premise being that governance mechanisms in FCAS can broadly be on a spectrum between conflict reinforcing (bad governance) *or* supporting of sustaining or contributing to peace (good governance). For example, this normative understanding of governance in FCAS is articulated quite clearly in the UN sustaining peace architecture:

> *"Sustainable development, underpinned by good, inclusive governance, the rule of law, human rights and environmental conservation, is a significant factor in preventing conflicts and maintaining peace and security. It offers a structural prevention approach by addressing the root and underlying causes of grievances and violence and can serve as an effective exit strategy from the recurrent and interconnected cycles of conflict and crisis. Fragility and crisis are often linked to a lack of economic security and of decent work opportunities, coupled with weak or absent State governance that fails to provide equitable access to basic services or fundamental justice. This leads to a weakened social contract and reduced social trust" (United Nations Secretary General, 2024, p. 8).*

It is however important to recognize that governance (and its role in sustaining peace) does not solely or primarily exist at the level of the State. The school of hybrid peacebuilding for instance is built on the premise that peacebuilding should encompass a mix of international (liberal) structures and local traditions or practices – which includes governance mechanisms at different levels. Mac Ginty (2010) highlights that peace should emerge through a negotiation of global norms and indigenous or locally-grounded initiatives, resulting in hybrid systems that are complex and contextually grounded.

However, Mac Ginty and Richmond (2015) also warn that:

> *"hybridity has been co-opted and instrumentalized by some international organizations and peace-intervention states. It is in sync with a post-Iraq and Afghanistan curtailed liberal interventionism, and is also in keeping with neoliberal mores of shifting responsibility and lowering intervention costs. Simultaneously, this approach arrives at similar conclusions to liberal imperialists of the past: the necessity for trusteeship and 'native administration'" (Mac Ginty and Richmond, 2015, p. 219).*

In order to address this, Mac Ginty and Richmond (2015) suggest that hybrid peace should instead be an interplay between: the compliance powers of liberal peace agents, networks and structures; the incentivizing powers of liberal peace agents, networks and structures; the ability of local actors to resist, ignore or adapt liberal peace interventions; and the ability of local actors, networks and structures to present and maintain alternative forms of peacemaking.

Research on environmental peacebuilding has also engaged in the role of environmental and natural resource *governance* for contributions towards positive peace in FCAS. According to Ide et al. (2021, pp. 2-3), "environmental peacebuilding comprises the multiple approaches and pathways by which the management of environmental issues is integrated in and can support conflict prevention, mitigation, resolution and recovery." Krampe, Hegazi, and VanDeveer (2021, p. 2) build on this definition, yet outline a more governance-oriented definition when defining environmental peacebuilding as "the sustainable management of natural resources before, during or after conflict, emphasizing the potential for environmental governance—especially cooperative governance between conflict actors—to support peace and stability." The literature on environmental peacebuilding allows an entry point for considering what contributions certain governance arrangements – and the principles that underpin them – can have

in contributing towards or sustaining positive peace as seed can be considered a natural resource and encompassed by environmental governance approaches, and in turn encompassed by environmental peacebuilding approaches and theory.

Krampe (2017) highlights two broad perspectives on peace from the perspective of environmental peacebuilding that can be conceptualized relative to negative peace (resource risk) and positive peace (cooperation perspectives). Where the resource risk perspective highlights how natural resources can lead to instability, particularly within states. It focuses on preventing violence (negative peace) by managing these risks through environmental cooperation, often in the context of peace operations. Comparatively, the cooperation perspective emphasizes collaborative environmental and resource management as a way to promote positive peace, mainly focusing on relationships between states rather than within them. It considers broader notions of peace including human security, equity, and freedom from structural violence. However, these dynamics of positive peace are often assumed rather than directly measured (Krampe, 2017).

Building on the latter cooperation perspective, Krampe, Hegazi, and VanDeveer (2021) outline three causal mechanisms through which improved environmental cooperation in post-conflict contexts can be theorized to facilitate a positive peace.

1. *"the contact hypothesis (i.e. that facilitation of intergroup cooperation reduces bias and prejudice);*
2. *diffusion of transnational norms (i.e. that the introduction of environmental norms supports human empowerment and strengthens civil society);*
3. *and equitable state service provision (that the provision of and access to public services address the instrumental needs of communities, thereby strengthening state legitimacy and state-society relations)" (Krampe, Hegazi, & VanDeveer, 2021, p. 5).*

Importantly, the above deals with post-conflict settings and contributions to positive peace with echoes of liberal peace paradigms by emphasizing the role of the state and international norms. Whereas many seed systems in FCAS in Africa could not be considered post-conflict, and indeed continue to function (to varying degrees) in the absence of state level governance. Moreover, some of the causal mechanisms outlined above relating to intergroup cooperation and state-society relations could be linked to another term commonly associated with contributions to peace and the HDP nexus – that of social cohesion.

3.5 Social Cohesion

Social cohesion is a commonly employed framing for interventions and their outcomes or results across HDP organizations (Holloway & Sturridge, 2022; Sommer, 2019). However, the significant breadth of definitions for social cohesion that exist are emblematic of a lack of scientific consensus on the concept in regards to its definition, how to operationalize it, and how to measure it (Holloway & Sturridge, 2022).

In general, the literature on social cohesion points to some commonalities across definitions in relation to terms such as trust, cooperation, participation, inclusive identity, and a sense of belonging (Holloway & Sturridge, 2022).

Commonly cited analytical frameworks on social cohesion like Chan, To, and Chan (2006) operationalize two dimensions of social cohesion in terms of *horizontal* and *vertical* social cohesion,[7] and two components of social cohesion as *objectivity* and *subjectivity*.[8] Cox and Sisk (2017) build upon Chan et

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[7] Defined as: "Social cohesion is a state of affairs concerning both the vertical and the horizontal interactions among members of society as characterized by a set of attitudes and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioural manifestations" (Chan et al., 2006, p. 290)

[8] "The objective level of analysis focuses on the nature of observable points of contact or the sites of access between the state and society; it looks at the ways in which the state establishes various institutions and incentive structures within which religious and ethnic actors and organizations operate. The subjective level directs attention toward values, attitudes, and beliefs that social actors develop toward the state and toward other ethnic and religious groups within the state. The subjective level focuses on the nature of ethnic and religious identity construction, or the processes through which ethno-religious identity emerges in the context of historical struggles and contention and the subsequent ideals of the nation that are reflected within state institutions" (Cox & Sisk, 2017, p. 16)

al., (2006) by identifying social cohesion as an endogenous property (i.e., coming from within a system), rather than exogenous (coming from outside a system), and emphasize the centrality of governance, both at the formal and informal level. Indeed, informal governance structures are given particular attention in FCAS by Cox and Sisk (2017), though the authors emphasize their uncertainty of whether locally driven, externally supported efforts to foster cross-group collaboration can sustainably reduce social violence across all dimensions of social cohesion.

On a conceptual level, the differences and similarities between social cohesion and peace are varied. While some emphasize that social cohesion can be a constituent element of how positive peace is envisioned (Nesterova & Kim, 2024), others warn of the myriad of unintended consequences that social cohesion initiatives can have, and that social cohesion initiatives should systematically address root causes of conflict in order to have sustainable effect (Cox and Sisk, 2017). Moreover, social cohesion initiatives can be seen as less politically contentious compared to initiatives that are explicitly orientated towards human rights or peacebuilding work, perhaps allowing for more operational flexibility in highly politicized environments (Cox and Sisk, 2017).

Similarly to the concept of peace, operationalizing social cohesion means that it must be defined by its context and should be linked to the root causes of conflict. It can be an entry point for many organizations looking to operationalize the HDP nexus without explicitly working on peacebuilding or human rights work, particularly for seed-orientated initiatives where there are existing examples of seed exchange resulting in enhanced social cohesion at the local level (van Niekerk & Wynberg, 2017). Though this does not mean that all social cohesion initiatives make sustainable contributions to peace, as this requires applying a conflict lens to assessment and design, and accounting as well as possible for unintended consequences within the broader conflict system.

Overall, these theories provide useful entry points for understanding how seed governance mechanisms could contribute towards peace in FCAS.

However, the challenge remains for how seed governance arrangements can contribute to both positive and negative peace in FCAS across the whole conflict cycle. Additionally, perhaps the presence of negative peace is a precondition in many contexts for the ability of seed governance to make a contribution towards positive peace; or how social cohesion initiatives can be designed so as to make contributions to peace that address root causes of conflict and that are adaptive over time.

3.6 Contributions to Peace

Importantly, the purpose of operationalizing the term "contributions to peace" does *not* mean that seed governance initiatives and seed sector development (a predominantly humanitarian- and development-orientated practice) should have an explicitly peacebuilding-orientated mandate, nor that the term "contributions to peace" is synonymous with the practice of peacebuilding. Instead, this terminology (*contributions to peace*) acknowledges that operationalizing and strengthening the HDP nexus in relation to seed means addressing the issue of fragmentation and the lack of coherence between HDP actors, all of whom are working to meet people's needs and build resilience in one way or another.

This requires evidence to show how interventions by HDP actors can be *mutually* reinforcing, in order to stimulate evidence-informed collaboration toward more holistic outcomes that fundamentally address needs, tackle the root causes of violent conflict, and sustainably build resilience. A contribution to peace is therefore where seed governance initiatives are mutually reinforcing to the goals and practices of building negative *and* positive peace, more generally defined as follows:

Contributions to negative peace *– Reducing direct violence and fear of direct violence.*

Contributions to positive peace *– Promoting and sustaining attitudes, institutions and structures that create and sustain peaceful societies that address the structures and cultures of violence.*

Contributing to peace (both negative and positive) is not a linear process. Moreover, while the concept of negative peace has its merits, negative peace is still fundamentally a negative state. The mere absence of direct violence is problematic, as it is often unstable, temporary, and fails to address the root causes of conflict – thereby increasing the risk of renewed violence. It can also mask deeper issues, allowing human rights abuses and structural violence to persist under the guise of calm.

This short-term focus diverts attention from the long-term need for justice, trust-building, social cohesion, and strong institutions – we should not claim that good seed governance mechanisms should contribute to such negative peace in the long-term. Rather, in acknowledging that contributions to peace occur in non-linear ways in complex systems, where sometimes negative peace is required to work on positive peace; working towards negative and positive peace allows for flexibility depending on context, needs, and temporal scope.

Ultimately, negative peace cannot be the end-goal, as it is a negative state. Instead, positive peace should form the basis of a long-term vision and allows for a meta perspective on contributions to peace. Contributions to peace are always contextually defined, and the overall issue of attribution means that contributions to peace are difficult to measure and understand within complex systems like in FCAS. Therefore, further inquiry is required in order to operationalize what mutual reinforcement could look like in practice relative to seed governance and contributions to peace in FCAS.

4. The Literature on Seed Governance and Peace

While seed systems (and how they are governed) are increasingly recognized for their roles in food security and rural livelihoods, their potential to contribute to peace has received far less attention. This literature review of both academic and grey literature on seed governance and contributions to peace in explores how various studies and policy discussions have begun to link seed governance with concepts of peace.[9] Drawing on examples in Africa from FAO, research in Sierra Leone and Zimbabwe, and recent policy work by SIPRI, and research from outside of Africa in central and south America – the literature highlights how governance arrangements, local agency, the symbolic role of seed, and seed-related practices intersect with broader peace dynamics, both conceptually and in practice.

4.1 FCAS in Africa

Farmer seed systems and sustaining peace (FAO, 2018) is one of the few pieces of literature that engages explicitly with the link between seed governance (within the context of farmer seed systems) and peace through the concept of environmental peacebuilding. Though mainly evidenced at the conceptual level, the authors highlight the work by United Nations Environment Programme (UNEP), and outline that farmer seed systems could be seen as a form of natural resource management, the function of which – conflict reinforcing or contributing towards social cohesion – is determined to a large part by the typology of governance arrangements around it. More broadly, the authors outline that resilience, social cohesion and positive local collective action are important and common elements of both farmers' seed systems and sustaining peace.

Research in Sierra Leone (primarily by Paul Richards) from the 1990's and 2000's present some entry points into how seed sector interventions and the dynamics of seed systems overall can contribute towards human rights (Archibald and Richards, 2002), the building and quality of trust networks between neighbors (Richards and Ruivenkamp, 1997), and the function of collective action in post-war rural communities – broadly in relation to development initiatives, but with specific examples relating to seed (Richards, Bah, and Vincent, 2004). The latter research (Richards, Bah, and Vincent, 2004) in particular, outlines the importance of cohesion and collective action to foster community-driven development and role of *bad* governance (phrased as undemocratic procedures) in disrupting this.

In their research in rural Zimbabwe, McAllister, and Wright (2019) study three cases of negative peace and outline the dynamics of indirect violence that underpin them, they then explore the transformative potential of agroecology and how it can form the foundation of bottom-up positive peace processes. The authors highlight that though linking agroecology and peacebuilding is a novel approach and bound to the context of the study, the findings suggest that social farming can re-forge relationships that are capable of bridging divisions.

Interestingly, this was largely enabled by the degree of agency that particular communities had in experimenting with and developing their own adaptive capacities and emancipatory processes in the face of shocks and stresses – agency as resilience. Conversely, the presence of higher levels of direct and indirect violence along with a stronger hand by the state and more technocratic solutions, lessened the sense of agency and therefore curtailed experimentation and collective approaches by farmers.

Some of the basis for the transformative engagements and social interaction between farmers in the study was in relation to the exchange and saving of seed, which participants described as "precious" (McAllister & Wright, 2019, p. 10).

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[9] Note that this was not a systematic literature review, though it involved a comprehensive key word search across several databases.

Moreover, the authors emphasize that "'violent environments' are less about struggles over natural resources per se, but rather the structural ways in which these resources are politicised and transformed into entitlements as a result of the ebb and flow of shifting alliances between powerholders" (McAllister & Wright, 2019, p. 2) – power and the governance of (and by) powerholders being key aspects of (seed) governance.

Lastly, the Stockholm International Peace Research Institute (SIPRI) use seed-related case studies in their policy papers on how climate-resilient food security and humanitarian action can promote peace. SIPRI advises that Theories of Change (ToCs) should be explicit – rather than most commonly being implicit – about potential peace dividends.[10]

For example: "if agricultural production improves in communities vulnerable to climate change and violence and programme participants obtain access to: (a) avenues for participation in, or cooperation with, cooperatives, local committees and municipalities; (b) higher incomes; (c) increased knowledge; and (d) improved natural resource and disaster risk management, then social cohesion and resilience to contextual conflict dynamics can be expected to increase." (Bunse & Delgado, 2024). They also highlight the importance of sound contextual and conflict analysis to feed into the development of such ToCs.

4.2 FCAS outside of Africa

When expanding the literature review to include non-African contexts, studies from Central and South America provide some interesting insights.

Research from Colombia emphasizes the bridging role of agrobiodiversity as a one of the key conditions for peace in certain conflict-affected areas. In one example, sustaining and defending agrobiodiversity in seed directly engaged with the *root causes* of violence and conflict as agro-industrial development had led to violence over the control of seeds (Dexter & Ingalls, 2022); while in another case, seed served a strong symbolic frame for environmental governance following the 2016 peace process in Colombia (Baumann, 2022).

Research from Mexico suggests that conflict can drive the creation of seed sovereignty and positive grassroots agrobiodiversity management – i.e., between the indigenous movement and the Mexican government. Where there is a strategic relationship between agrobiodiversity conservation, communities' food security, and seed sovereignty, particularly in the context of violent conflict (Hernández, Perales, & Jaffee, 2020).

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[10] Peace dividends are the returns that communities receive on their investments in peace. Peace dividend projects incentivize and sustain peaceful relations or non-violent behavior in communities that have engaged in peacebuilding or conflict management programming communities or access to a shared resource or service across the border that otherwise would not be accessible. (ConnexUs, 2022)

5. Key Findings From the Literature

By combining the literature on peace, peacebuilding, contributions to peace, and how they (could) link to seed governance, the following key findings emerge:

1. **There are strong overlaps between seed governance and contributions to peace in terms of terminology.**

Terms such as trust, collective action, resilience, governance, cohesion are all terms that are used in the literature on seed governance, peace, peacebuilding, and contributions to peace. These terms can at times have different meanings, yet the overlap shows that there is opportunity to find mutually reinforcing dynamics between the predominantly HD-oriented seed sector and the predominantly P-oriented field of contributions to peace. Additionally, outlining and defining the terminology on peace and contributions to peace allows for clarity towards building a shared language on what seed governance arrangements could look like if the intent is to contribute to peace.

2. **Power and typology of governance arrangements can shape the dynamics of violence and/or contributions to peace.**

The type of governance mechanisms governing seed systems – whether inclusive or exclusionary, just or unjust, accountable or unaccountable – can play a role in determining whether the dynamics within seed systems reinforce violence or contribute to peace. Structural inequalities and politicized control over seed can reflect deeper struggles over power, as well as the broader cultures and structures of violence. Theories of environmental peacebuilding (Krampe, Hegazi, & VanDeveer, 2021) can provide a useful entry point for operationalizing seed governance mechanisms in FCAS in order to contribute to peace as seed can be considered a natural resource.

3. **Local agency and meaningful hybrid collaboration are critical.**

Efforts to contribute to peace are more effective when farmers and communities feel that they have agency – the ability to experiment within, adapt, and govern their own seed systems. Top-down, technocratic interventions that do not account for contextual variation, can weaken this agency and reduce opportunities for collaboration. Moreover, the literature on hybrid peacebuilding shows that even well-meaning efforts to bridge this dynamic can be cooped by international organizations – deep considerations of the power imbalances between international and local actors are required, along with the ability of local actors to resist, ignore, adapt, and maintain alternative forms of peace work.

4. **Seed systems can be vehicles for symbolic and environmental justice – but it depends on the context. This does *not* mean that all seed systems can have this function, nor that seed governance arrangements can elicit this.**

In contexts where seed is directly linked to a root causes of violence (see section 4.2), seeds can serve as symbols of identity, sovereignty, and resistance – therefore helping communities address historical grievances and reclaim control over land, food, and culture. Deep contextual understandings are key to understanding whether these dynamics exist, and in turn shape whether seed governance arrangements need to engage with deeper grievances that underpin the cultures and structures of violence, or if it may be more suitable to engage with the role of seed in violence reduction as a contribution towards negative peace in the short-term – yet this is also crucially dependent on context, there is no one size fits all solution.

5. **Explicit context-specific strategies and theories of change are needed in seed governance-oriented interventions in FCAS if contributions to peace are to be effective.**

Actors like SIPRI emphasize the need for clear theories of change that explicitly link seed and agricultural initiatives to positive peace – such as improved livelihoods, inclusive governance, and better natural resource management – and what those dynamics or pathways would look like in practice.

This can help to address the issue of attribution, but it is also acknowledged that in complex systems (like seed systems in FCAS), measuring contributions to peace will always be difficult and requires continuous adaptation in relation to unintended consequences or changes in system dynamics. The point is to be intentional and contextually informed so as to increase the likelihood of mutually reinforcing dynamics between HD and P.

The five points above should be seen as an approach to building guiding principles in how seed governance mechanisms could make a contribution to peace in FCAS. However, this does not mean that the question of "how" these dynamics play out in practice is answered. The next sections of this working paper will outline what some causal relations could look like based on expert perspectives gathered during a recent workshop with partners to ALP4 in Uganda (ISSD Africa, 2025).

6. A Conceptual framework of seed governance and contributions to peace

According to Imenda (2014), the choice between a theoretical and a conceptual framework depends largely on the research approach: deductive studies typically employ theoretical frameworks, while inductive studies are better suited to conceptual frameworks. Given that the action research in ALP4 is exploratory, case-driven, and largely qualitative in nature, it aligns more closely with an inductive approach, thereby warranting the development of a conceptual framework.

Imenda (2014) further emphasizes that inductive research lends itself to theory building rather than theory testing. Since existing theoretical understanding on the intersections between peace, contributions to peace, and seed governance are limited, this study seeks to supplement the available theory by constructing a conceptual framework in the form of examples of causal feedback loops. This framework will outline potential relationships among core concepts, thereby providing guidance on the identification of cases and what dynamics of seed governance in seed systems in FCAS that could be suitable for further exploration. This is particularly valuable in action research, where naming and understanding experiences is essential not only for description but also for analysis and synthesis, answering the critical question of "so what?"

Additionally, the framework makes explicit the assumptions embedded in the research, providing a shared vocabulary (alongside the literature review) and guidance for the study. This enhances both the explanatory power and analytical utility of the research, allowing for a deeper interrogation of why and how phenomena might occur and relate to one another. Assumed causal linkages are presented as causal feedback loops, acknowledging that any assumed links between seed governance and peace or conflict happen within complex systems. These feedback loops are accompanied by some examples of potential theories of changes, and then complemented by a short discussion section – all based on the findings of the previous literature review and as an outcome of the Uganda partners meeting (see below).

6.1 Potential causal feedback loops

The causal feedback loops outlined below are based on a synthesis of findings from a participatory workshop in Uganda attended by partners within ISSD Africa ALP4 (ISSD Africa, 2025). They are broken up into A) negative cases (conflict reinforcing) and B) positive cases (contributing to positive and/or negative peace, or social cohesion). They are based on the experiences of the participants and should not be considered to be exhaustive, but instead emblematic of casual relations and causal loops.

These causal feedback loops act as examples that can help guide further case-based research within ALP4. Some loops have been visualized for effect; but they could often be expanded, and perhaps linked to one another – this will be the remit of the next stage of case-based research in ALP4 where such loops can be mapped exhaustively per context and studied empirically.

6.1.1 Negative Cases

Exclusion-Grievance-Trust Erosion Loop

- Limited farmer consultation in governance processes produces seed aid that is poorly aligned with local needs.
- When inappropriate varieties are distributed, farmers experience crop failure and feel disregarded.
- This fuels grievances against agencies and institutions, eroding trust.

- As trust declines, farmer participation in governance processes weakens further, reinforcing exclusion and deepening patterns of mistrust and structures and cultures of violence.[11]
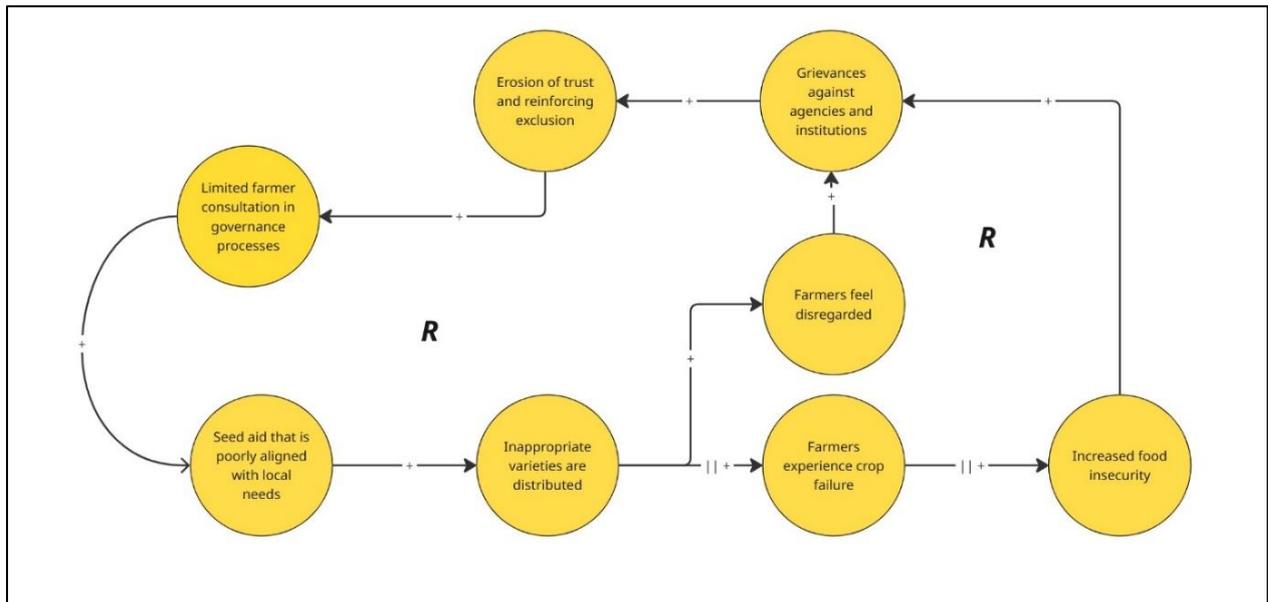

Figure 2 - Exclusion–Grievance–Trust Erosion Loop

Distribution-Inequity-Tension Loop

- Targeting criteria for seed aid creates tensions between those who are "included" and those who are "excluded" (often labelled "the distribution effect").
- Perceptions of unfairness and unequal access heighten social tensions between "haves" and "have-nots."
- These tensions undermine social cohesion and may trigger disputes over future distributions, perpetuating inequities and reinforcing cycles of mistrust.

Elite Capture-Exclusion-Conflict Loop

- During a period of seed scarcity, local leaders favour cronies to receive seed aid (family members and allies).
- Excluded groups perceive bias and marginalisation, leading to grievances.
- These grievances reduce horizontal social cohesion and strengthens divisions within communities and increase the risk of violence, while consolidating elite control and perpetuating exclusionary practices.

Quality-Yield-Food Security Loop

- Lack of quality control enables agro-dealers to sell fake or substandard seed.
- Low yields and food insecurity follow, increasing vulnerability to future shocks.
- As food insecurity deepens, demand for aid rises, creating further opportunities for agro-dealers offering poor-quality supply and reinforcing the cycle of dependency, mistrust, and tension.

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[11] Within the casual feedback loop diagrams, the bubbles indicate variables, the arrows indicate direction, the + indicate that the relationship is positive (an increase in A leads to an increase in B), R indicate that the loop is reinforcing (the change amplifies itself), || indicates a time delay between two variables.

Timeliness- Debt Trap-Violence Loop

- Delays in seed supply undermine planting schedules.
- Households are forced at the last minute to use credit or borrow seeds to ensure they have a crop in the ground before the rains (in rainfed areas).
- This plunges those households into debt (high credit rates).
- Given the prevalence of armed groups operating in the area and the inability to pay off debt through existing (non-violent) livelihoods, some male members of those debt-affected households join armed groups for income and protection, or engage in theft of assets (i.e., livestock) to supplement their livelihoods – a debt trap amplifying the opportunity cost of violence.

Conflict of Interest-Market Capture-Violence Loop

- Powerholders in seed governance with private stakes manipulate crises to capture seed markets.
- Competitors are excluded, seed quality declines, and yields fall.
- Food insecurity and disillusionment with institutions deepen.
- This erosion of legitimacy and growing inequality reinforce cultures of violence and enable continued market capture.

6.1.2 Positive Cases

Community Agency-Cohesion Loop

- When community seed banks are governed by farmers, they ensure timely access to preferred and appropriate seeds.
- Reliable access to preferred varieties enhances crop yield and food security, and strengthens collaboration among farmers.
- Increased agency and cooperation reinforce trust, reciprocity, and horizontal social cohesion, which in turn support peace and sustain community-led seed systems.
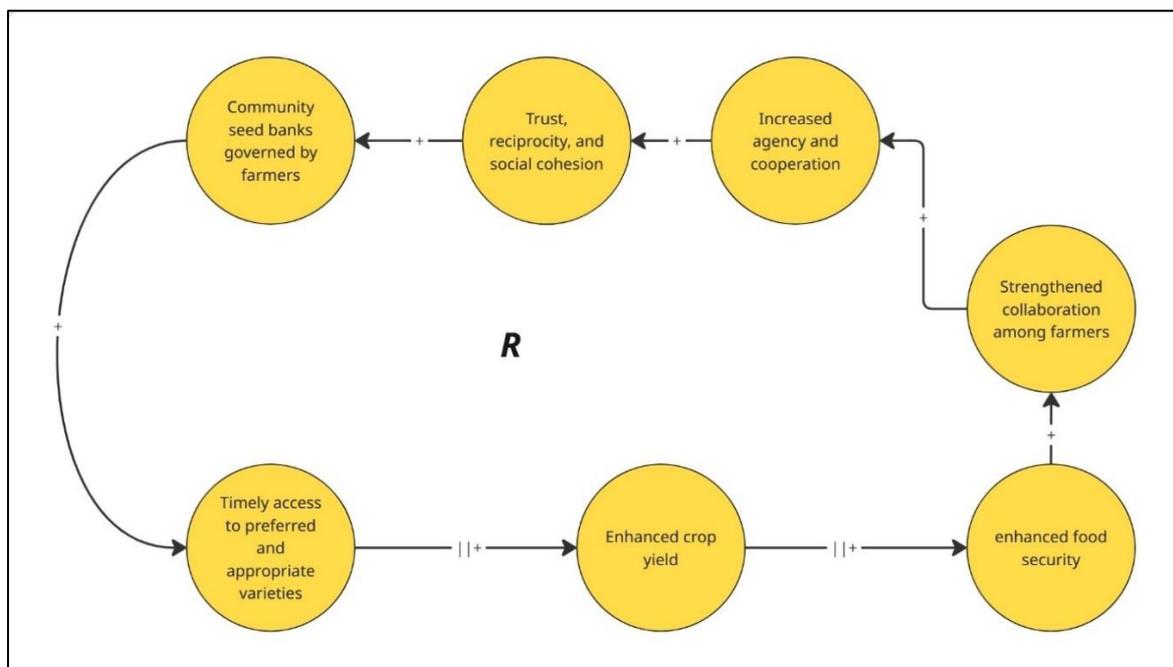

Figure 3 - Community Agency-Cohesion Loop

Transparency-Trust Loop

- Just, transparent, and timely seed aid ensures that seeds reach those who need them most, when they are needed.
- Fair and reliable distribution builds confidence in institutions and enhances vertical social cohesion.
- Growing trust encourages further participation and accountability, reinforcing transparent practices.

Quality-Stability Loop

- Stronger quality control limits the circulation of fake or substandard seeds.
- Access to quality seed improves yields and enhances household and community food security.
- Stability in food production reduces vulnerabilities to shocks and lowers the risk of resource-based conflict, creating conditions for further strengthening of quality assurance systems.

Inclusion-Resilience Loop

- Seed fairs based on inclusive farmer feedback mechanisms make seed aid programs more responsive to local needs.
- by supporting both farmers and local seed supplies, this supports resilient seed systems development and generates trust between farmers, institutions, and aid actors.
- The resulting resilience and horizontal trust contribute to peace and further encourages inclusive governance structures (vertical social cohesion).

6.2 Country Cases – the Case of South Sudan

At the ALP4 partners meeting in Uganda, participants also outlined specific country cases that they thought emblematic of some of the causal feedback loops that had outlined. These included South Sudan, Ethiopia, and Mali – the case of South Sudan has been expanded on below with some examples and links to potential causal feedback loops outlined above. This case is not exhaustive, but is intended to provide a contextual example of how these feedback loops *could* play out in practice.

The identified country cases, along with Nigeria, will be the basis for further case-based exploratory research within ALP4.

6.2.1 South Sudan

In South Sudan, weak seed governance – characterized by the lack of formal regulatory instruments, and limited formal recognition of farmer-managed (informal) seed systems – could play a role in indirectly reinforcing some of the broader dynamics that drive violent conflict. While conversely, inclusive and localized seed governance mechanisms could reduce resource-based conflict over seed by (re)building horizontal social cohesion through collaborative mechanisms geared towards ensuring seed quality.

South Sudan's seed systems can be characterized by three predominant clusters of seed systems – informal, intermediary, and formal. The vast majority of farmers in South Sudan are reliant on informal seed systems for acquiring seed for crop production (farm-saved seed, social seed networks, and local grain markets), where women in particular have a key role in the functioning of household seed saving and seed supply within social seed networks. Intermediary systems, supported by international aid, are designed to supply emergency seed to vulnerable groups such as displaced persons and returnees, though delays in direct seed delivery are common and recent research suggests that seed aid targeting is skewed towards farmers that are better connected as leaders, members of CBOs, or who own mobile phones (Smits et al., 2024). Meanwhile, the formal seed system remains weak, with limited organization, dependence on a small number of improved varieties, a lack of foundation seed, the absence of a significant commercial farming sector, and the lack of an institutional gene bank (Subedi, Van Uffelen, & Ngalamu, 2022).

The dynamics of violent conflict intrinsically interlink with the dynamics of seed systems in South Sudan. As a shock, occurrences of violent conflict in South Sudan have been shown to drive crop loss and the shutdown of seed companies as conflict escalates (Sperling, Lambert, Otim, & March, 2025). While in Magwi County, for example, disruptions to seed access due to conflict reduced farmers' ability to cultivate reliably, leading to livelihood loss and sometimes displacement, which in turn fueled competition and tension over scarce resources (Ngalamu, Subedi, & van Uffelen, 2021). Indeed, as seed systems underpin most food systems in South Sudan, the outcomes of poorly functioning seed systems can significantly contribute to food insecurity (Subedi, Van Uffelen, & Ngalamu, 2022). Food insecurity has in turn been shown to have a two-way causal relationship with violent conflict in South Sudan (Tschunkert, Delgado, Murugani, & Riquier, 2023). Summarized as "peace is more likely to be built and sustained when it is linked to secure livelihoods and food security in conflict-affected communities. If the livelihood concerns of conflict-affected communities are not addressed, their grievances may fuel a resurgence of violent conflict, creating a vicious circle of conflict and food insecurity" (Delgado, Murugani, & Tschunkert, 2021, pp. 11-12).

Conflict can also potentially interlink with underlying dynamics of conflict at the level of governance. In South Sudan, there is a weak and poorly equipped seed regulatory framework, and a broadly non-functional seed quality assurance system (Subedi, Van Uffelen, & Ngalamu, 2022). The lack of quality assurance has in some instances led to tensions between local government line ministries and NGOs accused of supplying poor quality seed (Radio Tamazuj, 2018). Moreover, the lack of a seed regulatory framework that meaningfully includes informal seed systems – such as farmer saved seed, social seed networks and local seed markets – means that informal seed systems are in general systematically excluded from formal policy frameworks, while conversely being the source of seed that the majority of farmers in the country rely on in practice (van Uffelen et al., 2023). There have been recent efforts to review the South Sudan draft seed policy document that was initially drafted in 2012 (Kok, 2024), and the reviewed seed policy and certification framework does partially recognize the importance of farmer managed seed systems. However, they are yet to be ratified, and there is a significant leap between policy drafting and policy implementation.

Indeed, the exclusion of major stakeholders in the informal sector from national policy and regulation could reinforce the sense of marginalization and decrease the accountability of institutions – undermining vertical trust (in line with the Exclusion-Grievance-Trust Erosion Loop). Actors in informal seed systems (i.e., seed producers) constitute the majority of seed produced in South Sudan, yet remain broadly underacknowledged in formal regulatory frameworks and in practice – though intermediary systems do have some significant engagement with the informal sector. Instead intermediary and formal systems generally prefer imported seed (Subedi, Van Uffelen, & Ngalamu, 2022), potentially reinforcing the marginalization of informal systems and the development of vertical grievances. Policy suggestions to address issues of the marginalization of the informal sector and quality assurance mechanisms – such as through the ratification of reviewed seed policy and certification framework that meaningfully includes informal systems, and decentralized seed quality assurance systems – are therefore both good seed sector development initiatives as well as being potentially mutually inclusive towards contributions to positive peace (in line with the Quality-Stability Loop).

Seed systems in South Sudan could also serve as a leverage point for building horizontal social cohesion at a local level. For example, the Women United Community Seed Bank in Bor South provides some anecdotal evidence on how localized, inclusive seed governance could mitigate inter-community tensions, by restoring access to quality seed (especially among conflict-affected women and displaced communities), (re)building horizontal social trust, and providing forums for cooperation (Kok, Vernooy, & Gupta, 2025) – in line with the Community Agency-Cohesion Loop. The challenge remains in how to look past horizontal social cohesion initiatives, which are likely valuable at a local level, but perhaps fail to acknowledge the fundamental link that seed and how it is governed could have with some of the broader root causes of conflict in South Sudan, dynamics that remain underexplored.

6.3 Examples of Theories of Change

Participants also used the causal pathways they had developed in order to draft out ToCs on how seed governance mechanisms or initiatives could feasibly make a contribution to peace. They created conditionality and contextualization requirements given that the ToCs were formulated in a generic manner.

Conditionality / Contextualisation

o **IF the drivers of conflict are addressed AND/OR**

o **IF intercommunal fault lines are considered AND**

o **IF relevant key stakeholders are involved**

1: Seed Sector Governance

IF informal/formal governance of seed systems is strengthened and decision making more meaningfully inclusive and transparent, THEN the access and availability of sufficient quantity and quality of seeds will improve food security and livelihoods outcomes and reduce the economic drivers of violent conflict (increasing opportunity cost of engaging in violence), BECAUSE the seed sector governance will respond better to the needs of users.

2: Maintaining key functions of seed systems in conflict-affected areas

IF the key functioning of the different seed systems is maintained in situations of violent conflict and insecurity, THEN the resilience of small-holder farmers will be supported and the opportunity cost of involvement in violence will be increased, BECAUSE smallholder farmers' key livelihood assets will be protected, food security outcomes improved, and they will be less likely to resort to negative coping strategies including resorting to violent conflict.

3: Productive dialogue and inclusive decision-making

IF dialogue between local communities and seed systems actors (formal/informal) is strengthened and decision-making is more inclusive, THEN grievances over the unequal access and availability of seeds of preferred varieties will be reduced and horizontal/vertical social cohesion (measured through social capital: trust, contact, collaboration) will increase, BECAUSE smallholder farmers will feel their needs are being considered/addressed; and that decision-making is more transparent and seed system actors are more responsive to the needs of small-holder farmers.

4: Improved relationships and joint problem solving

IF constructive engagement and collaboration between communities over the production and supply of seeds (including the ability to resolve disputes), THEN disputes will more likely be addressed in a non-violent manner and the degree of horizontal social cohesion (i.e. trust between people) will be increased, BECAUSE there will be collaborative management of livelihood assets (seeds) and increased trust between communities.

7. Discussion

Many of the causal feedback loops that participants outlined were predominantly aligned with interventionism (mostly the dynamics of seed aid and distribution) – this being likely due to the nature of partners who attended, who were primarily experts in seed sector development, seed governance, and peace and conflict.

Indeed, many of negative cases (conflict reinforcing) that were outlined were associated with interventionism, while other key themes were the role of markets (seed trade and agro-dealers) and powerholders within seed governance arrangements (nepotism, cronyism, and corruption). Additional key themes were in relation to timeliness, quality, preference, and appropriateness relative to seed, and the role that governance mechanisms can have in regulating these dynamics.

The positive cases were to some degree the inverse of the negative cases, where the presence of inclusive, just, and collaborative governance mechanisms were understood to have an indirect link to positive peace through the building of vertical and horizontal trust and social cohesion, but also by indirectly contributing to food security and resilience.

Interestingly, this association of trust and social cohesion (particularly horizontally) as having an indirect relation to positive peace seems to be a common assumption across the examples of feedback loops. However, the literature review on social cohesion outlined the uncertainty of social cohesion initiatives in general addressing both vertical and horizontal social cohesion towards contributing to positive peace.

The country case example of South Sudan delves into these dynamics a bit more explicitly, where the cyclical interaction between food insecurity and violent conflict could be engaged with from a seed systems perspective. As seed systems have an underpinning role within food systems in South Sudan, initiatives that improve seed security could have an indirect link to peace and conflict dynamics. In particular, initiatives that promote horizontal social cohesion and good localized seed sector development (such as community seed banks) could make valuable contributions that align with HDP nexus thinking.

However, the challenge remains on how to design initiatives to engage vertically with seed policy, regulation and dynamics of marginalization, and to understand how seed governance more broadly relates to underlying conflict dynamics. Such initiatives could be framed as both contributions to peace and as generally good seed sector development initiatives (mutually reinforcing for HD and P) – but what they require is a conflict lens to consider the broader consequences of intervention. Moreover, in the case of South Sudan, building vertical trust in institutions (vertical social cohesion) perhaps requires the use of a political economy lens to understand power dynamics.

For the ToCs, partners to the ALP4 Uganda workshop originally phrased "social cohesion" as "social capital", this was largely changed at the report drafting stage to "social cohesion" given the link to trust outlined in the ToC text and to be in line with the literature presented in this report. However, this doesn't mean that social capital isn't a valuable concept in the context of designing seed governance initiatives that can contribute to peace in FCAS, and itself warrants further exploration.

Much like the literature on social cohesion, there is no clear scientific consensus on the definition, operationalization, and measurement of social capital (Carrasco & Bilal, 2016; Claridge, 2020). Indeed, the conceptual differences between social capital and social cohesion have been generally described as the former relating to *having* and the latter relating to *being*, where focusing on social capital can promote individualistic tendencies that are perhaps contradictory to social cohesion (Carrasco & Bilal, 2016).

Indeed, Claridge (2020) emphasizes this point by outlining that in general, social cohesion tends to start with society as a whole, whereas social capital has a tendency to start with the individual, but that both concepts engage with social settings and social structures.

The key is very much how each term is defined and assessed in practice, and if both are used, how they are defined and assessed in relation to one another and the context in question.

The UNDP (2020) has developed a guidance note on the conceptual framing and programming implications for strengthening social cohesion where they include both concepts of social cohesion and social capital. This framework divides social cohesion into vertical and horizontal, yet outlines the use of social capital as a concept to further evaluate horizontal social cohesion based on the type of social capital: bonding, bridging, and linking (UNDP, 2020). This dual use of social cohesion and social capital could be an avenue to explore when it comes to conducting further case studies within ALP4.

In general, it is important to emphasize that the causal feedback loops and ToCs that are outlined in the previous section are both generalized, simple, and idealistic. They operationalize core concepts of seed governance and peace literature and engage mainly with indirect drivers of conflict. However, they do not engage with broader dynamics of contextual complexity as they are meant to be simplified examples to encapsulate some of the core casual assumptions found in the literature and that practitioners recounted in the Uganda ALP4 partners meeting. For example, the binary nature of positive vs negative cases does not account for the temporal aspect of complex systems – where they change dynamically over time and space.

Moreover, the lack of reflection on trade-offs and unintended consequences in these feedback loops means that the picture is incomplete. In the upcoming case-based research within ALP4, it will be crucial to not remain at this generalized level of thinking, but to ground the context-based causal feedback loops that are identified in deep understandings of how seed governance relates to the root causes of conflict in a particular context, and to collect empirical evidence on how these dynamics play out in practice over time.

8. Summary and next steps

This working paper is an attempt to operationalize the core action learning question of ALP4 – *how can seed sector governance be organized in fragile and conflict affected situations in order to contribute peace*? In doing so, we have outlined key literature on seed governance in FCAS, peace, contributions to peace, governance and peace, and how this could link to existing literature on the relation between seed governance and contributions to peace.

Five key guiding principles emerged from that process, and when paired with the causal feedback loops outlined in the conceptual framework, this provides a foundation for further case-based exploratory research on how these dynamics play out in specific FCAS in Africa.

The assumptions underlying these casual relations, their conditions, their interplay, and the dynamics of trade-offs and synergies between them will be explored and updated in future working papers. The next step will be to finalize case selection and develop research questions and terms of reference for specific cases (both positive and negative).

We consider this working paper a living document that can act as the basis for future exploratory research, we will continue to update this body of knowledge through further working papers summarizing our findings, and we welcome critical and constructive reflection.

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