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# Leveraging Agriculture for Nutrition in Fragile Contexts

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**About LANSA**
Leveraging Agriculture for Nutrition in South Asia (LANSA) is an international research partnership. LANSA is finding out how agriculture and agri-food systems can be better designed to advance nutrition. LANSA is focused on policies, interventions and strategies that can improve the nutritional status of women and children in South Asia. LANSA is funded by UK aid from the UK government. The views expressed do not necessarily reflect the UK Government's official policies. For more information see www.lansasouthasia.org

# Contents

# Abstract

Fragility, resulting both from violent conflict and/or severely adverse environmental conditions linked to climate change, fundamentally alters the linkages between agriculture and nutrition outcomes. This paper argues that these alterations occur not only because of the political economy and other logistic constraints placed on agriculture and nutrition in contexts of fragility, but also because the state may or may not have the capacity or political will to undertake the different degrees of flexible and innovative functioning required to administer and implement interventions in such contexts. A rethinking of where and when the state does and does not have the willingness or organisational capacity to exercise effective control and implement programmes is needed in order to determine the full extent of whether and how agriculture can be leveraged for nutrition.

# 1. Introduction

The agriculture-nutrition connect occurs through several pathways (as summarised by Kadiyala et al. 2014; Meeker and Haddad 2013): most directly, agriculture is a source of food. However, agriculture is also a source of income for food and non-food expenditure, while agricultural policy and food prices affect food consumption. Women's participation in agriculture and intra-household decision making, including resource allocation, also significantly impacts nutrition outcomes, childcare arrangements and the general health status of household members. Based on a review of relevant literature published in the last 20 years, as well as an engagement with the findings of studies conducted under the Leveraging Agriculture for Nutrition in South Asia (LANSA) consortium, this paper outlines how fragility, resulting both from violent conflict and/or severely adverse environmental conditions linked to climate change, fundamentally alters each of these pathways in the context of South Asia.

This paper argues that these alterations occur not only because of the political economy and other logistic constraints placed on agriculture and nutrition in contexts of fragility, but also because the state may or may not be able or willing to undertake the different degrees of flexible and innovative functioning required to govern and implement interventions in such contexts. As such, this paper contends that fragile contexts present structural obstacles to leveraging agriculture for nutrition (including, for example, permanent shifts in livelihood patterns due to people selling off assets, including land), and these cannot simply be 'worked around'. Instead, a fundamental rethinking of where and when the state does and does not have the willingness or organisational capacity to exercise effective control and implement programmes is needed in order to determine the full extent of whether and how agriculture can be leveraged for nutrition.

The review of the literature for this paper was undertaken in three steps. The first was a review of the literature on the politics of agriculture, nutrition and their linkages. The second was a broader review of the literature on fragility. The third was a review of the literature published by LANSA for specific references to agriculture-nutrition linkages. For the first two steps of the review, the criteria of inclusion/exclusion were as follows:

- Source: Web of Science, ScienceDirect, JSTOR and Google Scholar
- Research domains: (reverse engineer)

- Research areas: (reverse engineer)
- Search terms: "agriculture AND policy"; "agriculture AND politics"; "agriculture AND governance"; "nutrition AND policy"; "nutrition AND politics"; "nutrition AND governance"; "agriculture AND nutrition"; "agriculture AND nutrition AND linkages"; "agriculture-nutrition"; "agriculture-nutrition AND linkages"; "fragility"; "agriculture OR nutrition AND fragility"; "agriculture OR nutrition AND conflict"; "food OR agriculture AND conflict"; "nutrition AND conflict"; "food security AND nutrition".
- Peer-reviewed materials and reports
- Published after 2000
- Priority regions: Afghanistan; Pakistan; India; Bangladesh; South Asia
- Language: English

The choice of limiting the search category to post-2000 was deliberate in order to keep the list of articles reviewed to a more manageable size. From initial searches, 98 articles and reports were identified with the search terms based on their abstracts, introductions or key words relevant to our study. From these, 38 were used in the narrative analysis. Out of the 27 published reports, articles and research outputs of the LANSA consortium, 10 were identified to have specific references to agriculture-nutrition linkages, and included in the analysis. This material was contextualised within feedback from experts and stakeholders, and set in relation to relevant development paradigms and debates, pertaining in particular to the role of the developmental state. To do this, the paper refers to literature that is beyond the date range used for the systematic review, and that reaches beyond the regional focus on South Asia.

# 2. Fragile Contexts

## 2.1 Defining fragility

Although 'fragile states' have come to be associated with violent conflict, fragility itself need not be restricted to armed conflict or immediate post-conflict situations alone (Stewart and Brown 2009). Fragility may also arise as a result of natural disasters and environmental stresses linked to climate change. The UN Food and Agriculture Organization (FAO 2010) describes persistent fragility as occurring in areas or regions that are "in protracted crisis" and characterised by recurrent natural disasters, conflict, persistent food crisis, a breakdown of livelihoods and/or insufficient institutional capacity to respond to the various crises. Approaching fragility from the point of view of service delivery, the Department for International Development (DFID) locates fragility as occurring where and when "the government cannot or will not deliver core functions [including service entitlements, justice and security] to its people, including the poor" (DFID 2005)[2] The Committee of World Food Security (CFS) states that countries facing such chronic crises must be considered a special category, requiring context-specific interventions by the development community.

It is also important to recognise the interplay between climactic shocks and violent conflict (Homer-Dixon 1999).Events such as the floods in Pakistan in 2010-11 direct our attention towards the

[2] Under this definition, non-conflict countries that are failing to ensure service entitlements may also count among fragile states, while countries that are in conflict but are nonetheless providing an acceptable level of service entitlements to the majority of the population may not be regarded as fragile. The OECD broadens the definition by characterising fragility in terms of an inability to "develop mutually constructive relations with society" alongside a weakened capacity to carry out basic governance functions (OECD 2012).

potential interactions between political insecurity, economic vulnerability and the impact of natural disasters (Harris et al. 2013). Between 2005 and 2009, more than 50 per cent of people affected by natural disasters lived in conflict-affected countries. This number was around 80 per cent in 2006 and 2008 (Kellett and Sparks 2012). Jaspars and O'Callaghan (2010) find that people living in fragile and conflict-affected states find it harder to cope with natural disasters given the impact of violence and instability on health, basic service provision, social cohesion, mobility opportunities and livelihoods.

Given that fragility can also occur in particular periods of time or in specific sub-national or even cross-border areas where "states or institutions lack the capacity, accountability, or legitimacy to mediate relations between citizen groups and between citizens and the state" (World Bank 2011: xvi), it makes little analytical sense to spatially or temporally bind the concept of fragility to national borders. In other words, there are two interconnected components that define fragile contexts: these are countries, regions *or* areas, that are characterised by (1) natural *or* human-induced protracted crises, and (2) a limited capacity or political will to respond.

Today, 1.2 billion people live in countries affected by fragility.[3] In the 22 countries identified by FAO as being in protracted crisis (or containing areas in protracted crisis), more than 166 million people are undernourished, representing nearly 40 per cent of the population of those countries and nearly 20 per cent of all undernourished people in the world. In these contexts, fundamental human needs go unsatisfied: women are unsafe, children are malnourished and not in school, youth lack opportunities to build their livelihoods, and communities are divided and insecure. As such, the risk of future onset, or further worsening of the causes of fragility, also require special attention in identifying relevant interventions for resilience.

# 3. The Role of the 'Developmental State'

## 3.1 What the state can do – defining state capacity

Understanding the role of the state in leveraging agriculture for nutritional outcomes involves a balancing between what the state *ought to do, what it can do,* and *what it is willing to do*. The role of the state and wider perspectives on governmentality are critical factors in understanding the developmental impacts of both agriculture (Harriss-White 1996) and nutrition (Nisbett et al. 2014). Successfully leveraging agriculture for nutrition hinges on the capacity of governments to create enabling environments, defined by Gillespie et al. ( 2013: 2) as "political and policy processes that build and sustain momentum for effective implementation of actions that reduce undernutrition". That is, enabling environments are shaped by a range of factors, including the availability of knowledge and evidence and resources, and a failure in any one of these areas can affect a state's capacity to respond to fragility. Indeed, state and institutional capacity are core concepts in understanding the political-economy of development (Evans et al.1985; Lauridsen 1993), and it is widely recognised that state institutions exert considerable influence on developmental outcomes as well as on civil conflict, democratic consolidation, and regional or international security.

[3] See http://www.worldbank.org/en/topic/fragilityconflictviolence/overview#1

The 'developmental state' (as in Leftwich 1995), then, *ought to* play a role in leveraging agriculture-nutrition linkages. However, this normative position needs to be separated from objective understandings of what the state *can do*. As a starting point, state capacity can broadly be defined as "the ability of state institutions to effectively implement official goals" (Sikkink 1991). This definition avoids normative conceptions about what the state ought to do or how it ought to do it (Hanson and Sigman 2013). Instead, it utilises the notion that capable states may regulate economic and social life in different ways, and may achieve these goals through varying relationships with social groups. It also recognises the duality that on the one hand, leadership at both the national and sub-national levels is fundamentally important for creating momentum behind state interventions, but on the other hand, inadequate or disjointed leadership can also lead to problems in addressing developmental challenges (as in relation to malnutrition in Gillespie et al. 2013).

In a similar vein, Cavatorta et al. (2015), in a study of five Indian states that account for a sixth of the world's stunted under-5s, are able to show that it is important to recognise cross-state differences in institutions and policy-making in explaining disparities in child nutrition outcomes (height-for-age). Interestingly, initial endowments explain surprisingly little. Superior policy-making (in the state of Tamil Nadu, for example) as well as cross-state variations in institutions, social capital levels and political makeup are shown to have significant value for empirical research on nutrition. This occurs at multiple levels, involving multiple sets of actors, and is dependent on a variety of structural, socio-political and cultural factors. At the macro-level, this implies that state capacity to cope and willingness to adapt when faced with environmental- and conflict-related shocks of national and regional actors might be simultaneously dependent on the nature of resource and asset bases, food production systems and available technologies on the one hand, while also on the prevalence and extent of the rule of law or any other pre-existing governance arrangements on the other. Macro-level political commitment is therefore important in countering the invisibility, irreversibility and multi-sectorality of issues such as undernutrition in fragile contexts, as also to enable macro-level actors generate adequate and timely responses.

At the micro-level, and depending on the local conditions of fragility, farmers and households will undertake a combination of activities to reduce their exposure to fragility, depending on local conditions.  . Households make agricultural and consumption choices that are based on their knowledge, and deficiencies in knowledge can therefore lead to sub-optimal household choices (Fitzsimons et al.2013). One commonly-evidenced method is the shift in income sources to protect consumption. This also significantly impacts an individual farmer's access to savings and can have broader consequences on prevailing norms and values related to consumption. Agricultural markets also tend to be weaker in fragile contexts, and over time, farmers may switch to subsistence agricultural production to protect income and become less visible. For example, in Columbia farmers and households cut back land use on perennial crops and pasture, and withdrew from market activities in order to lower their risk and exposure to conflict (Arias et al.2013). Similarly, when exposed to risks of climatic shocks, farm households can manage risk through diversification by engaging in a variety of economic activities, by farming plots in different locations, or by letting some household members migrate to a city to participate in the urban economy (Gunning 2012). Another method is the sale of assets. Farming assets can become liabilities in situations of conflict because they are signs of wealth (Rockmore 2013). One strategy to mitigate this risk is the selling of livestock. Because livestock like cattle and sheep are hard to conceal, their exposure may make

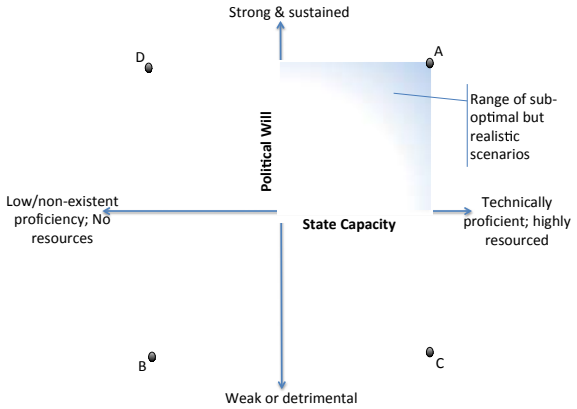
farmers more easily targeted. Verpoorten (2009) shows that cattle sales in Rwanda increased during times of conflict to stabilise household consumption and minimise the threat of violence.
Just as at the macro-level, state actions and interventions at the micro-level — like for example, the transfer of knowledge or assets, insurance provision, securing access to markets, setting food prices (particularly of staples) or providing and securing agricultural infrastructure — have direct and important impacts on risk aversion and other behavioural dimensions of agriculture and nutrition (see Timmer 2012, 2014).

## 3.2 What the state is willing to do – defining political will

It is a fallacy that the effective administration or 'management' of development is essentially a technical or practical matter. It has long been established that development is fundamentally a political matter (Leftwich 1994).More specifically, FAO — in its strategic framework and mid-term plan for 2014-17 — highlights political will as one of the necessary conditions for the eradication of persistent hunger, food insecurity and malnutrition (FAO 2012). te Lintelo and Lakshman (2015) use 'political will' and 'political commitment' interchangeably, and show that both these concepts have been central to the main development debates over the past two decades. Intriguingly, political will is both a central concept, and yet, one that is difficult to define (Thomas and Grindle 1990).

Post et al.(2010) provide a pragmatic approach to defining political will by addressing several fundamental questions about its nature: whether political will is a binary or a continuous concept; whether it is an individual-level or group-level concept; whether it incorporates issues of capacity; and whether it is a universal concept. They find that political will has both binary and continuous properties, and argue that it relates to political and policy outcomes that engender a social collective, and therefore involves aggregating preferences in such a way that is meaningful for outcomes in political processes. They further argue that political will must also consider whether a jurisdiction has the ability and resources to implement an outcome. Finally, because political will involves a complex aggregation of preferences, it also varies across places because of differences in a range of contextual parameters including institutions and prevailing local norms.

For our purposes, it is heuristically useful to illustrate how state capacity and political will interact through the following 2x2 matrix:



We can see that the matrix yields four extreme scenarios: Scenario **A** is characterised by a strong and sustained political will to pursue a development objective in conjunction with a state that is technically proficient and resourced to deliver that objective; scenario **B** is the mirror opposite of **A** and is characterised by a non-existent political will and a weak capacity to deliver a particular objective. We might also think of such a scenario as comprised of a strong will and capacity to pursue an alternative objective that is detrimental to the development objective in question (for example, a strong will and capacity to persecute a particular population through war or other policies). Scenario **C** is characterised by a strong political will to pursue a development objective, but a weak capacity to deliver it; and finally, scenario **D** is characterised by a strong state capacity to deliver an objective, but without the political will to back it. If **A** is an unrealistic ideal, it is possible to conceive of a variety of sub-optimal, yet more realistic, situations wherein the combination of some degree of political will (that is restricted to a sub-national body or only through particular political mandates, for instance) and some degree of state capacity (that is without cutting edge technical proficiency or piecemeal resources, for instance) can yet set in motion processes that lead towards the intended outcome.

# 4. Governance of Agriculture and Nutrition in Fragile Contexts

Developing a social contract in a fragile context is necessarily the product of "on-going explicit and implicit negotiation between different interest groups and a range of formal and informal power-holders, [while] the resultant contract will not be a static agreement but will be subject to renegotiation and changes in circumstances" (Fooks 2013: 4). Translating the macro- and micro-level pathways the state can leverage agriculture for nutrition in fragile contexts, therefore, requires special attention. While the drivers of violent conflict, natural disasters and environmental stresses are distinct in many obvious regards, a common result is a weakening of the state, either through the direct restriction of state functioning or the indirect limits placed on its capacity and legitimacy to govern (Vallings and Moreno-Torres 2005). At the same time, the state might display varying degrees of willingness to engage in governing fragile areas by virtue of being a party to the violent conflict, or lacking the resources to adequately engage in environmentally fragile areas, for example. It is therefore illustrative to preface the discussion of how the pathways through which agriculture can be leveraged for nutrition are altered in fragile contexts with a brief description of the direct impacts of fragile environments on agriculture and nutrition.

## 4.1 Agriculture and nutrition in fragile ecosystems

The impacts of natural disasters and environmental stresses on agricultural output are most obvious: some ecosystems can cope with wide variations in climatic conditions and land use impacts whereas others are much more sensitive to any environmental change. The effects of small shifts in rainfall patterns or ambient temperatures can often do great harm to fragile environments and these effects can act as indicators of both idiosyncratic and covariate risks (Günther and Harttgen 2009).The growing global food demand will need to be met against the backdrop of the change in climatic conditions, putting even more strain on fragile ecosystems. These changes will affect crop growth and livestock performance, the availability of water, as also fisheries and agriculture yields (Meeker

and Haddad 2013). Severe droughts, higher temperatures or unpredictable rainfalls can negatively affect crops and livestock. Cash crops are particularly affected as they tend to be more sensitive to the regularity of seasonal rains and temperature. In fragile ecosystems, their failure can leave households and farmers in situations where they must resort to subsistence farming or non-farm income generation opportunities. The same can be said for livestock. Owning livestock is known to contribute to a nutrient-rich diet, but drought and desertification negatively affect grazing land and the availability of feedstock. Hoddinott (2006) provides evidence that in conditions of drought, livestock-rich households are more likely to sell livestock in order to maintain their consumption. In contrast, livestock-poor households are much less likely to sell livestock, and instead massively destabilise their consumption. The broader impacts of such behaviour places new strains on food availability (in terms of production) and accessibility (through pricing).

The degradation of arable and pasture lands also directly constrains agricultural yields and the availability of nutrients, while increasing the competition for food, and therefore impacts food security negatively (Roetten and Krawinkel 2000). In conditions of environmental fragility, increased pressure on land impacts farming practices insofar that farmers are less likely to allow their land to fall fallow because of the increased pressure to produce food for consumption and income. These changes in farming practices can be very rapid (Solomon et al. 2007).

## 4.2 Agriculture and nutrition in contexts of violent conflict

Agriculture and conflict are intrinsically linked. Historically, many protracted conflicts have had their roots in the subjugation and class struggles that play out in agrarian and land markets. For example, Banerjee and Iyer (2005: 1198), among many others, trace the roots of the Maoist peasant uprisings in India to the exercise of arbitrary powers by landlords over "property, and not infrequently, the body of the peasant". Equally, the impacts of violent conflict are also transmitted to agricultural production. This occurs through two channels: through the direct shock of violence and the indirect impacts of uncertainty brought by the conflict (Arias et al. 2013). The most direct and immediate impacts occur as a result of the loss of life and destruction of farmland and infrastructure like roads, irrigation systems and electricity networks. These impacts are compounded by a disruption to food and financial markets, affecting both consumers and producers (Suleri et al. 2016). Often, crops, livestock and harvests and food reserves are also physically destroyed during conflict (Justino 2012). As a result, many conflict situations are characterised by widespread malnutrition, particularly among vulnerable groups (e.g., children, women and the elderly), and this can be directly traced back to inadequate dietary intake and disease (ibid.). Violent conflict also breeds uncertainty, and as a result, households reduce land allocated to perennial crops, increase production of seasonal crops and pasture, and cut back investments when in contact with intense conflict (Arias et al. 2013). However, longer-term impacts are more complex as households seem to learn to live amidst conflict (Justino 2012) and though total agricultural production might be lower because of conflict, investments in agriculture may rebound under protracted situations.

This can be seen, for example, in the impacts the occupation by the militants and the military operation on fruit and vegetable supply chains in the Swat Valley in Pakistan's Khyber Pakhtunkhwa (KP) province (Suleri et al.2016). The conflict severely restricted traders' access to markets, damaged roads and infrastructure, and increased transport costs. Farmers had to leave their homes and leave their crops on the verge of harvest. When they returned post conflict, most of the crops

were damaged. Farmer-coping strategies hurt consumers as they translated into reduced scale leading to higher prices, and changed terms of trade from credit to cash, while the less than market price for livestock hurt farmers' ability to cope. Though there was a post-conflict agricultural shift towards high-value crops, however, most farmers and transport operators migrated to other districts, improving their down-country linkages. Counter intuitively, this allowed for a stronger supply chain, thus showing that post-conflict interventions that take advantage of newly-formed linkages can restore or even improve supply chain linkages.

Conflict also aggravates nutritional insecurity, but the impact does not fall evenly on all people affected by the conflict: some do well out of conflict, some live in conditions of fear and extreme destitution, while others simply get by (Justino 2012: 2). Levels of resilience often depend on the type of coping strategies that people are able (or allowed) to access (ibid.). The mass displacement of people during conflict can cause shortages of food as farmers and pastoralists flee from violence, resulting in reduced food supply from food-producing areas and increased demand in relatively safe urban areas. The outcomes of this are that high demand and low availability drive up food prices, drastically increasing the prices of nutritious food (Breisinger et al. 2014). However, economic activity does not take place separately from social relationships, but is deeply embedded in them. The impacts of conflict are therefore extenuated as socio-economic relationships are damaged. This is seen in Nangarhar, Afghanistan, where several informal systems govern the rural onion market. Specifically, the most salient are social networks that determine trade relationships and access to informal credit schemes, like the powerful local traders in Jalalabad who have formed associations and are politically connected. Minoia et al. (2015) find that the big traders set local prices, control access to market information, and actively reduce income opportunities for farmers and small traders by stockpiling goods and regulating cash exchange. The market functions on relationships of trust, with no up-front cash exchange. This means that the market is socially regulated and has exclusionary effects for those lower on the production chain. The impact of persistent conflict on socio-economic relationships in Nangarhar has meant that access to credit and market information are no longer the main constraints on growth. Rather, it is the practices of a trade elite that largely operates on informal credit and relationships of trust based on close personal networks (ibid.)..

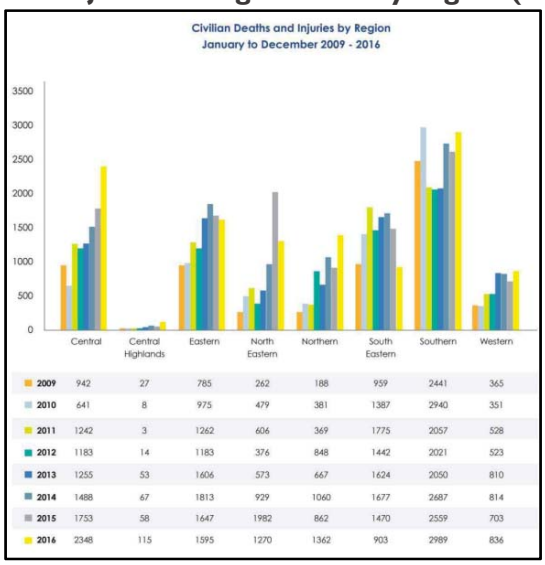
Additionally, violent conflict negatively affects nutritional outcomes because of reduction in health services, leading to the higher risk of disease outbreak. Overcrowding in urban and safe areas, coupled with diminished health service capacity, increases the probability of an outbreak of infectious diseases, such as diarrhoea, that negatively affects nutritional outcomes. Thus, conflict adversely affects agricultural production through the destruction of crops, livestock and agricultural capital, driving up food prices and reducing the availability of nutritious food. Migration to safer places causes increased population density. This, coupled with diminished health service capacity, can lead to increased risk of disease that can lead to reduced nutritional outcomes.

# 5. Recent Evidence on the Impact of Fragility on Agriculture-Nutritional Linkages in South Asia

## 5.1 Conflict-related events

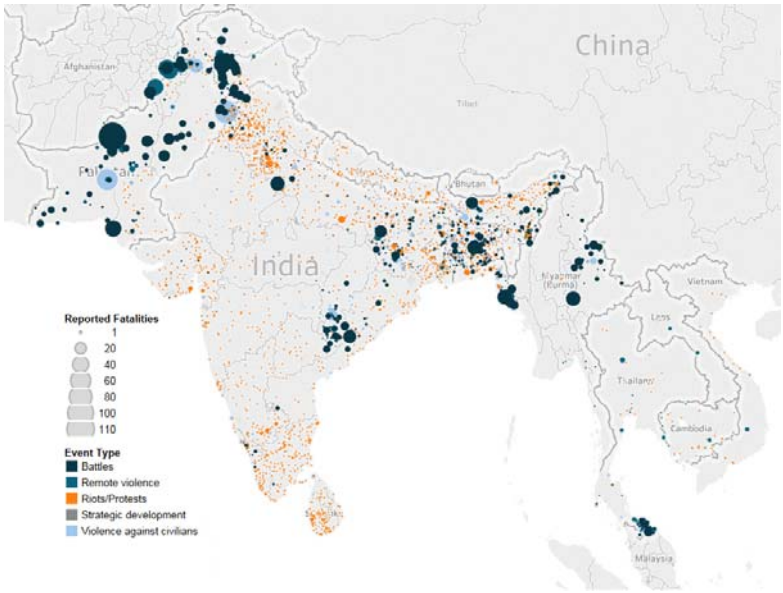
In South Asia, conflict and political instability are spread unevenly across the region. Nevertheless, it does need to be recognised that while conflict-related events are most prevalent and most severe in Afghanistan (as seen in **Figure 1**), various sources corroborate the significant presence of conflict (and conflict-related) events in *all* LANSA countries (**Figure 2**).

**Figure 1: Civilian deaths and injuries in Afghanistan by region (2009-2016)**




**Source: Protection of Civilians in Armed Conflict Annual Report 2016**

**Figure 2: Number of reported fatalities due to conflict and violence in the rest of South Asia by location, 2015**



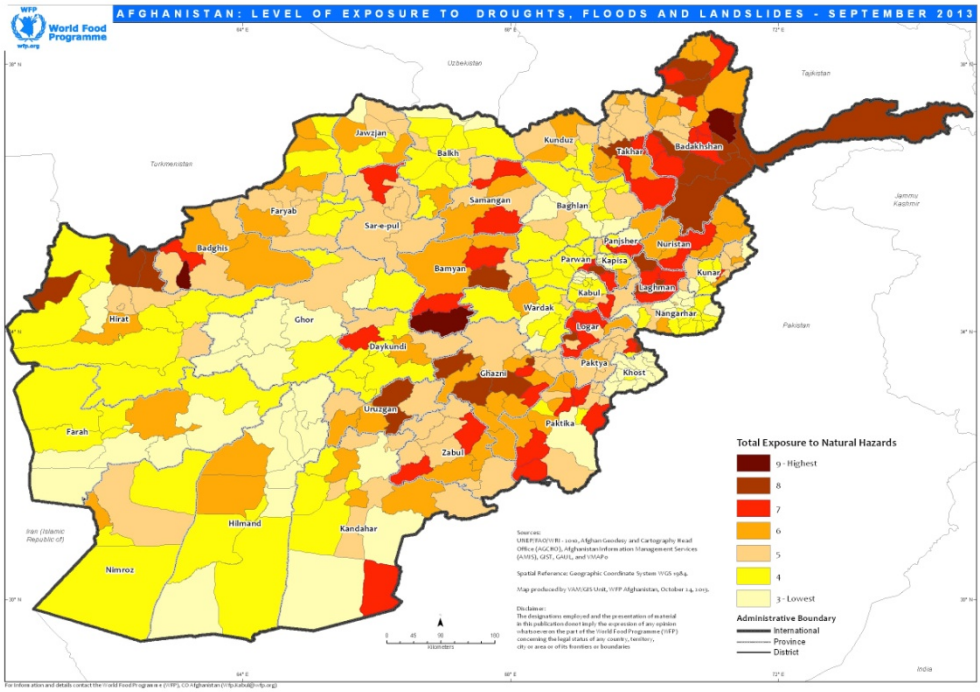

**Source: ACLED 2016**

## 5.2 Vulnerability to climate-related events

Afghanistan is located in a zone of high seismic activity and is prone to earthquakes, flooding, drought, landslides and avalanches. The north and northeast of the country experience frequent earthquakes, and these often trigger landslides. In the south and southeast, floods are common in the spring with the melting of the snow. Since 2000, nine major earthquakes have occurred, and an estimated 6,000 families (over 42,000 individuals) across 21 provinces have been affected by avalanches, flooding, landslides and heavy snowfall since February 2014. Nevertheless, as shown in **Figure 3**, the level of exposure to such risks varies significantly at the province and district level.

Several regions in the rest of South Asia are also highly vulnerable to flooding. In 2010, heavy monsoon rains in the Khyber Pakhtunkhwa, Sindh, Punjab and Balochistan regions of Pakistan caused severe flooding that affected approximately one-fifth of Pakistan's total land area. In Bangladesh, an estimated 20 per cent of the total land area (3 million ha) is flooded annually, and this can increase to about 70 per cent in extreme cases (Mirza 2002). Ironically, water scarcity is a concurrent problem as glacier melt accelerates in the Himalaya, Karakoram and Hindu Kush mountain ranges. Ghazi et al. (2016) identify water scarcity as a potential threat to peace and security in South Asia. In India, two consecutive years of severe drought have led to water shortages in as many as 10 states, forcing authorities to post armed guards at dams in order to prevent desperate farmers from stealing water. In Afghanistan, drought has driven some young men to join armed groups as the only way to provide for their families. Pakistan is also facing acute shortages as groundwater supplies are being rapidly depleted.

**Figure 3: Levels of exposure to droughts, floods and landslides, Afghanistan, 2013**

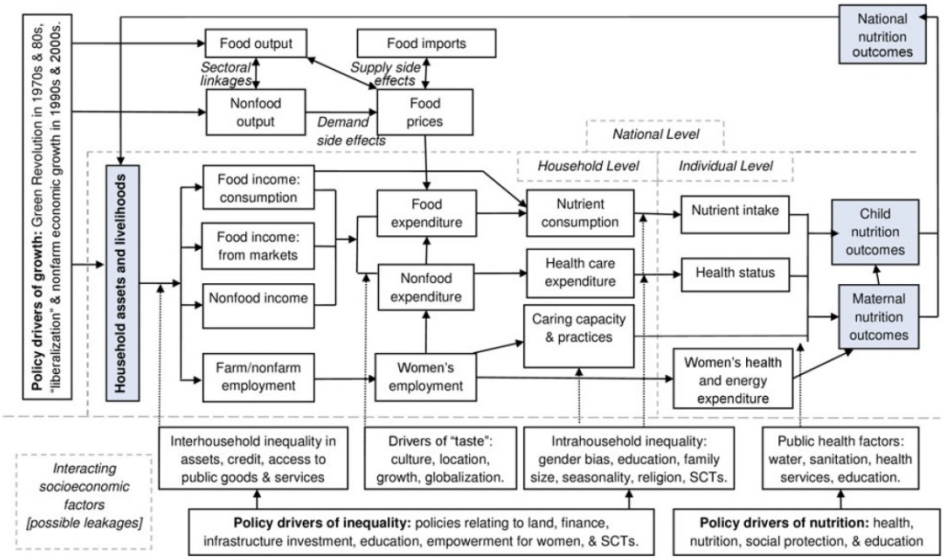


## 5.3 Impact on agriculture-nutrition linkages

It is well established that both agricultural and nutrition policy processes are deeply political in nature, not only because of the way they are conceived, but also because of the manner in which they are implemented (Resnick and Birner 2010). Furthermore, agriculture and nutrition do not exist in isolation. For example, agricultural markets are closely linked with money, land and labour markets in ways that can institutionally subordinate one to the others (Harriss-White 1996). We have seen in the previous sections that in fragile contexts these power differentials are exaggerated due to a weakening of the local institutions that mediate market pressures. The political will and organisational capacity of national and local governments therefore become critical in actuating agriculture-nutrition linkages in these contexts.

Kadiyala et al. (2014) summarise the means that link agriculture and nutrition in India as occurring through six major pathways (illustrated in **Figure 4**): through agriculture as a source of food, particularly for those who directly consume their own produce; through agriculture as a source of household economy that enables expenditure on nutrition-enhancing goods and services; as a result of agricultural conditions determining the relative prices of food in general, as well as specific foods, which in turn influence the composition of diets through macro-economic linkages; as a result of agricultural production conditions that influence the empowerment of women and household decision-making outcomes for nutrition-relevant resources, particularly food and health care; as a result of the pressures placed on childcare by the large female workload in agriculture; and as a result of the implications of hazardous conditions of agricultural labour on maternal nutritional status and intergenerational transmission of undernutrition.

**Figure 4: Pathways linking Agriculture and Nutrition**




**Source: Kadiyala et al. 2014**

The sections below take account of recent evidence to illustrate how these pathways are reshaped or broken in the fragile contexts of South Asia, and, further, identify the specific role of the state in actuating the linkages in such instances. The first sub-section reviews evidence of the impact on the

pathways formed through farm production, farm incomes and food prices. The second sub-section reviews evidence of the impact on the pathways formed by agriculture-gender linkages. While these sections are not meant to be exhaustive in their coverage of evidence from all fragile contexts in South Asia, the evidence presented showcases those instances where the impacts of fragility on the agriculture-nutrition pathways are most proximate so as to illustrate the nature of these relationships. Due to the protracted nature of the conflict in Afghanistan, it merits particular attention, and is therefore separated out from the rest of South Asia in the following sub-sections.

### 5.3.1 Farm production, farm incomes, and food prices

Agriculture plays a more dominant role as a source of employment, and thus income, for undernourished populations, particularly women, than it does for the workforce at large (Headey et al. 2012). The heavy dependence on agriculture by the undernourished exposes them to a far higher degree of risk; it is therefore a major direct and indirect influencer of nutrition-relevant expenditures. Humphrey and Zuberi (2015) find that market failure is a primary impediment for nutrition-rich food products to have an impact on undernutrition across South Asia. When labour and agriculture markets (farm production, farm incomes and food prices, in particular) become uncertain under conditions of fragility, this triggers various short-, medium-, and longer-term or permanent adaptations that are relevant to how we understand the enabling environment around the agriculture-nutrition connects. In the short to medium term, various adaptations to livelihood systems are evidenced, showcasing both resilience and flexibility to withstand the onset of fragility on the one hand, but also on the negative side, adaptations that are harmful or unsuitable, such as high-risk livelihood strategies (FAO 2010). Protracted crises can also trigger more permanent adaptations in the longer term, with rural-urban migration, and increased competition between livelihood groups often leading to further conflict, being the most common (see. for example, Young et al. 2005).

### 5.3.1a Afghanistan

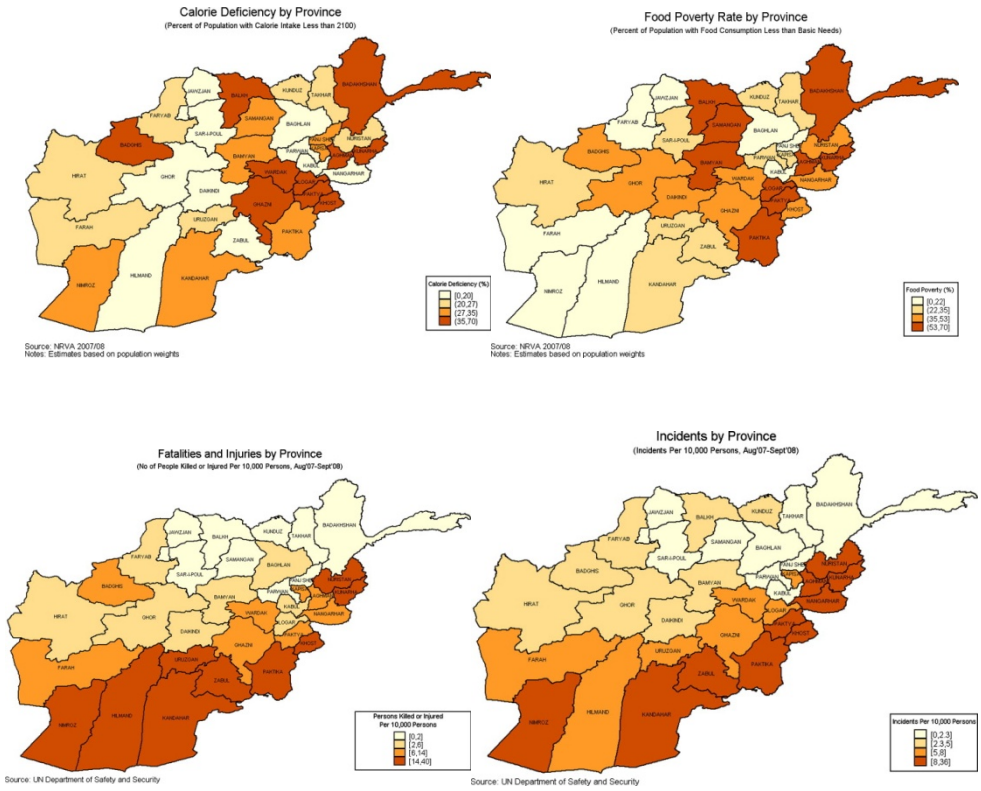
Afghanistan has one of the poorest, least well-nourished populations in the world. Nearly 30 per cent of the Afghan population do not meet minimum daily food requirements (2100 kilocalories per person). Approximately 60 per cent of children under five suffered from chronic malnutrition (stunting) and 8 per cent suffered from acute malnutrition (wasting) (Johnecheck and Holland 2007). Mean annual temperature has increased by 0.6°C while mean rainfall has decreased by approximately 2 per cent per decade since 1960. Recent winters have been unusually warm and dry, while below-average rainfall has negatively impacted food production in eastern and north-eastern Afghanistan (Parenti 2011).

As seen in the maps (**Figure 5**) below, there are large variations in levels of caloric deficiency, food poverty and conflict across the country. Though it is surprising that high conflict provinces are not the most food insecure, there is nevertheless a strong, negative relationship between conflict and household food security (D'Souza and Jolliffe 2013). In 2008, due to a confluence of domestic (drought), regional (export bans), and international (food price crisis) factors, the price of wheat flour (the dietary staple) doubled, leading to a sudden and drastic decline in purchasing power and a substantial decrease in Afghan well-being. The rising price of wheat has triggered large declines in the real value of per capita food consumption (D'Souza and Jolliffe 2012). Smaller price elasticities with respect to calories as compared with food consumption suggest that households trade off quality for

quantity as they move away from nutrient-rich foods such as meat and vegetables toward staple foods.

However, Poole et al. (2016) find that policy awareness among stakeholders is restricted to their respective sector, and most considered that agriculture and nutrition policies are not strongly linked. The prevailing nutrition policy is health-oriented, and focuses on prescriptive solutions rather than preventative strategies. Importantly, political decision making is centralised, and lacks adequate understanding of provincial, district, and community issues. Policies therefore continue to be heavily influenced by donors who have tended to borrow methods and approaches from other country contexts that are not relevant for Afghanistan. As such, the continued dependence on external human and financial resources adversely affects policy and practice, often leading to ineffective and inefficient practices and outcomes. Lack of capacity is also a major issue.

**Figure 5: District level caloric deficiency, food poverty and conflict in Afghanistan**




**Source: D'Souza and Jolliffe, 2013**

Non-state actors continue to have a considerable impact: for instance, aid organisations in the province of Uruzgan gave over one-third of their food aid and agricultural support to the Taliban (Nunn and Qian 2012). Lind et al. (2013) show strong causal evidence that conflict explains the rise in local opium production. And though agriculture is by far the largest employer, and will remain a very important source for income and growth, agricultural production is overshadowed by opium,

which now accounts for half of overall agricultural production but on a much smaller portion of arable land (Hogg et al. 2013).

### 5.3.1b Rest of South Asia

South Asia is one of the most flood-vulnerable regions in the world (Mirza 2011). In the last decade, natural disasters and climate change have had a significant impact on Pakistan, India and Bangladesh. One of the most prominent examples is the 2010 floods in Pakistan that displaced some 20 million people and submerged 50,000 square kilometres. The floods also damaged 2.1 million ha of standing *kharif* crops – mainly cotton, rice, sugarcane and vegetables — while one million tonnes of food and seed stocks were lost along with a large number of on-farm water channels and wells (Looney 2012). Livestock were severely decimated during the flash floods in the hilly areas of Khyber Pakhtunkhwa and Balochistan, while grazing animals and poultry were lost also in the plains area.

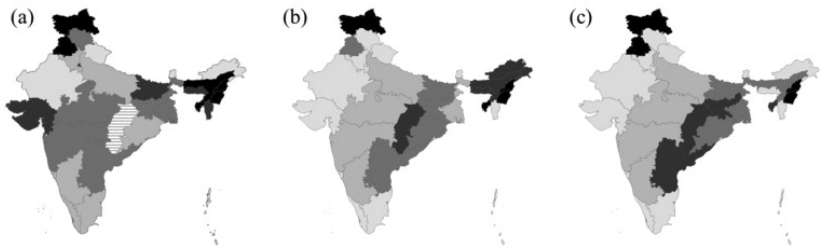
In India, Mishra and Sahu (2014) use estimated trends of various seasons over 30 years to show a negative relationship between rising temperature and net agricultural revenue per hectare in Odisha's coastal zone. Similar conclusions can be drawn of other vulnerable areas in the country (for example, the North East as identified in Ravindranath et al. 2011), particularly as climate models are generally predicting changes in seasonal precipitation that are detrimental to agriculture, namely, a decrease in dry season precipitation and an increase during the rest of the year including the monsoon season, but still with a large inter-model spread than annual mean changes (Christensen et al. 2007: 847–940).

In Bangladesh, increases in rice yields have large and statistically significant associations with child weight gain, which can be partially explained by increased food consumption (Headey and Hoddinott 2016). Strong evidence suggests that delays in the introduction of complementary foods are related to low levels of agricultural productivity and household economic status, and that public investment in staple food production should be used to overcome these constraints. Furthermore, evidence suggests that diets have not diversified that much over a period of rapid productivity growth in the main food staple. Shahid (2011) finds that though there will be no appreciable changes in total irrigation water requirement for dry-season *Boro* rice cultivation in northwest Bangladesh due to climate change, higher daily pumping rate in dry season may aggravate the situation of groundwater scarcity in the region (also see Yu et al. 2010). Time series analysis shows, however, that climate change variables have varying impacts on particular varieties of rice: maximum temperature has positive effects on *Aus* and *Aman* rice but adverse effects on *Boro* rice; minimum temperature has negative effect on *Aman* rice and a significantly positive effect on *Boro* rice; while rainfall only has a statistically significant effect on *Aus* and *Aman* rice (Sarker et al. 2012).

As the conflict in 2008/2009 in Swat, Khyber Pakhtunkhwa, Pakistan, shifted from a purely military and humanitarian action to a post-conflict situation, people who returned to the region were faced with badly damaged infrastructure, a completely ceased wheat production, lost livestock, and had therefore to run down their savings or incur debt. The floods of 2010 reopened opportunities for militant organisations to regain their lost position by filling the vacuum in relief efforts left by the government and international organisations (Orakzai 2011). In India, Wischnath and Buhaug (2014) show that harvest loss is robustly associated with increased levels of political violence, and further that it also has the potential to fuel more fighting in areas that already are scenes of chronic conflict

(as shown in **Figure 6** ) to the extent that future climate change will negatively affect local food production and economic activity. There is also anecdotal evidence showing that one of the channels through which climactic shocks impacts agriculture is a function and consequence of how rebel groups are affected by the shock. Vanden Eynde (2016) shows that between 2005 and 2011, deficient rainfall spurred targeted Maoist violence against civilians but that the number of Maoist attacks against security forces increases only in mining districts. The relationship between income shocks and conflict therefore depends on the type of targets and the revenue sources of the rebels.

**Figure 6: Violence rates across India**




**The figure illustrates the severity of political violence for contemporary Indian states, expressed as reported fatalities as a share of the state's population size and categorised in quintiles. Panel (a) shows fatalities per capita in state-based violence from the India Sub-National Problem Set, 1980–2004; panel (b) shows fatalities per capita in violent conflicts from the South Asia Terrorism Portal, 1993–2011; panel (c) shows battle deaths per capita in intrastate conflict from the Uppsala Conflict Data Program, 1989–2011. Darker shades indicate higher rates of violence. (Wischnath & Buhaug, 2014:, 11)**

Long-standing neglect of fragile areas can impact agriculture and land use significantly. Rahman et al. (2012) identify that shifting cultivation in the uplands of eastern Bangladesh contributes significantly to forest loss and is the main cause of land degradation. They argue that this type of cultivation continues due to prevailing poverty and is associated with a lack of technical knowledge, as well as inadequate land for cultivation, low education levels, and policy planning and implementation processes that are not inclusive of local actors. However, these findings sit somewhat uncomfortably with the increased attention on the diversification of rural livelihoods in low-income developing countries as a route to poverty reduction (Ellis 2000). Here, it is important to make a distinction between diversification by necessity and diversification by choice. We see that under the precarious conditions that characterise rural survival, diversified rural livelihoods are less vulnerable than undiversified ones in many low income countries. However, the point remains that it is suboptimal for the need for diversification to arise as a result of political or state neglect. Thus, evidence of diversification might not necessarily be indicative of farmer resilience alone, it may also signal farmers' response to state neglect.

Rice cultivation in eastern Bangladesh also suffers from a unique and significant threat from pests. The recurrent 'rat floods' are particularly devastating for smallholder farmers, but during intense outbreaks also severely impact all food sources and cause general famine conditions, including disease. Historically, this occurrence has encouraged militancy and civil war in Mizoram (India), and continues to do so in the hill tracts in Bangladesh, but has largely been ignored by both governments (Singleton et al. 2010: 52).

### 5.3.2 Agriculture–gender linkages

Both natural and human-induced crises impact women and men differently (Enarson and Morrow 1998). Women and men have different access to resources, power and decision making, while technological interventions aiming to improve livelihoods in such contexts are unlikely to be successful if the prevailing gender roles in society, including access to different livelihood opportunities, are not fully understood (Tavva et al. 2013). It follows then that the gendered pathways linking agriculture and nutrition (i.e., those that focus on linkages between child undernutrition and maternal socio-economic and nutritional status) are also likely to be altered under such conditions.

The collective positioning of women as subordinate and dependent vis-à-vis men determines and shapes women's vulnerabilities in conflict situations (Bari 2010). More broadly, alongside the role markets play in the allocation of resources, the nature of exchange relations prevalent in agricultural markets also significantly shapes the processes of social reproduction and development (Jan and Harriss-White 2012). These relationships can be deeply exploitative (Banaji 2010), while regulation in the agrarian economy can be enforced through a strategic reworking of so-called 'primordial' identities such as caste, gender and religion in order to reinforce the control of higher over lower caste (Basile and Harriss-White 1998), men over women (Agarwal 1994), religious and ethnic majorities over minorities, and the family over the individual (Harriss-White 2003). That is, the agriculture-gender linkages identified by Kadiyala et al. (2014) stand to be fundamentally different in fragile contexts not only due to the differential coping abilities of women and men, but also women's unique vulnerabilities attributable to pre-existing gender inequalities and life-cycle needs, women's responsibilities within the household (as mothers and caregivers) and in the labour market (as productive workers), as well as broader power relations driving inequality and exclusion (Holmes and Jones 2013).

### 5.3.2a Afghanistan

Since the early 2000s, Afghanistan experienced a 29 per cent decline in under-five mortality, and while definite reductions in maternal mortality remain uncertain, concurrent improvements in essential maternal health interventions suggest parallel survival gains in mothers (Akseer et al. 2016). However, stunting and wasting remain among the highest in the world, requiring attention to address immediate and underlying causes (Varkey et al. 2015). In an effort to coordinate initiatives across sectors to tackle undernutrition, there has been a harmonisation of health and agriculture policies and actions during 2002-2007 (Levitt et al. 2011). However, equitable access to health care remains a challenge that is not being met by present delivery models as they have high transactional costs. To maintain and further accelerate health and development gains, future strategies in Afghanistan will need to focus on investments in improving social determinants of health as well as on targeted cost-effective interventions to address major causes of maternal and new-born mortality.

These short- and medium-term effects of conflict are reasonably well documented. Less considered are the consequences across generations and potential harms to the health of children yet to be born (Devakumar et al.2014). Conflict-driven harms are transmitted through a complex permissive environment that includes biological, cultural and economic factors (Ibid.), and feedback loops

between sources of problems and weaknesses in individual and societal resilience to them. For example, Afghanistan has seen an increase in malaria after it had successfully controlled the disease in the 1970s, as also in the prevalence of scurvy and vitamin C deficiency, while the polio eradication programme has been negatively affected by the conflict.

Due to the multi-sectoral approaches necessitated by protracted crises in Afghanistan, interventions not related to agriculture or nutrition can still have meaningful impact on the pathways that link the two. An obvious example of this is the adoption of the new constitution in 2004, which mandated participation of women (Krook et al. 2010). Using evidence from Nangarhar and Baghlan provinces, Tavva et al. (2013) show that agricultural interventions aimed at increasing women's participation in the workforce can only be effective if they take into account the variety of social restrictions and shortage of labour, both deeply related with the prevailing conflict, that influence the gender division of labour in on-farm and off-farm activities. However, current policy initiatives do not adequately recognise women's role in facilitating agriculture-nutrition linkages (Poole et al. 2016).

### 5.3.2b Rest of South Asia

Evidence from Andhra Pradesh, India, shows that drought has an adverse effect on child nutrition but only in violence-affected communities, while political violence has large negative effects on child nutrition through a reduction of the ability of households to cope with drought (Tranchant et al.2014). Furthermore, the authors find no evidence that exposure to conflict may affect child nutrition outcomes significantly on its own. Banerjee and Iyer (2005) suggest that the districts severely affected by the Naxal insurgency may owe their poor living standards to a colonial legacy of underinvestment in agriculture, and in particular that targeted employment programmes (directed at women's participation, for instance) in this region may also be lagging behind.

In the Swat and FATA regions of Pakistan, a reduction in access to healthcare can be linked to the 'Talibanisation' that has occurred in the regions (Ud Din et al.2012). This is not only due to the direct reduction of access to health facilities because of the conflict, but also to the overall shift towards a misogynistic socio-political order that sought to control women's bodies in a way that restricted their movement, specifically to access healthcare, and curtailed other basic rights. The study of women's agricultural work in Pakistan by Balagamwala et al. (LANSA Working Paper 2) finds that the terms of any trade-offs between work, care and consumption choices involved in women's participation in the agricultural workforce are strongly mediated through gendered norms in agricultural work as well as in care provision, and vary between socio-economic groups. The authors highlight how the presence of conflict, some of it violent, in the study areas impacts the agriculture-nutrition linkages through an indirect bearing on the irrigation systems. Local conflicts led the main source of irrigation water serving the studied areas to be shut off for two years. The authors find that the variability in water supply and institutional concerns caused by violent conflict were compounded by an inability to cope with torrential rains in 2011, which led to widespread crop and livestock losses.

In terms of impacts of natural disasters and climate change on the agriculture-gender linkages, Ray-Bennett et al. (2010) show that health-related coping strategies and agentive capabilities in the context of impending crises in Bangladesh vary from one micro-context to the next.

# 6. Not Business as Usual: Implications of Weak Political Will and Organisational Capacity on Leveraging Agriculture for Nutritional Outcomes in Fragile Contexts

Recent evidence from South Asia highlights the significance of the impact of fragility resulting from natural and human-induced crises in South Asia. However, states often lack the organisational capacity or are constrained by political hurdles to design and implement effective strategies to leverage agriculture for nutrition in fragile contexts. This directly leads to the exclusion of already marginalised groups, and can exacerbate post-crises recovery more generally. Conversely, policy makers who understand the socio-economic embeddedness of the local agriculture markets in fragile contexts have a better chance of creating successful interventions.

The implications of a state that is unable or unwilling to engage in effective agriculture and nutrition programming in fragile areas are numerous but can be summarised into three categories: First, in the event a natural or human-induced crisis occurs in an area that also suffers long-standing neglect, state response tends to focus on short-term emergency approaches alone. There is a resistance towards designing, funding and implementing longer-term strategies that address not only the immediate but the underlying and basic causes of food crises and undernutrition. Second, states might lack the capacity to design and implement their own strategies, so they continuously rely on the policy advice, training of staff and regular funding from the donor community. The governance challenge is to help states design, coordinate and implement policies that are most relevant to their environment. And third, fragile contexts are often characterised by weak or non-existent accountability linkages between the state and society, either because citizens lack the freedom or the information to hold their governments to account or because unresponsive political elites have captured most state resources for political gain. This restricts local champions of change from innovating ways to leverage agriculture for nutritional outcomes.

Based on the review conducted for this paper, several factors can be identified that necessitate a shift from 'business as usual' when it comes to research and policy on leveraging agriculture-nutrition linkages in fragile contexts. As a primary point of departure, research and policy alike must recognise the centrality of the state and formal governance mechanisms in actuating the pathways that link agriculture to nutritional outcomes in fragile contexts. Related to this is an explicit recognition that it makes little analytical sense to spatially or temporally bind the concept of fragility to national borders. Instead, there are two interconnected components that define fragile contexts: these are countries, regions *or* areas that are characterised by (1) natural *or* human-induced protracted crises, and (2) a limited capacity or political will to respond to crises.

Conflict does not affect everyone equally — some do well out of conflict, some live in conditions of fear and extreme destitution, while others simply get by. These varying degrees of resilience need to be taken into account in the design and implementation of programmes. However, the complexity of fragile conditions may also dictate the implementation of blanket coverage programmes (see Acosta

et al. 2013). Similarly, climate change has varying impact on certain types of crops, and the long-term socio-political and economic consequences of such impact, viewed in particular through a gendered and horizontal inequalities lens, need to be placed at the centre of research and policy practice. In light of this, agricultural interventions, in particular supporting agricultural productivity, form a crucial aspect of post-crisis recovery. Interventions that are contextualised in local realities are most likely to succeed with a wide range of activities supporting this sector, including strengthening agricultural services, providing local extension programmes that combine input supply with training on basic business skills, restoring rural roads, improving the agribusiness-enabling environment, improving land and water management, and organising farmers into associations to connect them to commodity buyers and agricultural credit (World Bank 2011).

Agriculture and informal sector jobs are often viewed as second best in relation to the formal sector — but in fragile contexts, they often offer the only realistic prospect for large-scale job creation. Labour-intensive public works can rarely be sustained in fragile situations. Alternatives to short-term interventions could be labour-intensive public works programmes in rural areas that are seasonal or vary in intensity between the seasons, to complement employment in agriculture (and that could be integrated into community-driven development programmes), or programmes that are linked to a longer-term national strategy, such as India's long-term National Rural Employment Guarantee scheme (ibid.).

To do much of this effectively however, we need a better understanding of the spatial distributions of linkages between conflict and food insecurity. Locating sub-national fragility precisely can serve to inform policymakers interested in targeting scarce resources to vulnerable populations, for example, through the placement of strategic grain reserves or targeted food assistance programmes (Ray-Bennett et al. 2010).

# 7. Conclusion and Considerations for LANSA Research[4]

The objective of this paper has been to first highlight the ways in which agriculture-nutrition pathways are altered, reshaped or broken in fragile contexts. It further stresses that these relationships are exacerbated when governments lack the organisational capacity or political will to deliver the core functions of services, justice and security. In this concluding section, the paper argues, therefore, that academic research and its uptake should pay explicit attention to these relationships, with particular attention to how they might impact the pathways that link agricultural and nutritional outcomes. In doing so, the following three broad questions chart a course to link research already undertaken by the LANSA consortium to potential directions for positioning future research, activities and outputs.

[4] This section draws on the background note prepared by Haris Gazdar and Jaideep Gupte for the Fragility Workshop during the LANSA Annual Partners' Meeting, Dhaka, 2014.

## 7.1 How does the political will and organizational capacity of government influence agriculture-nutritional linkages in South Asia?

This question applies to any research within LANSA which aims to investigate the linkage between agriculture and nutrition. Pillar 1 studies focus on the enabling environment linking agriculture and food systems to other determinants of nutritional status. Political will and organisational capacity of governments are clearly part of the enabling environment in many different ways. In the Pathways approach used by LANSA country evidence papers, a key enabling factor is the existence of supporting public goods and services in health and nutrition. As such, LANSA Pillar 1 studies address fragility to the extent that deficiencies in the provision of public goods and services can be traced back to political will or organisational capacity of governments.

The same is true of LANSA Pillar 2 studies which asked how the nutrition impacts of agriculture and agri-food value chains might be enhanced through appropriate strategies and policies. Before coming to their recommendations of appropriate strategies and policies, LANSA research on existing agriculture and agri-food value chains has probed constraints and bottlenecks, and some of these constraints and bottlenecks relate to political will or the organisational capacity of governments — e.g., in enforcing regulations relating to food fortification. This has important relevance for further research in this area, and in particular helps to understand how agriculture-nutrition linkages might be leveraged in fragile contexts across South Asia as well as beyond the specific contexts studied as part of the consortium.

## 7.2 How can evidence-based recommendations for agriculture-nutrition policy, programmes and interventions take account of political will and organizational capacity of government?

This question applies across the board, to all recommendations emerging from LANSA research. The two broad areas where this question is most strongly applicable are Pillar 2 and Pillar 3 studies which aim to make evidence-based recommendations. The fragility cross-cut implies, therefore, that evidence-based recommendations proposed by LANSA research should explicitly address the question of whether and to what extent political will and organisational capacity exist for the recommendation to actually be adopted and implemented. Since both Pillar 2 (particularly the value chain studies) and Pillar 3 studies focus primarily on existing or proposed programmes and interventions, a key question for further research relates to the scaleability of programmes or interventions under conditions of compromised political will and organisational capacity. More specifically, future research in this area should examine the problem of taking a successful intervention to scale not only from the point of view of the technical design of the intervention, but also with respect to assumptions about how the state is expected to perform.

## 7.3 What are the implications of weak political will and organizational capacity of government for the uptake of evidence on agriculture-nutrition linkages?

Finally, this paper has made the case that understanding agriculture-nutrition linkages in contexts of fragility requires taking a political-economy view on state capacity and political will. It follows then that this has direct implications for the manner in which research uptake might take place. Pillar 1 research on the political economy has already addressed the politics of policy-making in agriculture-

nutrition. These findings need to be continually reflected in the research uptake strategy moving forward — both LANSA-wide and at the country level. In particular, research uptake strategies should, among other things, be attentive to the following:

- What are the drivers of policy and political action other than evidence-based findings, and how are they likely to affect policy and political choices in our areas of concern?
- The importance to LANSA of any particular stakeholder needs to balance her/his strategic position within policy-making with her/his political alignment with pro-nutrition goals
- Even if a stakeholder is able to act on evidence-based findings, and is willing to do so, how effective is the organisation that she/he represents in actual delivery?

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