K4D | Knowledge, evidence and learning for development

The drivers of acute food insecurity and the risk of famine

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Question

What recent evidence exists on the drivers (particularly conflict, climate, and economic shocks) of acute food insecurity and the risk of famine in FCDO priority countries Ethiopia, Somalia, South Sudan, Sudan, Afghanistan, Myanmar, Bangladesh, Yemen, Syria, DRC and Nigeria?

Contents

1. Summary

This rapid review synthesises the literature from academic, policy, and knowledge institution sources on the drivers of acute food insecurity and famines with a focus on key FCDO-partner countries. As Box 1 shows this review builds further on evidence already collected in other K4D helpdesk reports.

The main conclusion of this rapid review is that the drivers of acute food insecurity are complex, often involving multiple and interrelated factors. The drivers for chronical food insecurity and *acute* food insecurity cannot be separated entirely from each other, as the evidence shows that slow-onset determinants of food insecurity could play a critical role during an event (or multiple events) that could trigger a food emergency. The literature shows that the political economy (e.g. food system governance or preparedness of institutions to disasters) and socioeconomic dynamics (e.g. shaping demand and supply of food) have become more relevant factors in any analysis on the drivers of acute food insecurity, acute malnutrition, and famine. This coincides with a shift in the literature away from global drivers of food insecurity and malnutrition toward localised dynamics on the national and sub-national level.

Box 1. Relevant K4D rapid reviews

Carter, B. & Kelly, L. (2021). Social inequalities and famine and food insecurity risk. K4D Helpdesk Report. Institute of Development Studies. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/16735

Ismail, Z. (2021). Interaction Between Food Prices and Political Instability. K4D Helpdesk Report. Institute of Development Studies. https://gsdrc.org/publications/interaction-between-food-prices-and-political-instability/

Kelly, L. (2021). *The humanitarian impact of sanctions.* K4D Helpdesk Report. Institute of Development Studies (not publicly available).

O'Driscoll, D. (2017). Impact of Economic sanctions on poverty and economic growth. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies. https://gsdrc.org/publications/impact-of-economic-sanctions-on-poverty-and-economic-growth/

Quak, E. (2018). Food Systems in Protracted Crises: Strengthening Resilience against Shocks and Conflicts. K4D Helpdesk Report 447. Brighton, UK: Institute of Development Studies. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/14145

Price, R.A. (2019). Climate change as a driver of conflict in Afghanistan and other Fragile and Conflict Affected States. K4D Helpdesk Report 527. Brighton, UK: Institute of Development Studies. https://assets.publishing.service.gov.uk/media/5ca20ba940f0b625df8d85f1/527_Climate_change_as_a_driver_of_conflict_in_Afghanistan_and_other_FCAS.pdf

Rohwerder, B. (2017). Supporting agriculture in protracted crises and rebuilding agriculture after conflict and disasters. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/13505

The analytical framework of Howe (2018) that captures this complexity distinguishes pressure, hold, and self-reinforcing dynamics as key dimensions that explain potential pathways for famine. These could be political-induced, natural-induced, economical-induced, or socially induced, but

most often a combination. Based on this framework and supported by the evidence from the literature, this rapid review assesses conflicts and protracted crises; climate change and pressure on natural resources; social inequalities; and economic shocks and food prices, as the key drivers of acute food insecurity and famine. Importantly, from the literature it seems clear that acute food insecurity is the result of changing vulnerabilities that link with different coping mechanisms of households and communities.

Conflict and protracted crises:

- Baliki et al. (2018) show that high-quality micro data remains rare in high-intensity conflict settings (Nigeria). Other studies like Huang et al. (2019) show that new technologies can collect data from conflict-struck regions (Myanmar).
- Conflict has a direct impact on food production, distribution, and marketing, and as such can trigger increased food prices (domestically due to higher transaction costs or higher import costs after depreciation of the local currency) (Yemen).
- Mistrust is an important factor in how food systems work in prolonged periods of conflict, resulting in shorter supply chains, and lack of exchange of information and knowledge (Afghanistan, DRC).
- Lack of essential services such as access to credits, monitoring on food safety, and institutions' inability or willingness to react to the crisis, reduces coping options for the most vulnerable groups.
- Quantitative studies show a clear link between fragile and conflict affected countries, and rising numbers of undernourishment, concentrating in countries in protracted crises.
- More evidence is needed to understand how agriculture and food sectors are interlinked with the war economy (which can be negative for food insecurity, but not *per se*) (Syria). Other areas of attention as identified in the literature is on gender issues, population movements, and ways to collect data on the coping mechanisms of households.
- Donor countries often react to international human right violations by applying economic sanctions, which could increase the food insecurity situation in various ways (e.g. changing the tactics of sanctioned governments against opposing groups or constraints for food aid to enter the country). More comprehensive sanctions are likely to have greater economic effects and unintended consequences.
- Research on the link between conflict and acute food insecurity must consider the possibility that food insecurity can trigger civil unrest and could add to conflicts (although the evidence from the literature is conflicting as it depends on different layers of causes, e.g. socioeconomic inequalities).

Climate change and pressure on natural resources:

- Climate change affects food availability mainly through extreme and unpredictable weather conditions, affecting productivity of crops and livestock (Ethiopia). This is likely to lead to higher food cost impacting consumers globally through higher food prices and reduced purchasing power, with low-income consumers particularly at risk from higher food prices (affordability/accessibility).

- There is less evidence how climate change affects the utilisation of food. Some studies mention the potential of higher cost for safe food storage, lower food safety, and reduced nutritional intake.
- The literature on climate change and stability mention that uncertainties destabilise food trade and market systems and investments. It also could ultimately result in more conflicts, although the literature is clear that climate change is not the single factor, but often in combination with weak governance and deprived food systems (Nigeria).
- Constraints to access land and fresh water are main issues that can emerge due to population growth, population movements, climate change, large investments, which all impact on food security. Gender dynamics are important to consider.

Social inequalities:

- Often the poorest people are at the highest risk of food insecurity, but in some cases, particularly conflict-related famines, vulnerability increases due to social inequalities and discrimination, limiting specific groups from building assets to cope with food insecurity (some districts in Yemen).
- Furthermore, the breakdown of traditions of communal sharing, the rise in crime, and the emotional and physical changes associated with hunger have implications for the most vulnerable groups.
- Studies often look into gender inequalities and to some extent to ethnic minority groups and refugees, but less evidence is available on how discrimination against people with a disability, elder people, youth, and people with diverse sexual orientation affect their food security.
- The literature finds some relationship between social inequalities, conflict and climate change, and risk of famine or acute food insecurity at the national and sub-national level. One of the main characteristics is lack of access to land, fishing and hunting resources and unfair competition over land and water.

Economic shock and food prices:

- Poor and vulnerable households, especially in low-income countries, have a high share of food spending to their total income, which reduces their resilience in response to high food price, resulting in coping mechanisms that involve cheaper food options, reduced total amount of food, and less healthy food.
- In rural areas, where households rely on low-productivity agriculture, a sudden rise in food prices is not beneficial as they are net purchasers of food and increases uncertainty regarding both output and consumption. Households in low productivity agriculture regions struggle more due high food prices resulting in poorer health outcomes (Kenya).
- Urbanisation in combination with urban inequalities and poverty could make (acute) food insecurity become less a rural problem and increasingly an urban problem. Studies from LMICs show that the urban poor depend almost entirely on the cash economy for their food needs, while at the same time they are struggling to obtain stable incomes, as social safety nets are often unavailable for them.
- The combination of job/income uncertainty (abrupt fall of income during an economic crisis) with sharp rises in food prices is detrimental for the poorest and vulnerable groups.

It has been estimated that it is the most vulnerable group that disproportionately absorb price shocks, particularly women who have lower job security in the informal sector, childcare demands at home, and in rural areas are often involved in low-productivity agriculture.

- The Covid-19 pandemic showed the multiple and interrelated causes of acute food insecurity in many countries and sub-regions, caused by a combination of demand and supply stresses, which have resulted in higher food prices, exacerbated by social inequalities (Ethiopia, Nigeria, Kenya).
- Rapid changes in food prices make it hard for farmers to take decisions about investments in production because of uncertainty about future prices. They also make it difficult for traders to determine appropriate stock levels and set prices, and for consumers to make choices about which foods to buy, and when.
- The literature on the links between food prices and political instability found many conflicting results. The main difficulty is that conflict can affect food prices and food prices can exacerbate conflict, but in both ways (interconnected): either way they could cause acute food insecurity as it increases vulnerabilities of specific groups.

2. The causes of acute food insecurity and famines

What drives food insecurity?

Food insecurity is a complex problem at the global, regional, national and sub-national levels with multiple, interconnected causes that manifest as malnutrition, extreme hunger, and starvation (Allee et al., 2018). Food security means that all people have at all times access to sufficient, safe, and nutritious food, while food insecurity can be understood as a continuum, with starvation the most extreme experience (Hendriks, 2015). This review is about the drivers (causes of) of *acute* food insecurity and the risks of famines, but it is important to set the scene more generally on the drivers of food insecurity and malnutrition because of the **interdependencies of multiple drivers** that could lead to severe food emergencies.[1]

Since 2008 the *State of Food Security and Nutrition in the World* reports (by FAO et al.) have identified specific drivers of food insecurity, such as high food prices and economic crises (reports 2008, 2009, 2011, 2019), conflict and protracted crises (reports 2010, 2017), and climate change (2018).[2] The reports increasingly have highlighted the multiple dimensions and complexities of food security embedded within **changing food systems**. This relates with a shift away from the pre-2008 dominant belief that economic growth could be enough to achieve a more food secure world. The 2012 the report highlighted this shift by stating that economic growth is "necessary but not sufficient to accelerate reduction of hunger and malnutrition".

[1] Drivers are the factors that cause change, and as such affect or shape future directions, in this case for food insecurity and hunger. Analysing these drivers could be considered relevant because it helps understand what causal relations exist and forces have been and could be at play with the potential to transform the current food security situation, in the short- and longer-term (Bourgeois, 2016).

[2] To access the latest 2021 and previous reports go to https://www.fao.org/publications/sofi/2021/en/

Furthermore, food security and nutrition are now seen as intertwined, which prompted the name change of the reports, which was *State of Food Insecurity in the World* before 2017.

These changing perspectives on food (in)security have opened a diverse discussion about the causes of food insecurity and malnutrition and interventions needed to achieve food security, away from an emphasis on supply side factors (agriculture) and introducing more demand side factors and political economy. For example, Bourgeois (2016) mentions that **policy, cultural values, and individual and collective behaviours** are now more present in the current debate as they have the potential to disrupt desirable outcomes of food security, which are driven by demographic, climatic and economic trends. In his systematic review of foresight studies on food security, he identified eight clusters of drivers (Bourgeois, 2016): climate change, demography (population growth, distribution of populations, such as urbanization), food trade and markets, income and growth, technology, consumption patterns, policy and governance, and societal values and behaviour.

Several studies mention food prices as a separate key driver as they are shaped by changing food trade, policy, and markets (Maggio et al., 2015; Fyles & Madramootoo, 2016). In a market economy, food prices are the product of changing demands and supplies of food. Therefore, it is common in the literature to **separate demand and supply-side factors**, with rising demand for food triggered by population growth and changing consumption patterns, and pressure on food production from climate change, natural resources mismanagement, and lack of public and private investment (Fyles & Madramootoo, 2016). The degree of importance of each key driver varies between countries and regions according to their unique set of physical, economic, and social circumstances.

The literature agrees that income or economic growth drives changes in consumption patterns and changes directions of investments. On the other hand, economic shocks and crises (excessive food price volatility, fall in income levels, job insecurity) have a reverse effect on food security (World Bank, 2021). Importantly, studies on *acute* food insecurity and risks for famines mostly refer to economic shocks and disasters (disrupting production and distribution of food) as an **event**, and not as a driver *per se* (Howe, 2018; Devereux et al., 2017). This literature often names the following drivers that have potential of an event to develop into a food emergency:

- **Pressure on natural resources:** This refers to the distribution and access to fertile land and fresh water, which can change due to climate change, population growth, oppression, amongst other factors (FAO, 2016a/b).
- **Conflict, insecurity, and governance:** Armed conflict and civil unrest can disrupt or damage food supply chains. Fragile or weak governance systems are not able or willing to respond to emergencies and tackle insecurity and disparity to prevent full scale crises (Global Panel, 2020).
- **Social inequalities:** Income distribution, discrimination and exclusion are all relevant factors to understand how groups are differently affected by food insecurity (Carter & Kelly, 2021).

Linking the drivers with dimensions of food security

The above section shows that there are multiple factors and dimensions that shape the causes and circumstances of such causes to result in a situation of severe food insecurity and

malnutrition; often interconnected to each other within changing food systems.[3] This section links these drivers of food insecurity with the broader conceptual frameworks that have emerged to explain food security.

The distinction between a **rapid-onset emergency** (e.g. acute food insecurity due to a disaster, such as flooding) and a **slow-onset emergency** (one that does not emerge from a single, distinct event but one that emerges gradually over time) is important but cannot be entirely separated from each other (UNOCHA, 2011). Drivers of slow-onset changes (e.g. climate change, urbanisation, changing food markets and diets) can trigger moments of acute food insecurity and risks of famines if they reduce resilience against shocks, disasters, and crises.

This is in line with Devereux (2006) who mentions that repeated transitory shocks can lead to chronic food insecurity as households use up or sell their assets until they "face destitution as well as heightened vulnerability to famine", while people who are already moderately food insecure are highly vulnerable to severe food insecurity when a shock occurs. As such a combination of drivers shape the prospect of food insecurity in the short and longer-term, which affect vulnerability, resilience, and coping mechanisms by specific groups (UNOCHA, 2011). As such, food insecurity risk should be understood as an **outcome of vulnerability and resilience** (Devereux, 2006).

The four dimensions of food security are: availability, accessibility, utilisation, and stability - from the global to individual/household level (FAO, 2009). Availability continued to dominate the debate for a long time with an emphasis on producing enough food for the world's population (Khan *et al*., 2014; van Dijk & Meijerink, 2014). Yet, more recently (arguably since 2008) the importance of **accessibility** of food became more prominent. This relates to the acknowledgement that on a global level there is enough food produced to satisfy the demand generated by population and income growth for decades to come, while constraints in **affordability** of food and the movement to where food is available, makes specific groups more vulnerable at some times (Herforth et al., 2020). This insight implies a shift away from global food security, with its implicit emphasis on quantities, production, productivity and technology, to a focus on poverty, redistribution and social inequity as drivers of food insecurity (Bourgeois, 2016). This is more country and context specific and involves an understanding of **local power relations** (political economy) and interests of specific groups.[4]

Poverty and social inequalities relate to the **utilisation of food**. Not having adequate food storage (e.g. cold storage), access to clean water, and cooking equipment reduces people's flexibility to cope with a food insecure situation and reduces their chances for healthy diets (Tacoli, 2017). Furthermore, **stability** is needed to increase confidence to invest and improve management and governance processes within the food system over time (Queiroz et al., 2021).

[3] See for example the policy brief of Woodhill & Quak (2019).

[4] Where many studies traditionally focused on technology (e.g. productivity in agriculture), concluded with policy recommendations, policy was seen as an external factor. However, stakeholders (including policymakers) are not simply end users, but major drivers of change, highlighting the importance of the inclusion of changes in political, social, and economic processes for a better understanding of the causes of food insecurity (Erb *et al*. 2009).

Conflicts, economic shocks, and disasters all reduce stability and therefore impact on food security.

Recently, there are discussions to add agency and sustainability to the dimensions of food security (Clapp et al., 2021). **Agency** reflects on the political economy dimensions behind food insecurity due to power struggles of specific stakeholders, with vulnerable groups often lacking agency and voice to shape their own futures, with implications for their food security situation (Clapp et al. 2021). **Sustainability** reflects on pressures on natural resources and climate change as key drivers of food insecurity and risks of famine.

Framing the causes of acute malnutrition

Drivers of acute food insecurity are often the same for acute malnutrition. However, where food security looks at the risk situation regarding availability and accessibility of the total amount of food on different scales, the concept of malnutrition specifies that these **foods also need to be safe, nutritious, and healthy**.[5] Therefore, malnutrition is considered the outcome of food insecurity affecting the health and development of individuals in three ways: undernourishment, obesity, and micronutrient deficiencies (the "triple burden of malnutrition") (Blankenship et al., 2020). Undernourishment is mostly linked with acute food insecurity.

The UNICEF malnutrition causal conceptual framework is often used to understand the causes of malnutrition. The framework recognises the need to understand causality at the micro (individual or household) and macro levels (local communities and society). It has identified three levels (immediate, underlying and basic) in which the drivers of malnutrition operate, ranging from individuals, households, local community, and the wider regional, national, or international level. The "**immediate causes**" of malnutrition capture the physiological reasons why an individual child becomes malnourished (related to food intake and disease), which in turn are driven by the "**underlying causes**" (inadequate household food security, care of women and children, and the health environment and access to health care), which in turn are determined by the "**basic causes**" of malnutrition. As such, the framework implies that multiple interconnected actions are required to address acute malnutrition.

Although the framework is useful, some critics mention that it directs the focus of research - and therefore keeps the existing evidence base - on treatment rather than prevention (Young, 2020). Hence, the analytical focus is on the immediate and underlying drivers of malnutrition, which operate in close proximity to the household. As a result, there is a "misconception" that we already know what causes undernutrition, while most analyses **ignore the role of more systemic or basic causes**, ones that drive the underlying causes of acute malnutrition, which are highly contextual and vary seasonally as well as socially (Young, 2020).

For example, a recent study by Marshak et al. (2021) find in the context of Chad that there is no clear evidence for the prevailing assumption in the literature of the seasonality of acute malnutrition (e.g. peaking during the main rainy season - the so-called 'hunger gap' or 'lean season') as a result of a combination of increasing food insecurity and disease burden, particularly malaria (Devereux et al., 2012). It concludes that there are two peaks of acute

[5] See for more information https://www.who.int/tools/compendium-on-health-and-environment/safe-and-healthy-food

malnutrition by intermittent rainfall prior to the rainy season and just before the harvest season. Recently, there have been more efforts to better understand the seasonality of nutrition outcomes, with the same outcomes. Venkat (2021) also shows for the Sahel region the presence of two peaks in wasting of half a million child observations over 15 years across the Sahel, suggesting more understanding is necessary about the **complexity of what causes this acute malnutrition** in relation with food insecurity, inadequate social/care environment, and insufficient health services.

Conceptualising famines

The Integrated Food Security Phase Classification (IPC) sets out the criteria for the widely agreed classification of "famine", which involves starvation, death, destitution, and extremely critical levels of acute malnutrition (IPC, 2020). Over the years, scholars have identified famine as an event, a process, or a system (Devereux, 2009; Howe, 2003; and Maxwell et al., 2016).

- **Event:** For many years famines were mainly seen as an event of sharp rises in severe malnutrition and mortality attributed to a sudden shortage of food or a sudden collapse of entitlements (Howe, 2018).
- **Process:** By seeing famine as a process came a shift that emphasised more the causes of famines within different stages. Several models have reflected this view, such as the MSF model (three stages: food insecurity, food crisis, and famine, health crisis, and death) and the PAR model (a range of processes that increase the vulnerability of households, on one side, combined with natural hazards, on the other, can create the pressure that leads to crises, including famines).
- **System:** The concept of a 'famine system' emerged more recently, in which the preceding stages that lead to a famine may or may not lead to the development of the event of a famine, depending on many factors (non-linearity). Famine as a process blurs the temporal specific dimensions of a famine (famine as a "distinct state") (Howe & Devereux, 2004), as such the famine system thinking analyses famine as a complex process prior to the event and distinguish itself from the idea of famine as an extreme phase within a continuum, like a stage of food insecurity.

Howe (2018) introduces an **analytical model** consisting of five elements that seek to provide insight into the development of famines: pressure, hold, self-reinforcing dynamics, famine system, and rebalancing. It states that "severe pressure on a population, when held in place for sufficient time, leads to self-reinforcing dynamics that can eventually organise into a famine system that rapidly causes high levels of mortality, until it rebalances and collapses" (Howe, 2018). This means that for the causes of acute food insecurity are explained by a mix of pressure, hold and self-reinforcing dynamics (Howe, 2018):

- **Pressure:** This partially or systematically disrupts a vulnerable group's ability to meet their food and nutrition needs arises from a combination of the strength, comprehensiveness, and interaction of the disruptive shocks or stressors and the vulnerability (or, conversely, the resilience) of the communities. It can be politically-induced, such as conflicts, blockades, and raiding; naturally-induced, such as droughts, floods, and other hazards; economically-induced, such as high food prices or currency depreciations; and socially-induced, including discrimination based on political, religious, or ethnic affiliation.

- **Hold:** This is when communities affected by pressure do not receive sufficient release from it to prevent a deterioration of their food security and nutrition situation. Holds can take many forms, including natural (e.g. time till next harvest), political (e.g. duration of conflict or blockage), social (e.g. time that ethnic groups have no access to support to release pressure), economic (e.g. timespan of high food prices).
- **Self-reinforcing dynamics:** a pattern of accelerated and interrelated changes in key factors driving food insecurity and undernutrition. Desperate households in food stress make coping decisions that could worsen the overall food security situation due to increased vulnerabilities, like selling assets (decreasing resilience), mass migration for jobs (lower wages), or farmers not selling their produce (increasing food prices). The self-reinforcing dynamics may intensify and start to spread to other communities.

3. Acute food insecurity, conflict, and protracted crises

Conflict and food systems

One of the most common cited drivers of acute food insecurity and risks of famine is **protracted crises**. Conflict is one of the main characteristics of countries in protracted crisis,[6] along with the lengthy duration of crises, weak governance, and breakdown of local institutions (FAO/WFP, 2010). As the review of Baliki et al. (2018) shows, high-quality **micro data** remains rare in high-intensity conflict settings, where omitted variables and simultaneity bias often complicate causal analyses. They also mention that controlled experiments are not available which hinder answering complex questions to disentangle the mechanisms in play. Yet, there is evidence from cross-sectional analyses, panel data analyses, and exploiting exogenous variation from controlled or natural experiments (Baliki et al., 2018) (See also Box 2: measuring conflict-induced food insecurity in Myanmar).

Evidence shows that protracted crises significantly affect the four dimensions of food security (availability, access, stability, and utilisation) and the nutritional status of many individuals and households (Elver, 2020). In countries in protracted crisis, food markets and value chains still exist, but actors have to work very differently due to high risks, insecure situations, and **mistrust**, owing to a complex mix of weak governance, broken local institutions and influx of emergency assistance (Hiller *et al.*, 2014). As a result, horizontal and vertical linkages in food supply chains are broken, damaged, or shortened, making it difficult to produce, process, trade, and market food (Özerdem & Roberts, 2012).

In recent years “the worst food crises have occurred in areas of active conflict” (Elver, 2020: 11). Conflict is very often the cause of acute food insecurity and famine (e.g. Yemen, Afghanistan, Somalia). FAO et al. (2019) estimated that in conflict-affected countries in sub-Saharan Africa, the number of undernourished people increased by 23.4 million between 2015 and 2018 – and at a faster rate compared to countries not exposed to conflict. As the Global Panel (2020) policy

[6] Almost all countries going through a protracted crisis (the FAO currently counts 19 countries) have experienced some form of violent conflict over a prolonged period and 13 countries are still affected by conflict. The 19 countries are: Afghanistan, Burundi, Central African Republic, Chad, Democratic People’s Republic of Korea, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Haiti, Kenya, Niger, Somalia, South Sudan, Sudan, Syrian Arab Republic, Yemen, and Zimbabwe (FAO, 2018).

brief highlights, **conflict and food system fragility are mutually linked**. Undernourishment is in many low- and middle-income countries (LMICs) already difficult to eradicate, but conflict always causes disruption and destruction of food systems, reducing resilience and increasing vulnerabilities, leading to even greater numbers of people having insufficient access to healthy diets (Global Panel, 2020). It is the combination of conflict with man-made and natural disasters, natural resource pressures, climate change, inequalities, prevalence of poverty, and governance factors that makes countries in protracted crises so vulnerable to fall into a situation of severe food insecurity and famine (CFS, 2016).

- Most evidence shows that conflict reduces food availability and accessibility by destroying or damaging agricultural assets, infrastructure, and markets. When farmers face destruction of irrigation systems or have problems accessing their land during violent conflict this results in less production of food (Özerdem & Roberts, 2012).[7]
- Farmers respond to reduce their risk of being targeted by armed groups or a lack of access to markets to sell their produce, which often results in low incentives to engage in agricultural production beyond the subsistence level (Kimenyi et al, 2014; Özerdem & Roberts, 2012).
- While this reflects the complex navigation of risk, it can also mean overall stocks of food can suffer (UNDP, 2012). Input use is low and often of bad quality, inputs are unavailable, or only available through informal institutional arrangements.
- Selling produce is often done through incidental transactions, with producers being highly dependent on middlemen (Hiller *et al.*, 2014).
- Bad and unsafe roads, high transaction costs and lack of electricity in these contexts also decrease the quality (not only quantity) of food and increase the costs on goods that flow along these chains, which have detrimental effects on affordability and safety of food by end-users (Rohwerder, 2017).[8]
- Conflict also increases food insecurity by a significant lack of knowledge exchange among people resulting in less optimal functional food value chains (Hiller et al., 2014). This relates to increase of risk and reduce in trust levels, resulting in increasing transaction costs and reduced provision of agricultural services in conflict-affected regions.

[7] See also the K4D helpdesk report Rohwerder, B. (2017). Supporting agriculture in protracted crises and rebuilding agriculture after conflict and disasters. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies. https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/13505

[8] The impact of the Darfur crisis in Sudan shows that pastoralists in North Darfur lost over half of their livestock in the first three years of the conflict – around a quarter of their herd was looted while an even larger proportion died because poor security limited their access to feed and water supplies (FAO/WFP, 2010). In eastern part of Democratic Republic of the Congo, the local crop productivity levels fell to a minimum for agriculture-based livelihoods as a result of insecurity and the repeated displacement of households: in North Kivu during the peak of the war, bean productivity fell 72%, that of manioc by 53% and bananas by 45% (Raeymaekers, 2008). Also, illegal checkpoints could force farmers and local brokers to pay 'taxes' that force them to raise their prices, thus shrinking the direct market for their goods. Duggleby et al. (2008) describe the effect of war-induced disruptions in Democratic Republic of the Congo, which led to the deterioration of infrastructure and market linkages, almost completely severing rural-urban relations and rendering cities completely dependent on imported goods.

- Socio-economic networks are broken, or reshuffled, by displacement processes. People do not want to collaborate and do not trust other stakeholders, which reduces the resilience of households, communities, or the whole food system to cope with events that can cascade into a food crisis or famine (Hiller, 2014).
- However, actors adapt to these circumstances by making use of other institutional arrangements, building on kinship, social networks, social institutions, and others (Davis et al., 2018). Socio-cultural institutions form part of the business environment and determine entry and scope of participation in the value chain. A shared exposure to violence may also increase levels of trust within a specific community (Besley & Persson, 2012).
- In the wider context of food systems, conflicts also result in formal financial institutions either lacking or not fully being equipped to deal with the task of supporting stakeholders in food value chains to increase their produce, quality, and access and position in markets (El-Zoghbi et al., 2017).
- Government institutions for quality monitoring and extension services are often ill-equipped to fulfil most, or indeed any of these tasks, which can result in malnutrition and reduces resilience against shocks. Governments in fragile states have low emergency preparedness to create stability (World Bank, 2020).

All these conditions result in different **coping mechanisms on the household level**. Baliki et al. (2018) mention that descriptive evidence suggests that these strategies are dynamic and likely to diver at conflict onset and during protracted conflict. However, quantitative studies rely on refined household survey data related to the quantity and quality of consumption, which are challenging to collect in these regions. According to Baliki et al. (2018) the stronger findings on coping strategies in conflict resulting in vulnerabilities to acute food insecurity describe migration and forced displacement, and document a wide range of adverse effects on food security.

Quantitative studies confirm this link between conflict and food insecurity. It has been estimated that 40% more of ongoing food crises are considered to be protracted than in 1990 (FAO, 2018). Approximately half a billion people are currently affected by protracted crises, mainly situated in sub-Saharan Africa and the Middle East; and the majority of humanitarian assistance between 2005 and 2015 was directed at protracted crises. The 2014-2015 Global Food Policy states “global chronic undernutrition becomes increasingly concentrated in conflict-affected countries” (IFPRI, 2015, p.52). Figures of the FAO show that complex conflicts halted the progress made over many years to secure food security and nutrition (FAO *et al.*, 2017).

Since 2010, there has been a rising trend in the proportion of people in countries with protracted crises facing undernourishment, whereas it has been declining for all other developing countries (FAO, 2016d). This shows that conflict compounded by fragility and other stress factors leading to protracted crises substantially increases the likelihood of undernourishment. Almost 122 million, or 75%, of stunted children under age five live in countries affected by conflict (FAO et al., 2017). It was also measured that on average, 24% of the population in all countries affected by conflict were undernourished, compared to 16% for all countries unaffected by conflict. Data that looks at the population-weighted average of the prevalence of undernourishment in countries in protracted crises was slightly lower, but still shows that conflict compounded by fragility and

other stress factors leading to protracted crises substantially increases the likelihood of undernourishment.[9]

Hence, the State of Food Security and Nutrition in the World 2017 report states: "[W]hile most countries have achieved significant 25-year gains in reducing hunger and undernutrition, such progress has stagnated or deteriorated in most countries experiencing conflict. Conflict is a key factor explaining the apparent reversal in the long-term declining trend in global hunger, thereby posing a major challenge to ending hunger and malnutrition" (FAO et al., 2017: 30). Furthermore, all 19 countries in protracted crises are amongst the countries with the worst situation to produce sufficiently their own food.[10]

However, more evidence is needed how armed groups and governments intervene within food systems during conflicts. Both sides can use tactics that stop the distribution of food (via markets or via food aid), and in regions that they control they can push for non-food production to earn money (quate in Yemen, poppy in Afghanistan).[11] On the other hand a study has compared land use in Syrian areas by how much they were controlled, attacked and supported by the Islamic State (IS). The study shows that the use of cropland was generally maintained and sometimes even expanded (Eklund et al., 2017). More evidence is needed to understand **how agriculture and food sectors are interlinked with the war economy**.

Importantly, **gender inequalities** matter in understanding how conflict instigates (acute) food insecurity (see Box 3). Furthermore, although **population movement** could increase access to food, displaced populations are vulnerable for food insecurity as they rely on support (Mansour et al., 2020).[12] In research in the Central African Republic communities reported that households displaced as a result of conflict were less likely to re-invest in household assets or plant the full amount of seed to which they had access, due to fear of a future cycle of conflict and the potential for further displacement (Concern, 2018). Protracted displacement can lead to the loss of traditional agricultural knowledge and practice as it is often not passed on (Lautze et al, 2012), increasing vulnerabilities to shocks and disasters.

Box 2. Measuring conflict-induced food insecurity in Myanmar

Huang et al. (2019) found an innovative way to measure conflict-induced food insecurity across the Rakhine region in Myanmar while access to the region remains challenging. They used moderate-resolution satellite remote sensing to complement traditional food insecurity hot spot assessment across Rakhine. In the end they combined anecdotal reporting, very high resolution (VHR) imagery,

[9] The weighted average prevalence of undernourishment in the 46 countries affected by conflict is on average between 1.4-4.4% higher than for all other countries unaffected by conflict. Where compounded by conditions of fragility, the prevalence is between 11-18% higher, and for protracted crises the prevalence is about 2.5 times higher than for countries not affected by conflict (FAO et al., 2017).

[10] World Atlas: https://www.worldatlas.com/articles/the-countries-importing-the-most-food-in-the-world.html

[11] This information comes from the presentation of Rami Zurayk, Professor and chairperson of the Department of Landscape Design and Ecosystem Management at the Faculty of Agricultural and Food Sciences, American University of Beirut, during the K4D Learning Journey session on Changing Food Systems and Protracted Crises.

[12] See also https://scalingupnutrition.org/news/millions-of-refugees-across-africa-face-even-greater-food-insecurity-amid-covid-19-crisis/

and expert knowledge to support operational analyses routines in an attempt to characterise rice into failed, abandoned, and cultivated classes across 2016 to 2018 seasons. They found that nearly one-third of rice production was characterised as failed or abandoned in any given year. Qualitative analyses showed paddy failure was often adjacent to conflict events. However, they also mention the shortcomings of such method to understand complexities in regions where climate change, migration, and conflict coincide, which need human perspectives.

Source: Huang et al. (2019)

Box 3: Gender, conflict, and food insecurity

In crises or after severe shock situations, men, women, boys and girls are exposed to different types of risks and challenges and have specific coping strategies related to food and nutrition security. The literature shows that the normalisation of violence, especially in prolonged conflict settings, exposes men to a greater risk of loss of life or life-long disabilities. As a result, the engagement of men in conflict puts greater responsibility in the hands of women in sustaining the livelihood of the household, including for the access to food, nutrition, and health care of household members (FAO et al., 2017). Furthermore, conflict situations are often characterised by increased sexual violence, mostly targeted at women. Such violence and trauma not only cause direct harm to women, but also tend to affect their ability to support their families due to reducing the capacity and productivity of survivors as a result of illness, injury, stigma and discrimination, and this results in food security issues (FAO, 2016c). Only in cases where women gain more control of resources during crises, household food consumption tends to increase and child nutrition improve (FAO, 2016c). In some cases the demobilisation of male combatants can result in women losing their agricultural sector jobs when the men return after war, which was the case in Nicaragua in 1988 (Young & Goldman, 2015).

Violation of human rights and sanctions

The Committee on World Food Security (2018) mentioned that the right to food is arguably the most violated human right globally, and maybe the least visible. This relates to environmental, water, and land defenders, to nutrition and healthy food defenders as the right to food "is rooted in the indivisibility and interdependence of all human rights" (Elver et al., 2018). Elver et al. (2018) in a blog post argue that the **lack of commitment by governments** to ensure fundamental human rights are the base on which severe food insecurity situations occurs.

When a government is accused of severe violations of international human hights, individual countries or multilateral institutions could use **trade and financial sanctions** against the rulers. There are few studies that look at the impact of sanctions for food security (Kelly, 2021). Economic analysis of the effect of sanctions on gross domestic product (GDP) and income are more common. Some find significant effects on economic growth (Neuenkirch & Neumeier, 2015), income inequality (Afesorgbor & Mahadevan, 2016), and poverty (Neuenkirch & Neumeier, 2016). Common to all these studies is the consistency that imposition of sanctions has unintended and adverse consequences for civilian population and general economic development of the targeted states. Economic effects are likely to translate into worsening humanitarian indicators (O'Driscoll, 2017). More comprehensive sanctions are likely to have greater economic effects and unintended consequences (Gianopoulos, 2019). These are likely to fall disproportionately on poor and marginalised citizens, which is at least in part a consequence of social and political structures in the country (O'Driscoll, 2017).

This is relevant for the perspective of food insecurity as poverty and income inequality are an important factor for acute food insecurity. Afesorgbor (2020) analyses the impact of sanctions on food security and find that sanctions "significantly increases the composite index of global hunger index (GHI), and also adversely affect the availability and stability dimensions of food security". In addition, he finds that employing both financial and trade sanctions simultaneously have a more pronounced **adverse impact on food security** compared to when they are used separately.

This is in line with other observations, such as that many of the most food insecure countries in the world are also sanctioned states. For instance, according to the Global Hunger Index, countries such as Burundi, Eritrea, Yemen, Afghanistan, Chad, Ethiopia, Sudan, Somalia, and North Korea are the most food insecure countries and at the same time these countries have also suffered long periods of international sanctions (Afesorgbor, 2020). Oechslin (2014) indicates **two mechanisms** through which sanctions can adversely affect food security.

- The central government in a sanctioned state can under-supply essential resources thereby reducing private-sector (farmers and food traders/sellers) productivity.
- The government can deliberately centralise the distribution of essential goods (e.g., food) in order to use access to food as a defence mechanism to punish dissent against the leadership.

Others highlight that **food aid** (part of humanitarian aid) faces constraints due to sanctions (Kelly, 2021). Although Mary et al.'s (2018) econometric study shows that nutrition-sensitive aid composing of emergency food aid decreases hunger substantially, sanctions often go hand in hand with a cut of foreign cash and food assistance (Afesorgbor, 2020). On top of food aid cuts directly exacerbating food insecurity in the sanctioned state, sanctions also impede efficient distribution. Recent evidence from Syria shows that sanctions have detrimental effects on humanitarian aid by limiting NGOs' ability to transmit and receive funds (Daher & Moret, 2020), causing restrictions and delays to imports of essential goods (Brubaker & Huvé, 2021), playing a role in dissuading donors from supporting aid to certain regions (Brubaker & Huvé, 2021), and resulting in restrictive, inflexible, time-consuming and costly donor conditions on humanitarian operations (Debarre, 2019, pp. 3–5).

Marinov (2005) argues that sanctions destabilise governments and causes political instability - a common characteristic of the most food insecure countries (Deaton & Lipka, 2015). Deaton and Lipka (2015) further argue that political instability can cause food insecurity by impairing the capacity of the poor to generate income in the non-agricultural sector and thereby reducing their purchasing power; **increasing investment risk premium** and thereby reducing agricultural and other investment; and increasing the costs of food distribution.

Food insecurity and conflict

Conflict is not only a driver of food insecurity, but also the result of a food insecure situation, especially in the presence of unstable political regimes, a youth bulge, stunted economic development, slow or falling economic growth, and high inequality (Elver, 2020; Maystadt et al., 2014; Brinkman & Hendrix, 2011). This is important in the context of this report because in such cases conflict and food insecurity each presents a potential underlying driver of the other, resulting in a vicious circle in which the conditions (e.g. vulnerabilities and resilience changes) are created that could trigger acute food insecurity and famines.

The WFP (2017) found that when coupled with poverty, food insecurity increases the likelihood and intensity of armed conflicts, thus creating a potential downward spiral of further refugee outflows. However, the literature is also clear that **the causes of armed conflict go far beyond food insecurity and malnutrition** alone. The World Bank's 2011 World Development Report concluded that there is no simple causal explanation for conflict. The causes of conflict are complex, nonlinear, and mediated by a host of factors, including political institutions and economic structures (World Bank, 2011).

The Global Panel (2020) mentions the case of Somalia where causality was found between severe and lengthy periods of drought and civil unrest and outbreaks of violence, through the channel of livestock price shocks. With many people depending on the livestock sector for their livelihoods, the absence of public safety nets, and weak credit and insurance markets, droughts resulted in the loss of earnings and reduced the opportunity costs of participating in conflict activities (Maystadt & Ecker, 2014).

Box 4. Conflict and severe food insecurity in Yemen

ACAPS (2019) Yemen Analysis Hub published a report to understand the multiple drivers of acute food insecurity in the most food insecure districts in Yemen. In their findings they state:

The direct impact of violence on local businesses, trade routes and markets was identified as the top driver of acute food insecurity, mainly around the agricultural, export and manufacturing heartlands of Sa'ada, Al Hudaydah and Taizz. Conflict frontlines, damage to productive assets, and challenges accessing key markets and trade routes have increased the cost and risk of doing business and reduced access to livelihoods and lifesaving services. Businesses have closed as key inputs like fuel, agricultural supplies, and water have become scarcer and more expensive due to the collapse of Yemen's currency. These factors have reduced income for local families and increased the cost of food and other essential goods, above the average of non-conflict affected areas in the country. Direct impact of violence had a large impact on water and health infrastructure limiting access to basic services and increasing the risk of cholera and malnutrition, which can interact to increase the risk of mortality.

Pre-existing poverty and historic lack of development, rather than direct impact of violence, was the most significant driver of acute food insecurity for the 15 central districts around Amran, Hajjah, and Al Bayda. Poverty in Yemen is historically higher in rural communities. These communities were left out of Yemen's government-directed and oil-funded development, leaving them without the same level of networks, social capital and local industry as other parts of the country – resources that could have provided some cushioning against economic shocks resulting from the conflict.

The collapse of salary payments from the Government appears to have hit the districts of Al Qafr (Ibb), Zingibar (Abyan) and Al Azareq (Al Dhale'e) particularly hard. While the cessation of public sector wages in 2016 affected all areas of Yemen, districts in the south were particularly reliant on salary payments from the military and security forces. This means that these communities have fewer alternative industries or businesses to fall back on to offset the drop in public sector wages. Houthi controlled Al Qafr may be particularly vulnerable as, due to its historic association with the government armed forces, it is unlikely to be integrated into Houthi patronage networks.

Reduction of remittances from Saudi Arabia was the primary driver in As Sawma'ah (Al Bayda). Key informants in Yemen believe that this rural and tribal district was heavily reliant on remittances from Yemeni workers in Saudi Arabia, given its long history of association with Saudi Arabia and relatively high concentration of Sunni/Salafi Yemenis.

Pockets of vulnerability in Aden, Hadramaut were found to be major factors contributing to acute food insecurity. Main vulnerable groups include Muhamashin, refugees, migrants, and IDPs who are excluded from the economic opportunities and social and tribal networks that provide support to the remainder of the population. Communities presenting multiple vulnerabilities are likely to be affected the most. Muhamashin people have been suffering from administrative, social, and economic discrimination for years. They are likely to be overlooked by local response actors and struggle more in the event of displacement.

Source: ACEPS (2019)

4. Climate change and the pressure on natural resources

Climate change and food insecurity

Climate change has differential regional effects on acute food insecurity mainly based on specific vulnerabilities of local food systems to extreme weather conditions. While most studies focus on the risks for availability via impacts on food production, a growing number of studies are addressing related issues of access (e.g. climate change and food prices), utilisation (e.g. climate change and nutritional quality), and stability (e.g. climate change and extreme events, such as conflict) (Bailey et al. 2015). Mbow et al. (2019) give a good overview of the current evidence on climate drivers relevant to food security.

Availability: Mbow et al. (2019) categorise climate drivers relevant to food production as follow: i) modal climate changes (e.g. shifts in climate envelopes causing shifts in cropping varieties planted), ii) seasonal changes (e.g., warming trends extending growing seasons), iii) extreme events (e.g., high temperatures affecting critical growth periods, flooding/droughts), and iv) atmospheric conditions for example, CO2 concentrations, short-lived climate pollutants (SLCPs), and dust. These drivers have all different outcomes on food security in different context, for example on crop and livestock production by changing the dynamics of pests and diseases, water resources, availability of pollinators (for certain crops).

Climate variability can contribute to acute food insecurity, such as in 2015-2016 when a strong El Niño contributed to regional shifts in precipitation in the Sahel region. Significant drought across Ethiopia resulted in widespread crop failure and more than 10 million people in Ethiopia requiring food aid (Huntington et al. 2017). Overall, in recent years, yields of staple crops such as maize, wheat, sorghum, and fruit crops, such as mangoes, have decreased across Africa, widening food insecurity gaps (Ketiem et al. 2017). Temperature affects most of the critical factors of livestock production, such as water availability, animal production and reproduction, and animal health (mostly through heat stress) Livestock diseases are mostly affected by increases in temperature and precipitation variation (Rojas-Downing et al. 2017).

Access: Most studies on climate drivers for accessibility of food focus on the impact on food prices. Studies, cited by Mbow et al. (2019), found that decreased agricultural productivity will depress agricultural supply, leading to price increases. Declining food availability caused by climate change is likely to lead to increasing food cost impacting consumers globally through higher prices and reduced purchasing power, with low-income consumers particularly at risk from higher food prices (Springmann et al. 2016; Nelson et al. 2018). All models project an increase in

the risk of hunger with a median percentage increase that could range from 1 to 183 million additional people at risk of hunger due to climate change (Hasegawa et al. 2018).

Utilisation: Degradation and spoilage of products in storage and transport can also be affected by changing humidity and temperature outside of cold chains, notably from microbial decay but also from potential changes in the population dynamics of stored product pests (e.g., mites, beetles, moths) (Moses et al. 2015). Mbow et al. (2019: 463) state that "there is medium evidence, with high agreement that food utilisation via changes in food safety (and potentially food access from food loss) will be impacted by climate change, mostly by increasing risks, but there is low confidence, exactly how they may change for any given place". Furthermore, there is increased CO2 results in lower nutritional quality (e.g., less protein, zinc, and iron).

Stability: Extreme weather conditions are predicted to become more frequent. For the period 2006-2016 the agricultural sector counted for 23% of the total natural disaster damage to assets and infrastructure and losses in production in all sectors for Asia, Africa, and Latin America (FAO, 2018). The FAO (2018) study shows that the costs of agricultural production losses over the same period are higher (31% of all sectors) than the damage to assets and infrastructure (16% of all sectors); furthermore, drought was by far the most damaging factor, responsible for 83% of the total damage and loss in agriculture as measured as a percentage of all sectors. The data also shows that between 2006 and 2016 crops suffered the most from floods (causing 65% of total damage and loss in the sector), livestock suffered mainly from drought (86% of total damage and loss), fisheries and aquaculture suffer mainly from floods (44%) and storms (38%), and the forestry sector suffers the most from storms (counting for 64% of all the damage and loss) (FAO, 2018).

Tigchelaar et al. (2018) model shows that climate change could increase instability in global grain trade and international grain prices, affecting especially the about 800 million people living in extreme poverty who are most vulnerable to food price spikes. During environmental disasters, **livestock holders** have been shown to be more vulnerable to food insecurity than their crop-producing counterparts because of limited economic access to food and unfavourable market exchange rates, triggering conflict (Nori et al. 2005). In Madagascar, Harvey et al. (2014) surveyed 600 small farmers and found that chronic food insecurity, physical isolation and lack of access to formal safety nets increased Malagasy farmers' vulnerability to any shocks to their agricultural system, particularly extreme events.

However, Lewis (2017) shows for Ethiopia that climate change as driver of acute food insecurity is not as clear. Although Ethiopia continues to experience regular acute food insecurity crises, often associated with drought events, Lewis (2017) argued that "the meteorology of these events is poorly defined and local populations frequently experience food insecurity crises in years when national rainfall and cereal production totals are high". Although it is clear from the data that climate variability has the greatest adverse impact in the most marginal livelihood zones in the drier east of the country, she concludes that looking at national, or even to some extent sub-national, rainfall variability is a "misappropriation of climate as a causal factor in food insecurity in Ethiopia". A more **nuanced view** is needed that includes the governance of food systems.

Pressure on natural resources

A review on climate change and food insecurity in the Middle East and Northern Africa finds that the main threat for food security is the growing competition between different water uses as

agriculture is struggling to compete for water with other industries including tourism, hydro-power, and municipal drinking water (Tull, 2020). Van Baalen and Mobjörk (2018) explore how climate change affects the risk and dynamics of **violent conflict in East Africa**. Conflicts around natural resources – land, pasture, water – are particularly frequent where livestock rearing pastoralists are involved. They identify four key mechanisms in East Africa: i) deteriorating livelihoods, ii) increased migration and changes in pastoralist mobility patterns, iii) tactical considerations among armed groups, and iv) elite capture of local disaffection.

In crisis and resettlement situations land rights can become insecure while competition and conflict over access and use of natural resources increase in number and severity. In a fragile and conflict context this may represent the difference between maintaining stability and relapsing into conflict (Moore, 2017; RFSAN, 2016). When people are **forced to move**, they abandon their physical assets such as land and property, and only carry their skills and movable assets such as livestock. Access to water becomes a critical problem, most particularly in areas where natural disasters (such as hydrological extremes) are combined with armed conflict. In such situations, traditional transhumance coping mechanisms are no longer viable (FAO, 2016a). Physical barriers, threats from armed groups, landmines and even poisoning have been employed to block communities' access to known water points (e.g. river base-flows, springs and functioning wells) in times of drought (FAO, 2016a).

Furthermore, various forms of tenure can create a **complex pattern of rights** and other interests, particularly when statutory rights are granted in a way that does not take account of existing customary rights (e.g. for agriculture and grazing) (FAO, 2016a). There is strong evidence of this in Darfur, where competition between pastoralists and farmers over the natural resource base has intensified as both groups have become increasingly dependent on strategies such as grass and firewood collection to replace pre-conflict livelihood strategies that are no longer possible (FAO, 2010). In Jubba Region in Somalia, increased competition over irrigated land, resulting from the conflict, led to a further marginalisation of the Bantu groups whose livelihoods depend on agriculture (Little, 2008). Similarly, in eastern Democratic Republic of the Congo, farmers moved from central Lubero to the forests of West Lubero to regain access to the land lost because of the conflict and institutional breakdown. Tensions with local communities and customary landlords led to marginalisation of newcomers (Raeymaekers, 2008). In Afghanistan, land is a problem as warlords introduced a feudal system where farmers have to give part of their produce to the warlords and grow opium for them (Hiller et al., 2014).

Understanding **gender dynamics** is critical, as a better understanding of gender inequalities in access to natural resources could explain their vulnerability to food insecurity. For many women, their autonomy depends on land – a loss of land means a loss of identity (FAO, 2016c). Furthermore, land rights can become subject to dispute during crises while formal legal systems and local legal institutions often are broken down during conflict or weak governance. IFDC (2010) described the situation in Kivu, DR Congo, where traditional land tenure arrangements mean that smallholders use plots that are officially owned by traditional leaders and large private owners, leading to land insecurity and hesitation on the part of users to invest in the land.

Climate change and conflict

In the context of this report, it is also important to mention the interconnectedness of climate change with conflict that could start a process triggering a food emergency or famine. This is

because climate change and conflict are a potential underlying driver of the other resulting in vulnerabilities for certain groups due to reduced resilience. However, **the literature on the impact of climate change on conflict is divided** (Price, 2019). This means that although the vulnerability to extreme weather conditions (that will increase in severity and frequency due to climate change) is particularly high in countries in conflict, the causal link between climate change and conflict is less clear. One study by the Centre for Global Development (Wheeler, 2011) shows that by looking at the overall vulnerability to severe weather conditions 13 countries with protracted crises are at the highest risk. Nearly all countries in protracted crises are in the top 25 of countries that are the most vulnerable for agricultural productivity losses due to climate change (topped by Somalia). The Global Report on Food Crises 2017 also signals the increasing vulnerability of countries in protracted crises to extreme weather conditions (FSIN, 2017).

East African data show that extreme rainfall variation in either direction — both too much or too little — increases conflict risks (Raleigh & Kniverton, 2012). Fluctuations in livestock prices and changes in local seasonal migrations, which are both influenced by rainfall, are associated with risks of violence (Maystadt & Ecker, 2014). However, recent attempts to identify climate change as a driver of large-scale armed conflict have been criticised, with the plea that connections are complicated and highly nuanced (Raleigh et al., 2015). Studies disagree on both the magnitude of the impact of climate change on conflict and the direction of the effect (Buhaug et al., 2014). However, as Price (2019) mentions, there is data that shows that the likelihood of conflicts increases with the length of drought periods (Von Uexkull et al., 2016). A recent literature review by Sida (2018, p.4) on the relationship between climate change and violent conflict summarises the general conclusion that “there is no direct and linear relationship…, but under certain circumstances climate-related change can influence factors that lead to or exacerbate conflict”.

One of the main conclusions is **the weak or broken institutions** that cope inadequately with natural disasters by reducing distress among the populations. For example, De Châtel (2014), argues that government policies, including bureaucrats’ long-term mismanagement of natural resources in Syria, were the cause of the conflict and not the persistent drought *per se*, as small farmers were neglected and impoverished combined with neglecting the humanitarian crisis and food price increases. With drought continuing in the region and without adequate interventions Syria could face continued food insecurity and conflict in the country.

In general, in fragile countries or protracted crisis, constraints, shocks or stresses often overwhelm the capacity of governance institutions and this may also reflect deficits of representation, legitimacy or accountability of these institutions, or lack of political will to address this problem. Lukas and Rüttinger (2016) also emphasise the complexity of the relationship between climate change, conflict and fragility, and that fragile states are particularly vulnerable. They state that climate change acts as a threat multiplier. It interacts and converges with other existing risks and pressures in a given context and can increase the likelihood of fragility or violent conflict.

Stites and Bushby (2017, p.8) also highlight this connection, adding that “many countries categorised as conflict-affected or fragile states are particularly at risk to the impacts of climate change ([e.g.] Bangladesh, Myanmar, Pakistan and Somalia[..]), with their most vulnerable populations at heightened risk”. This is because many poor and marginalised populations in rural areas often rely heavily on natural resources to sustain their livelihoods, which may be negatively impacted by climate change leading to out-migration and competition within these groups (Stites

& Bushby, 2017). As a result of these interconnections food insecurity situations can occur that can lead under certain circumstance to severe malnutrition and famine.

Box 5. Governance natural resources and adaptation to climate change in North-East Nigeria

Baliki et al. (2018) analysed some key climate and natural resource drivers of food insecurity in North-east Nigeria. They conclude that local institutions are not equipped well to deal with land conflicts. The local institutions regulating land and resource systems and mitigating local conflicts are intimately related to both food security, conflict, and the link between the two. A key challenge is how to study these topics empirically and not many household surveys exist that collect data that would allow to infer information about local systems and institutions. They also show that more understanding is needed to link extreme weather conditions (climate change) with food insecurity. While no extreme, large-scale weather shock has hit North-east Nigeria, it may still be that the links between food security and conflict vary slightly with climatic conditions across the regions, Baliki et al. (2018) argue. "The region is vulnerable to climatic shocks, so when one occurs, it may exacerbate these difference and add new channels that may fuel conflict".

Source: Baliki et al. (2018)

5. Social inequalities

Social inequalities and vulnerability to food insecurity

Food insecurity risk is an outcome of individuals' and households' vulnerability and resilience, which are shaped by **poverty, social inequalities, and discrimination** (Carter & Kelly, 2021). Often the poorest people are at highest risk, but in some cases, particularly conflict-related famines, vulnerability has been "more complicated" (Devereux et al., 2017). In their review Carter and Kelly (2021) show that systematic discrimination and marginalisation by gender, age, disability, sexuality, and ethnicity impacts negatively on people's livelihoods and assets, making them more vulnerable to food insecurity, and at times severe food insecurity. Howe (2018) mentions **limited assets** affect individuals' and households' ability to withstand potential disruptive factors, increasing their vulnerability to severe food insecurity and famine. He also finds that at the outset of a famine, some individuals and households are more vulnerable due to "gender, age, disability and other diversity characteristics" or biological vulnerability especially for "young children, the elderly, and sometimes males" (Howe, 2018: 146). "The breakdown of traditions of communal sharing, the rise in crime, and the emotional and physical changes associated with hunger ramify outwards and have implications for who is most vulnerable during the crisis and for the heightening of that vulnerability" (Howe, 2018: 147).

What the review by Carter and Kelly (2021) shows is that gender inequality is an important factor. In-depth analysis of FAO 2014 to 2018 data from the Food Insecurity Experience Scale revealed women are more likely than men to find access to food difficult "even when they have the same income and education levels and live in similar areas as men" (FAO et al., 2020: 24). There is an established evidence base linking women's increased vulnerability to food insecurity to gender inequities and multiple compounding disadvantages (Njuki et al., 2021). For example, **unequal access to and ownership of assets**, including land rights and productive resources; disproportionate representation in lower-paying, insecure jobs, with less autonomy over household decisions, or no income; and, discriminatory gender norms that restrict women's freedom of movement and burden women with the majority of unpaid caring responsibilities

(Njuki et al., 2021; Brody et al., 2014: 21; Botreau & Cohen, 2019). Nutrition is critical for prenatal/lactating women and infants with women more vulnerable to inadequate nutrition in food shortages (de la O Campus & Garner, 2014: 7).

Other social inequalities are also drivers of food insecurity. FAO et al (2019: 100) find that "indigenous peoples are disproportionately represented among food-insecure and hungry populations", and "are often affected by poor food security and nutrition. They frequently live in extreme poverty and in environments that have been damaged; or they have lost their land and no longer have access to traditional food sources." **Indigenous women** are often among the most vulnerable populations, facing marginalisation within their own communities (FAO et al., 2019: 99). Carter and Kelly (2021) also show that, although less is knows about their food security situation (including coping mechanisms), people with diverse sexual orientation, gender identity and/or expression, and sex characteristics; older people; vulnerable children and youth, excluded from important services, networks, and employment due to stigma and discrimination, with increased vulnerability to acute food insecurity.

Linking social inequalities with conflict and climate change

The literature finds a relationship between social inequalities, conflict, and risk of famine or acute food insecurity at the national and sub-national level. It highlights the importance of ethnicity as a factor affecting vulnerability in famines. In situations of conflict driven by political, ethnic and/or religious tensions and factionalism, starvation of civilians may be used as a method of warfare. Elver (2017) identifies that: "(i)n times of conflict, disadvantaged groups, such as children under 5 years of age, orphans, pregnant and lactating women, female-headed households, refugees and internally displaced persons, older persons, persons with disabilities, minorities and already marginalized communities suffering from social exclusion, tend to have less access to resources and the lowest coping capacities, leaving them most vulnerable to the risk of an inadequate diet. Pastoralists, nomadic peoples and indigenous communities are also vulnerable, with conflict having an impact on their access to land, fishing and hunting resources." **Relevant grievances** can include competition over land and water (such as between pastoralists and crop producers), or a lack of economic opportunities (with youth unemployment "consistently cited in citizen perception surveys as a motive for joining both rebel movements and urban gangs" (International Development Association, 2020: 3)). However, "the conditions under which certain group identities become relevant for mobilizing people for violence is still clear" (Bahgat et al., 2017: iv).

Similarly, "climate change impacts differ among diverse social groups depending on factors such as age, ethnicity, ability/disability, sexual orientation, gender, wealth, and class" (Mbow et al., 2019: 446). Mbow et al. (2019: 446) find "(p)overty, along with socioeconomic and political marginalisation, cumulatively put women, children and the elderly in a disadvantaged position in coping with the adverse impacts of the changing climate". Looking at women's increased vulnerability, Women Deliver (2021: 1) find gender inequality results in "unequal access to basic social goods and natural and financial resources, reduction in food security, unequal decision-making power, and barriers in building capacity to increase individuals' resilience to extreme weather events".

Box 6. Determinants of increased food insecurity in Ethiopia

The multiple causes of slow-onset and rapid-onset emergencies, resulting in changes in the vulnerability levels of specific groups and regions, for Ethiopia are a combination of climate-related

shocks (drought, erratic and limited rainfall), land degradation, population growth, stagnant technology (poor farming technologies) and shortage of farmland deteriorated food security (Abebaw & Betru, 2019; Endalew et al., 2015). Abebaw and Betru (2019) mention that factors like land holding, livestock holding, and off-farm activities, education of the household head, household income, and household size, adoption of yield enhancing technologies, access to irrigation, rainfall shock, and soil fertility status significantly determined the food security of the households. The coping strategies exercised by food insecure household were reducing the number and size of meal, borrowing cash and grain and receiving food aid, asset (i.e. animals) selling, participating in food for work programs, temporary family dispersal, off-farm and non-farm jobs, rent out land and mortgage land (Abebaw & Betru, 2019).

The current armed conflict in Ethiopia is an example of how such a conflict spirals into an acute food insecure situation. More evidence is needed to understand the causal links between the longer-term determinants of food insecurity with the conflict and how both sides in the conflict use food as a weapon of war.[13]

6. Economic shocks and volatile food prices

Food prices and vulnerability to food insecurity

A sharp surge in food prices is a major driver of acute food insecurity, with increased attention by scholars after the food price crisis in 2007 (Abdallah et al., 2021; Gustafson, 2013; Global Panel, 2016; Andreyeva et al., 2010, Green et al., 2013).[14] The main reason is that poor and vulnerable households, especially in low-income countries, have a **high spending of their total income on food**. Research shows that, albeit with great variations, food purchase is amongst the most important expenditures for most households, and that it is greater among poorer households (Frayne et al., 2010; Tacoli, 2017). In sub-Saharan Africa, food expenditures are amongst the highest and count for 50-70% of all household spending (Frayne et al., 2010).

The inability of households to ensure employment that provides adequate income, and a sustained livelihood hence constitutes a primary challenge in ensuring food security (Crush and Frayne, 2010). Unanticipated increases in food prices require dietary changes that often result in poorer nutrition as they can buy less food for the same income, often resulting in informal debts, which increases vulnerabilities as the crisis continues or a next shock occurs rapidly after (Webb, 2010). In **rural areas**, where households rely on low-productivity agriculture, a sudden rise in food prices is not beneficial either as they are net purchasers of food and increases uncertainty regarding both output and consumption. Where a price decline can lead to a fall in rural incomes, price rises often reduce the quantity and quality (diversity and nutrient density) of foods consumed (Global Panel, 2016).

[13] Author's own observation after reading news articles and recent food insecurity reports from Ethiopia. No studies could be found during the timespan of this research that gave a comprehensive overview of how the current armed conflict causes acute food insecurity in the country.

[14] Over the past 20 years, there have been three periods of sharply rising global food prices – 1996 to 1999, 2007/08 and 2010/11. Higher price levels and year-to-year volatility have persisted since 2008.

Continued **urbanisation**, in combination with urban inequalities and poverty, in LMICs makes predictions that (acute) food insecurity will become not a rural problem but increasingly an urban problem. Studies from LMICs show that the urban poor depend almost entirely on the cash economy for their food needs, while at the same time they are struggling to obtain stable incomes, as social safety nets are often unavailable for them (Ruel, Garrett and Yosef, 2017). This makes them extremely vulnerable to upward food price volatility, as witnessed during economic crises. Rising food prices, sudden price shocks, and changes in income have a tremendous impact on poor residents' access to affordable and nutritious food (Caputi, 2013). Although children under five years of age living in urban areas in LMICs are generally less likely to be stunted and underweight than children living in rural areas (da Silva et al. 2018; Development Initiatives 2020), global data also show that still one quarter of children under five living in urban households are stunted, compared to one third of children in rural households (UNICEF, 2013) and in 2016, the Global Nutrition Report identified 13 countries in which urban stunting rates were above 30 per cent (IFPRI, 2016). Yet, critically, such global figures do not take account of the intensity of intra-urban nutritional inequalities. Children with low socioeconomic status in urban areas have higher risk of being stunted, compared to those with high socioeconomic status. In several countries, the rate of stunting in children living in slums is even higher than in rural areas (Ahmed et al., 2007). Analysis also shows that overall stunting prevalence in LMICs decreased more rapidly among rural than for urban children (da Silva et al., 2018).

It has been estimated that it is the most vulnerable group that disproportionately absorb price shocks, particularly women who have **lower job security** in the informal sector, childcare demands at home, and in rural areas often involved in low-productivity agriculture. As such, female-headed households are also among the most vulnerable, they are harder hit by food price increases and benefit less as producers from price increases (Gustafson, 2013). As consumers, these households tend to spend more of their income on food than male-headed ones, so higher prices affect their total expenditures more. As producers, they face a number of gender-related constraints, such as more limited access to credit and land, which limit their ability to produce more food for the market and take advantage of higher prices (Gustafson, 2013). Mkhawani et al. (2016) shows for South Africa that the majority of poor female-headed households changed their eating habits and food purchase strategy due to food price rises, mainly coping by trying to buy more food in bulk, and forcing them to resort to cheaper or less nutritious foods. A study in Kenya models that households in low productivity agriculture regions struggle more due high food prices resulting in poorer health outcomes (Grace et al., 2014).

Food prices as part of a complex mix of drivers

Hence, the literature highlights that food prices in combination with poverty, income inequality, climate change, and economic shocks (income losses, job insecurity) have detrimental nutrition and health outcomes. The United States' Office of National Intelligence (2015) argues that macroeconomic conditions combined with changing climate effects are likely to continue producing price spikes up to 2025 along with an "increase in the risk of price volatility."

The Food and Agriculture Organisation (FAO, 2021) announced that global food prices have hit their highest level in a decade in 2021, jumping 40% in May compared to the same period last year. The FAO projects this combination of supply chain constraints, high food prices, and an economic downturn (particularly hitting incomes of informal sector workers) due to the pandemic,

will increase the number of hungry people by up to 130 million, taking us back to hunger levels not seen in half a century. The main causes of the recent price hike are diverse, with increased demand for food in China, drought in important food producing countries (e.g. Brazil), and growing use of food production for non-food products (e.g. biofuels) (Smaller, 2021). The compounding factor to explain rising food insecurity during the pandemic are a combination of **constraints to earn incomes**, which has created demand shocks, with **price increases** of meat, sugar, oils & fats, dairy products, and cereals, as the FAO price index shows. Data from FAO Big Data Price Monitor shows that in most LMICs, food prices were considerably higher compared to pre-COVID19. The picture emerging from the literature suggests an increased consumption of cheap sources of calories, reducing or eliminating more expensive and nutrient-rich foods, or reducing the number of meals, all of which can lead to very poor-quality diets and micronutrient deficiencies (Headey & Ruel, 2020). The first evidence indeed indicates that reductions in consumption of nutrient-rich foods has been greatest for fruits and vegetables, dairy, and meat in both high-income and LMIC contexts (Tesfaye et al., 2020).

This situation will add to the constraints on poor households to afford a enough healthy diet (Carducci et al., 2021). The first data on the food-insecurity and undernourishment situation confirms that the food and nutrition security situation has been worsening due to the COVID-19 crisis. Countries like Nigeria, Ethiopia and Kenya all saw an increasing “stressed” population during 2020 (FSIN and Global Network Against Food Crises, 2020). Projection estimates suggest that COVID-19 and the related economic recession could, by 2022, result in an additional 9.3 million children wasted, 2.6 million stunted and 168,000 child deaths in LMICs, in the absence of appropriate response (Osendarp et al., 2020).[15]

The literature often notes that excessive price volatility is a key driver of food insecurity in the medium to longer term as it not only affects purchasing power, but also drives other changes that could increase vulnerabilities in the food system. As Kharas (2011) explains, “the crux of the food price challenge is about price volatility rather than high prices per se. […] it is the rapid and unpredictable changes in food prices that wreak havoc on markets, politics and social stability.” Rapid changes in food prices make it hard for farmers to take decisions about investments in production because of uncertainty about future prices. They also make it difficult for traders to determine appropriate stock levels and set prices, and for consumers to make choices about which foods to buy, and when. Consumers may also try to hoard supplies to manage their uncertainty, thus contributing to greater market volatility (Global Panel, 2020).

Food prices and conflict

Another section of the literature on food prices and food insecurity looks at the causal causes of high food prices with civil unrest and conflicts which together make the food security situation worse (Ismail, 2021). This is relevant in the context of underlying connectedness of the causes of acute food insecurity. While the exact causal effect of the relationship between food prices and

[15] The last time such a price spike happened was during the food prices crises of 2008/2009 during the financial and economic crisis, when prices spiralled high mainly through non-supply factors, such as growing shares of food channelled into biofuel production, processing value-added commodities, and feedstock. This was the result of changing demand that did not reflect on the nutrient needs of undernourished people (Webb, 2010). The situation continued as some food exporting countries responded by restricting exports of food staples, foreign investors and financial sector responded with buying fertile land and further speculation on commodity markets.

conflict might be difficult to find and is very context specific (Ismail, 2021), the outcome is that specific groups become more vulnerable to food insecurity and through a complex mechanism can result in acute and severe malnutrition and famine.

Food shortages are historically associated with popular uprisings and the wave of protest and unrest, particularly in urbanised regions in several LMICs around the world, sparked renewed interest (Smith, 2014; Van Weezel, 2016). However, the literature examining **the links between food prices and political instability found conflicting results** (Ismail, 2021; Weinberg & Bakker, 2015). Studies have argued that the relationship between food prices and protest or violent incidents is very complicated (Martin-Shields & Stojetz, 2019; Raleigh et al., 2015). The main difficulty is that conflict can affect food prices and food prices can exacerbate conflict.

7. References

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About this report

This report is based on six days of desk-based research. The K4D research helpdesk provides rapid syntheses of a selection of recent relevant literature and international expert thinking in response to specific questions relating to international development. For any enquiries, contact helpdesk@k4d.info.

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