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A systematic exploration

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Er is toenemende aandacht voor het lokaliseren van Afrikaanse voedselsystemen om daarmee wereldwijde crises beter het hoofd te kunnen bieden. Echter, het onderwerp is niet onomstreden, en er is weinig bekend over de implicaties van lokaliseringsbeleid. Deze studie presenteert een analysekader aan de hand waarvan deze implicaties, waaronder de trade-offs binnen het voedselsysteem, op systematische manier in kaart gebracht kunnen worden. Het analysekader kan op diverse cases worden toegepast, en draagt daarmee bij aan beter geïnformeerd beleid rondom lokalisering van voedselsystemen.

There is increasing attention for the potential benefits of localising food African systems to better cope with global crises. However, the topic is not uncontested, and little is known about the actual implications of localisation policies for food. This study presents an analysis framework through which these implications, including trade-offs within the food system, can be explored in a systematic way. The framework can be applied to various cases, thereby contributing to better informed policies related to localising food systems.

Key words: Localisation policy, Short value chains, Resilience, Food Systems, Sub-Saharan Africa.

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Preface

The recent outbreak of the COVID-19 pandemic highlighted critical vulnerabilities of global food systems, which proved to be closely interlinked. In the wake of this global crisis, local and regional value chains were found to not be able to adjust and respond effectively so as to sustain food security. To better cope with inevitable future global or local shocks, policymakers and other key stakeholders need to get a better understanding of the vulnerabilities of their food systems and of opportunities to strengthen their resilience.

Interest in exploring the potential benefits of localising food value chains is on the rise, fuelled by global crises. Many civil society organisations, international research institutes, and various national governments have put the topic of 'local' versus 'global' high on their agendas. However, there are many different approaches and schools of thought regarding advantages and disadvantages of food value chain localisation, and people may pursue localisation for different reasons. At the same time, empirical evidence of implications of localising value chains is scarce.

This report proposes a framework to unpack the real goals and effects from localisation policies. Results from the framework can support policy makers to making informed decisions about localisation policies.

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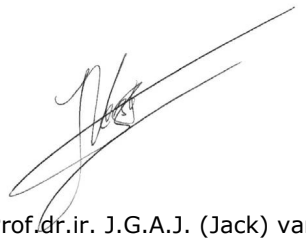

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Summary

Since the 1980s, African economies have become rapidly integrated into global value chains. During this liberalisation process, food value chains in Sub-Saharan Africa became closely intertwined with global food markets. African agricultural exports of primary products, such as coffee, cocoa, nuts, flowers and cotton, increased. Also the production of food crops has expanded steadily, but food imports supplement regionally produced food.

The recent outbreak of the Covid-19 pandemic highlighted critical vulnerabilities of global food systems. In the wake of this global crisis, local and regional value chains were found to not be able to adjust and respond effectively to sustain food security.

One pathway to achieve increased food system resilience is to opt for more localised and shorter food chains where food is consumed in close proximity to where it is produced. However, there are many different approaches and schools of thought regarding advantages and disadvantages of food value chain localisation, and people may pursue localisation for different reasons. At the same time, literature on ways to assess implications of localisation of value chains, as well as empirical evidence of implications of localising value chains is scarce. Hence, this study aims to unpack the real goals and effects from localisation policies.

To understand the potential effects of localising food value chains on food system actors as well as food system outcomes, we developed a simple analysis framework, consisting of five steps:

1. **Understanding the context**: what is the type of food system and what is the governance model in which the localisation of a food value chain will take place?
2. **Understanding the scope**: which components and activities of the food system are impacted when localising a value chain, and in what ways?
3. **Understanding the vulnerabilities**: how will localisation affect the value chain's vulnerabilities to potential shocks at the local, regional and global level?
4. **Understanding potential impact on food system outcomes**: what is the impact of localisation on economic livelihoods, food and nutrition security, and sustainability?
5. **Understanding the trade-offs**: What are the positive or negative effects in terms of the different outcomes, as well as vulnerabilities to shocks?

We applied this framework to the case of localising the rice value chain in West-Africa – where localisation of rice chains is seen as a way to reduce dependency on rice imports from Asia. We identified three potential trade-offs related to localising the rice value chain.

1. Localising the West-African rice value chain directly affects various **food system activities**. Smallholder producers would expand their production and input providers and transporters would expand their businesses. However, as rice prices will increase due to import tariffs, consumers might reduce rice consumption and shift to other food crops instead.
2. Localisation would leave the rice value chain less **vulnerable** to global shocks (in the wake of a global financial crisis, there would still be stable local availability of rice). However, the value chain might become more vulnerable to local shocks such as drought, pests, or domestic political unrest.
3. Impacts on **food system outcomes** will likely range from positive to negative. While due to localisation, consumers might pay higher prices for local rice compared to imported rice, smallholder producers' and midstream businesses' income levels will improve due to increased economic activity.

Insight into these (potential) trade-offs can help policymakers in agenda setting and in deciding on appropriate instruments to mitigate the potential negative effects of localisation policy. Using this framework contributes to more transparent food system governance by informing stakeholders on anticipated effects of localising a food value chain.

Samenvatting

Sinds de jaren tachtig zijn Afrikaanse economieën snel geïntegreerd in mondiale waardeketens. Tijdens dit liberaliseringsproces zijn voedselwaardeketens in Afrika bezuiden de Sahara nauw verweven geraakt met mondiale voedselmarkten. De Afrikaanse landbouwexport van primaire producten, zoals koffie, cacao, noten, bloemen en katoen, nam toe. Ook de productie van voedingsgewassen breidde zich gestaag uit, maar invoer van voedingsmiddelen vormt een aanvulling op regionaal geproduceerd voedsel.

De recente Covid-19-pandemie heeft de kwetsbaarheden van mondiale voedselsystemen aan het licht gebracht. In de nasleep van deze wereldwijde crisis bleken lokale en regionale waardeketens niet altijd in staat zich aan te passen en doeltreffend te reageren om voedselzekerheid te waarborgen.

Eén van de manieren om de veerkracht van voedselsystemen te vergroten, is te kiezen voor meer lokale en kortere voedselketens waarin voedsel wordt geconsumeerd dichtbij waar het wordt geproduceerd. Er zijn echter veel verschillende benaderingen en denkrichtingen wat betreft de voor- en nadelen van lokalisatie van de voedselwaardeketen, en er zijn verschillende redenen voor het streven naar lokalisatie. Er is weinig literatuur over manieren om de gevolgen van lokalisatie van waardeketens in kaart te brengen, en er is weinig empirisch bewijs van de gevolgen van lokalisatie van waardeketens. In deze studie brengen we daarom de doelstellingen en effecten van het lokalisatiebeleid in kaart.

Om de potentiële effecten van de lokalisatie van voedselwaardeketens op de actoren binnen het voedselsysteem en op de uitkomsten daarvan te begrijpen, hebben we een eenvoudig analysekader ontwikkeld, dat bestaat uit vijf stappen:

1. **Inzicht in de context**: wat is het type voedselsysteem en wat is het bestuursmodel waarbinnen de lokalisatie van een voedselwaardeketen zal plaatsvinden?
2. **Inzicht in de reikwijdte**: welke componenten en activiteiten van het voedselsysteem worden beïnvloed wanneer een waardeketen wordt gelokaliseerd, en op welke manieren?
3. **Inzicht in de kwetsbaarheden**: hoe zal lokalisatie de kwetsbaarheid van de waardeketen voor potentiële schokken op lokaal, regionaal en mondiaal niveau beïnvloeden?
4. **Inzicht in de potentiële impact op voedselsysteemuitkomsten**: wat is de impact van lokalisatie op economische bestaansmiddelen, voedsel- en voedingszekerheid, en duurzaamheid?
5. **Inzicht in trade-offs**: Wat zijn de positieve of negatieve effecten in termen van de verschillende uitkomsten, en de kwetsbaarheid voor schokken?

We hebben dit analysekader toegepast op de casus van de rijstwaardeketen in West-Afrika - waar lokalisatie wordt gezien als een manier om minder afhankelijk te worden van rijstimport uit Azië. Aan de hand hiervan hebben we drie potentiële wisselwerkingen geïdentificeerd met betrekking tot de lokalisatie van de rijstwaardeketen.

1. Lokalisatie van de West-Afrikaanse rijstwaardeketen heeft een direct effect op diverse activiteiten binnen het voedselsysteem. We verwachten dat kleine producenten hun productie zullen uitbreiden en leveranciers van inputs en vervoerders hun activiteiten zullen uitbreiden. Maar omdat de rijstprijzen zullen stijgen als gevolg van de invoertarieven, zullen consumenten wellicht minder rijst gaan consumeren en in plaats daarvan overschakelen op andere voedselgewassen.
2. Lokale productie zou de rijstwaardeketen minder kwetsbaar maken voor mondiale schokken (ook na een mondiale financiële crisis zou de lokale beschikbaarheid van rijst stabiel blijven). De waardeketen zou echter kwetsbaarder kunnen worden voor plaatselijke schokken zoals droogte, plagen of binnenlandse politieke onrust.
3. Ten slotte zullen de gevolgen voor de uitkomsten van het voedselsysteem waarschijnlijk variëren. Terwijl consumenten door de lokalisatie wellicht hogere prijzen voor lokale rijst zullen moeten betalen dan voor geïmporteerde rijst, zullen de inkomensniveaus van kleine producenten en bedrijven in het middensegment verbeteren als gevolg van de toegenomen economische activiteit.

Inzicht in deze (potentiële) wisselwerkingen kan beleidsmakers helpen bij het vaststellen van de agenda en bij het beslissen over passende instrumenten om potentiële negatieve effecten van het lokalisatiebeleid op te vangen. Het gebruik van dit analysekader draagt bij tot een transparanter beheer van het voedselsysteem door de stakeholders te informeren over de verwachte effecten van de lokalisatie van een voedselwaardeketen.

1 Setting the stage

1.1 Introduction

A growing number of voices from multiple corners of society are calling for more localised food value chains. Does this announce the end of an era of progressive globalisation and dominant neo-liberal food system policies? Or are ideas about reducing the distance between consumers and food producers driven by mere nostalgia or a romantic longing for more safety and security in times of uncertainty? Regardless, it is clear that the current rhetoric on the origin of our food has so many dimensions that we have lost sight of evidence on the merits and trade-offs of localising food value chains.

The current COVID-19 pandemic has revealed critical vulnerabilities of global food systems, and pointed out that capabilities to respond effectively by mobilising local and regional food chains are limited. Initial responses often had short-term impacts or were based on scenarios emerging from generic food systems modelling and global statistics. Evidence for the effectiveness of more recent public policies aiming to mitigate COVID-19 effects on public health and domestic economies is sometimes lacking. To better cope with inevitable future shocks, policymakers and other key stakeholders must deepen their understanding of the vulnerabilities of national food systems and their various forms and levels of resilience. This will allow them to more realistically anticipate the possible impacts of future shocks, as well as the trade-offs associated with pandemic-related government measures, such as lockdowns.

The economic impact of the pandemic points to the interdependency of global food systems, and to the sensitivity of many food systems to volatility in international food chains. This is in line with broader trends, such as renewed attention for food system resilience and for local food chains (as opposed to global), and the emergence of national food and nutrition security policies. These trends challenge the era of neo-liberal trade policy and globalisation of food value chains (Chandler, 2014; 2019).

We see a vast variety in both forms and levels of resilience of food systems, as well as differences in vulnerability across actors, dimensions, and system components. Resilience can be beneficial in terms of mitigating or adapting to damage due to shocks, but may also stagnate food system transformation processes or serve the interests of powerful actors in the food system, in detriment of other groups. Whereas some food systems largely operate outside international spheres of influence, others show deep rooted dependencies on foreign food imports and export markets. People in the latter systems are much more vulnerable to impacts of global economic shocks, such as those imposed by the COVID-19 pandemic. Agricultural labourers, for example, especially in the informal sector, have been much more immediately and drastically affected by COVID-19 responses than landowners. We argue that many food systems in low- and medium income countries need to become more resilient to future shocks and stressors, with increased efforts to improve the livelihoods of the most vulnerable populations. The latter include poorer segments of farmers and farm workers in rural households, small and medium enterprises, and their workers in the (hidden) 'middle' of the chain, and urban consumers.

One pathway to achieve increased food system resilience is to opt for more localised and shorter food chains where food is produced and consumed in closer proximity to where it is produced. Such transition processes must not only serve economic motives, but also consider food and nutrition security, as well as more general aspects of national food sovereignty. Localising value chains may, however, lead to several trade-offs between food system outcomes for different food system actors. Hence, in this paper we develop a framework to assess the potential impact of localising value chains in a robust and systematic way. Results contribute to overall understanding of these (potential) trade-offs. The outcomes of this analysis will help policymakers in their decision-making process and in choosing appropriate instruments to mitigate trade-offs associated with the localisation of food value chains.

The remainder of this white paper is organised as follows. In section 1.2 we take a closer look at current debates about localising food value chains. In section 1.3, we discuss global economic paradigms that have dominated and defined many national economic policies, such as neo-liberalism, and which are now being challenged. We then address the question 'how local is local?' to explore explicit and inherent motivations of promoting localised food value chains in section 2. We will focus our investigation on food system activities in low- and low-to-medium income countries, in relation to changes in global consumer markets. In section 3 we develop a framework to systematically assess the impacts of localising value chains on the resilience of food system outcomes, including diet, nutrition and health outcomes, and environmental, economic and social impacts, and apply it on the case of localising rice value chains in West Africa in section 4. We discuss the framework in section 5. In the final section we draw some conclusions from our investigation and provide recommendations for consideration by policymakers or others interested in the subject of food system resilience and localised food value chains.

1.2 Making sense of current debates

Global food value chains supply consumers around the globe with their daily food. Globalised value chains make a range of food items more affordable and increase availability of a wider variety of products. However, globalisation of the food industry has been criticised for its power concentration by a limited number of multinationals, separation of areas of production and consumption over long distances, deterioration in terms of trade for producers and out-competition of local producers by cheaper, large-scale producers elsewhere on the globe. What motivates the growing attention for and promotion of localising food value chains and food systems? Is this debate based on mere sentiments ("local is good"), or is there concrete evidence for how localising value chains could benefit food systems?

The suggested benefits of short value chains have been discussed for many years already (e.g. Hinrichs, 2003), and COVID-19 has further intensified this growing debate (e.g. Bakalis *et al.,* 2020; Kalfagianni and Skordi, 2019; Laborde *et al.,* 2020). Different types of benefits are associated with localising food value chains. Some authors focus on the vulnerability of long value chains due to (potential) mobility and transportation restrictions that could cut lines of supply (Bakalis *et al.,* 2020; Kummu *et al.,* 2020; Laborde *et al.,* 2020). Others focus on high GHG emissions associated with long distance transportation, while reference is also made to potential food safety issues when the origin of products cannot be traced. Born and Purcell (2006) argue that the scale of production will not make food better or worse, but that agendas driving choices for a focus on a particular scale has implications for food quality. However, although these benefits may be real, many claimed benefits of localising food value chains are based on unsupported assumptions (Schmitt *et al.,* 2018; Vittersø *et al.,* 2019).

Arguments regarding the benefits of shortening (food) value chains and local procurement of food are based on different motivations, which are visualised in Figure 1.1. These range from ethical motivations (i.e. local orientation would support food equity and would reduce dependency on large corporations, as stated in IPES-Food, 2017) to pragmatic motivations (i.e. short value chains offer more opportunities for a circular economy and/or are more reliable, as argued in Kiss *et al.,* 2019). We present the different approaches separately here to be able to articulate their difference in focus, but in actual practice we will see combinations of these approaches in one and the same initiative.

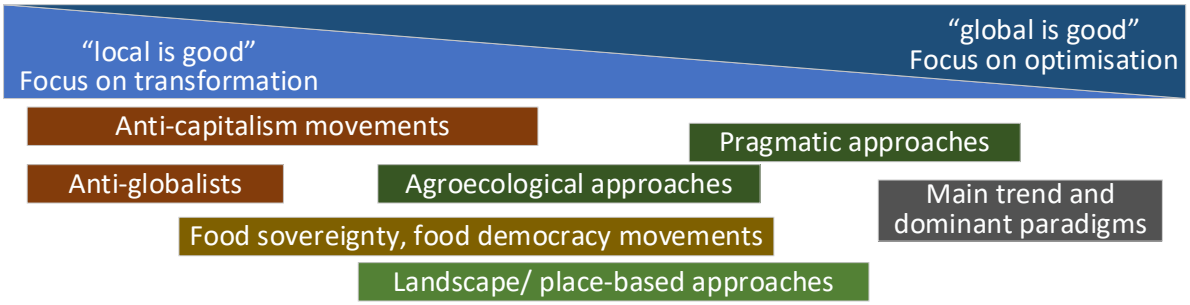

Figure 1.1 *Tentative indication of different orientations motivating an interest in shortening food value chains and localising food systems*

Anti-capitalist movements and *anti-globalists* take a critical stance towards the mainstream economic order and related trends. In their view, the global capitalist system is inherently exploitative, alienating, and unsustainable, and tends to commodify people and natural resources and create massive economic inequality. Their interest in localising food systems focuses on moving power over food system related decision-making back to "the people". *Agroecological approaches* focus on modes of agricultural production. Their interest in localising food systems focuses on reversing a trend towards "industrialisation" of agriculture (i.e. the increasing scale of farm enterprises). Local production, in this perspective, enables agriculture to stay within specific bio-ecological boundaries. *Food sovereignty and food democracy movements* focus on dependencies that are created through global food value chains (particularly the role of large corporations), and on the loss of influence of individual local food system actors on food system related decision-making processes. *Landscape approaches* emphasise the importance of creating sustainability and maintaining biodiversity within spatial boundaries of a landscape. In this perspective, sector approaches and longer value chains blur a view on the way in which a variety of interacting (food system related) activities contribute to sustainability. Through their focus on spatial dimensions they are closely related to *place-based approaches*, which emphasise the intrinsic value of the locality and the importance of a 'sense of place'. Connecting to a place is perceived to provide identity and is a basic human need, and hence, value chains and food systems should serve this need. The category of "*pragmatic approaches*" is a collection of approaches that consider whether localising food systems and shortening food value chains contributes to sustainability in food system outcomes, such as food and nutrition security.

Depending on strongly held core values, people in favour of short value chains can strongly oppose currently dominant food system paradigms (Bakalis *et al.,* 2020). In a neo-liberal view on economies of scale, efficiency and productivity take a prominent position. To the contrary, proponents of short food chains and localised food systems will often emphasise other values such as equity, democracy, and identity (e.g. Moragues-Faus, 2020). Hence, the way core values (key system functions) are prioritised is directing the debate on whether local value chains are beneficial to food systems, and translates into different priority setting in relation to desired food system outcomes.

Regardless of the core values chosen, conclusions as to the contribution of localising food value chains to these core values need to be evidence-based. However, while literature tends to focus on ways to shorten food value chains and to localise food systems (e.g. Chiffoleau *et al.,* 2019; Sellitto *et al.,* 2017; Varsány *et al.,* 2019), literature on ways to assess shortening value chains and localising food systems, as well as results from such evidence-based assessments, is scarce.

Apart from the different motivations that drive the debate of localising value chains, and the underlying core values, there are also different ways of thinking about how local is 'local', and how short is 'short' (Schmitt *et al.,* 2018). Both proponents and opponents of shortening food value chains and localising food systems refer to different specific configurations of 'short' and 'local' (Thomé *et al.,* 2020). Some would want to see a complete overhaul of food systems towards a local orientation (e.g. Holt-Giménez, 2019) while others are only talking about an increased role of short food value chains in wider food systems (e.g. Burnett, 2019).

As noted in the above, arguments and counterarguments are often based on different opinions regarding which (food) system functions and related core values should be given priority, as well as different ideas on what 'local' and 'short' refer to exactly. Table A.1 in the Appendix systematically explores such differences. It illustrates how it is impossible to give a singular answer as to whether localising food systems and shortening food value chains fosters food system resilience (on which we further elaborate in the next chapter). It very much depends on the specific context, norms and values given priority. Establishing evidence for the pros and cons of shortening food value chains involves addressing a range of questions which approach the topic from different angles. For example, evidence of the effects of localisation on farm productivity will be different from evidence of its effects on food equity and justice. Addressing those sub-questions will help provide a stronger basis for discourse and debate. Differences in opinion on the importance of trade-offs, policy priorities, and implications for choices regarding food system orientations will remain. Yet, bringing evidence and a framework to balance multiple effects of short value chains will enhance the transparency of debate and underlying motivations of its debaters (Born and Purcell, 2006).

1.3 Going global or staying local in relation to sub-Saharan Africa: historical debates

Global food value chains, a way of organising agricultural production such that different stages of the food supply system are located in different countries, is one of the most important organisational innovations in the history of globalisation (Milanovic, 2019: p. 147-148). Sub-Saharan Africa (SSA) has had a long history of integration in global value chains. One can argue that the development of global food value chains started with the colonial period during which capital-exporting nations either conquered other countries or made sure that they controlled the economic policy of quasi-colonies (*idem*: p. 148). The quest for raw materials for the emerging industries of colonial powers and expansion of markets for processed goods can be considered one of the main acts of globalisation.

Although World Wars and the state-led development policies of the late 1950s and 1960s in SSA countries (Dibua, 1994: p. 212-213) slowed down the speed of the integration of the African economy into the global economy, neither wars nor development policies stopped this process. In the late 1950s and 1960s, (post-)colonial African states focused on state-led development planning as the panacea for economic development (Dibua, 1994: p. 212-213). National economies were protected with high tariff barriers, and priority was given to the agricultural sector to provide food security for urban populations working in the industry and services sectors (Engel *et al.,* 2013). For this purpose, the governments in SSA supported the provision of inputs to farmers and the protection of domestic grain markets. State commodity boards levied export taxes on agricultural products. Agriculture in SSA was also important as it employed over 70 percent of the labour force. For instance, in the case of Nigeria, the objective was the creation of a vibrant and dynamic agricultural sector, "which apart from providing food for the country's populace, would be capable of providing substantial export earnings and raw materials for the industries." (*idem:* p. 214).

The market liberalisation process that started in the 1980s accelerated the integration of African economies into global value chains. Oil crises in the 1970s created budget deficits in African economies, which triggered a severe economic crisis in the early 1980s. After severe economic crises in the 1980s, many countries in SSA implemented Adjustment Programmes under the leadership of World Bank and IMF, promoting market liberalisation policies. These policies included removal of barriers to private sector involvement, deregulation of consumer and producer prices, privatisation of state marketing or processing enterprises, the abolition of state monopolies and the opening of trade to international competition (Crisp and Kelly, 1999). Especially removal of commodity boards and export taxes were seenas necessary to make African agriculture more competitive (Helleiner, 1983).

In this liberalisation process, food value chains in SSA became further intertwined with global food markets. African agricultural exports of primary products, such as coffee, cocoa, nuts, flowers and cotton, increased due to the removal of export taxes and commodity boards and increased production of those exports crops (Kherallah *et al.*, 2002).

However, as of 2018 these exports still constituted only 4 percent of global agricultural exports (Bouët and Odjo, 2019). Despite increasing exports, the African continent has not yet been able to produce the quantity and diversity of food necessary to feed its population, and the region has been a net food importer since the mid-1970s (Rakotoarisoa *et al.,* 2012). African countries became dependent on the imports of food items such as wheat, palm oil, sugar, rice, and dairy and soybean products. Between 2005 and 2017, food imports grew by 102% while exports grew by 71% (Bouët & Odjo, 2019). Between 2016 and 2018, SSA imported 85% of its food, equivalent to 35 billion US dollars. Food imports are expected to increase up to 110 billion US dollars in upcoming years (Akiwum, 2020).

There is no clear consensus on the effects of the integration of Africa's food value chains into global value chains. While some scholars find that market reform and trade liberalisation supported agricultural growth and food security, others point out that the poor record of reforms is linked to inadequate attention to institutional market foundations and poor infrastructure, which lead to impeded growth (e.g. Anderson, 2004; Brandão and Martin, 1993; FAO, 2003; World Bank, 1994). Overall, there is increasing evidence that structural policy reforms and trade liberalisation in

agriculture have largely been a false promise in terms of economic and nutrition outcomes (e.g. Engel *et al.,* 2013; Erokhin *et al.,* 2014; Resnick and Birner, 2010).

The COVID-19 pandemic has shown the risks associated with global food value chains. Zeufack *et al.* (2020) predicted that agricultural production will potentially reduce by between 2.6% and 7%, depending on trade blockages, while food imports will decrease between 13% and 25% due to high transaction costs and reduced domestic demand resulting from COVID-19. In March 2020, some food-producing countries applied export restrictions or even export bans. For instance, Russia banned exports of rice and buckwheat followed by export bans on buckwheat by Kazakhstan and Ukraine. Vietnam banned rice exports for a short period due to increased domestic demand. The ceased export of rice created an important risk for access to food in Africa. Strict sanitary border controls posed another threat to food access across Africa, as they increased the transaction costs of food imports (Bouët, 2020). The resulting risks of delayed access to main food staples, like rice, raised the concerns of the African public about their food security in March-April 2020.

Some African politicians and development organisations called for action to reduce those risks and to improve the resilience of African food value chains through increased regional and domestic agricultural production. For instance, Ghana's Minister of Food and Agriculture stated that "the COVID-19 pandemic provides a golden opportunity for Ghana to optimise our potential for food production to meet domestic needs, grow our agricultural exports and create jobs for the youth of this country".[1] Nigeria's President, Muhammadu Buhari, told the media that "I wish the farmers could go and stay in their farms so that we can produce what we need sufficiently so that we don't have to import".[2] Furthermore, the Southern African Development Community, comprised of 16 countries in southern Africa,[3] recommended African governments to "encourage crop diversity through the promotion of diversified diets, including indigenous foods for improving the resilience to COVID-19's shocks on the food system". COVID-19 has also triggered increased intra-regional trade and is claimed to be a factor that has promoted the African Continental Free Trade Area agreement (Banga *et al.,* 2020).[4]

These emerging ideas on improving local production seem to contradict the dominant view of economic development today—that a country must be integrated in global value chains rather than 'delink' from global markets. Scholars such as Richard Baldwin (2016) argue that only those countries that have been able to integrate themselves in global supply chains have succeeded in accelerating their development. Importantly, the most successful countries in this second wave of globalisation have 'suitable' institutional factors, skills, low labour costs, and geographical proximity to the North, that allow them to become an integral part of the Northern economy.

The question is what this implies for food system resilience and whether localisation improves the delivery of desired food system outcomes, such as food and nutrition security, but also employment, income generation and environmental sustainability. In the next sections, we will explore how we can answer these questions.

[1] This statement is from the blog of Gakpo (2020).
[2] From the article of Oge Udegbunam (2020) in Premium Times.
[3] Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia and Zimbabwe.
[4] The African Continental Free Trade Area agreement was launched in January 2021, and aims to accelerate intra-African trade and boost Africa's trading position in the global market. See: https://au.int/en/cfta

2 Clarifying underlying concepts

2.1 Localising food systems, shortening food value chains

We define a **food system** as all of the people and activities that play a part in growing, transporting, supplying, and, ultimately, eating food. These processes also involve elements that often go unseen, such as food preferences and resource investments. Food systems comprise different parts, including activities taking place in the food supply chains, the food environments where the value chains are situated, individual factors, and consumer preferences, as well as external drivers (factors that push or pull at the system, such as political shifts, climatic events or the outbreak of a pandemic). Food systems hence influence diets by determining what kinds of foods are produced. They also influence what foods people want to eat and what foods they can access. The different elements that together form the food systems can lead to both desired and undesired outcomes. These outcomes can be categorised as: diet outcomes, nutrition and health outcomes, environmental impacts, economic impacts and social impacts (see Figure 2.1).

We can focus on food systems at different scales. The scale focus will determine what relevant drivers, activities and outcomes need to be distinguished. A country-level food system perspective, for example, will encompass a wide range of food system drivers, activities, and outcomes. The more the focus moves towards the local scale, the more it can be characterised by *specific* drivers, activities, and outcomes. It will be difficult, if not impossible, to disentangle a local food system perspective from food system drivers, activities, and outcomes outside its system boundary.

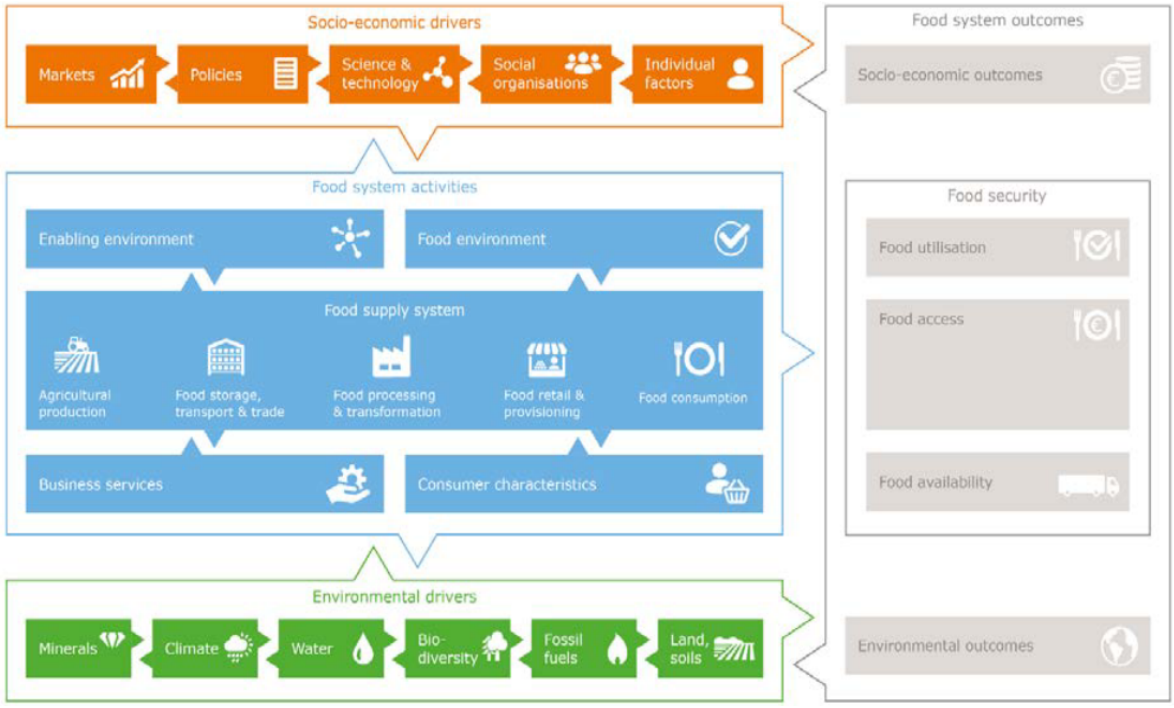

Figure 2.1 *A food system perspective (van Berkum et al., 2018)*

Food value chains are part of food systems, specifically referring to the way in which inputs into food production connect to consumers through processing, distribution and retail. A food value chain usually refers to a specific food product. Characterising a value chain as long or short involves mostly a geographic/spatial description: long means that there is a long distance and multiple transactions between food production and consumption, and short means that the distance is short, and transactions limited.

Localising food systems and shortening food value chains is about reducing distance and transactions between production and consumption. However, a localising food systems perspective is more encompassing than a shortening value chain perspective, which focuses merely on the connection and transactions between production and consumption of specific food products.

2.2 How local is local, how short is short?

'Local' means different things in different contexts and lacks a clear and unified definition (Eriksen, 2013). Local, in many cultures, especially for particular food products, has an intrinsic value, and is often equated with being of superior quality, or at least of higher value. A perspective on shortening food value chains relates to mainly the activity part of the food system, while a perspective on localising food systems is more encompassing. Most authors recognise the strong link between local food and a spatial reference (Feagan, 2010), such as in the definition from King *et al.* (2010: 2): "a local food product is defined as one that is raised, produced, and processed in the locality or region where the final product is marketed". Proximity between production and consumption is an important characteristic in this.

In the case of food systems and value chains, much more is involved than the food product alone. Production and consumption may be local, but inputs may have been imported from far away, and distribution and retail may connect to non-local markets as well. In a local food system perspective, food system drivers may be far from local. Hence, 'local food' often hides global inputs, multiple steps in the value chain, or exports (Schmitt *et al.,* 2018).

2.3 Localising food systems and shortening food value chains to strengthen resilience

The renewed interest in localising food systems, sparked by the COVID-19 pandemic, is related to the motivation to improve the **resilience** of food systems and food value chains (Sperling *et al.,* 2020). Resilience, here, is about the ability to deal with shocks (events with harmful and disruptive effects) to which food systems are exposed, and to do so in ways which safeguard, as much as possible, the positive outcomes of food systems, such as food and nutrition security (Kummu *et al.,* 2020).

Resilience is inherently difficult to predict, since an entity's resilience only becomes evident in response to an actual shock. Since every shock tends to have its own specific characteristics, every shock requires a partly unique (resilience) response. Many countries thought they were prepared for a pandemic but were taken by surprise when the COVID-19 outbreak turned out to have different characteristics than anticipated (Bené, 2020). This makes it difficult to provide evidence on positive or negative effects of localising and shortening of food value chains on food systems. Hence, it is important to learn lessons from the actual impact of global shocks such as COVID-19, as well as more local shocks on food systems and food value chains, to be better prepared and more resilient for similar shocks in the future.

Smith *et al.* (2015) argue that, rather than considering value chains and food systems to be short or long, local or global, it may be more useful to consider food value chains along the lines of resilience attributes, such as diversity, flexibility and cohesion. This is because both short and long food value chains can strengthen specific attributes of food system resilience, albeit for different types of shocks and stressors.

In this paper, we focus on the question 'to what extent does localisation of food value chains enhance the capacity of food systems to deliver desired outcomes in the face of shocks and stressors?' Taking into consideration our definition of food systems, we specify this question further by two sub-questions:

a. To what extent does localising food value chains enhance the capacity of food system agents to respond to shocks and sudden stressors?
b. How does localising food value chains impact food system outcomes?

3 Localising value chains and food system resilience: a framework

This chapter presents a framework to assess the impact of localisation on the resilience of food supply systems to different shocks as well as the impact on desired outcomes: economic livelihoods, food and nutrition security, and sustainability. Figure 3.1 below provides a simplified diagram of a food system and the components that we propose to assess.

Figure 3.1 *Simplified food system diagram with the assessed components*

In practice, localisation may take different forms. For the purpose of this framework, we define localisation of food systems as follows: support for 'local' production and consumption of one or more crops, for example in the form of agricultural subsidies and/or shortening of value chains, so that more locally produced food products become available for consumers within a particular country or region. 'Local' does not necessarily mean domestic production, as localisation policy may also focus on strengthening regional production and consumption of particular commodities that would otherwise have to be imported from other parts of the world. Short supply chains have particular benefits for the fruit and vegetable sector, with higher risk of perishability, as well as for some livestock products.[5] Especially in high-income countries, there are growing efforts to cut the distance from source to table, aiming to bring consumers closer to food sources, while reducing the vulnerabilities to market shocks as well as the carbon foot print of international transport.[6] As the COVID-19 crisis has highlighted many African countries' dependence on imported foods, there have been calls to encourage more local food production there.[7]

We propose a stepwise assessment to investigate whether promoting localisation of food value chains enhances the capacity of food systems to deliver desired outcomes in the face of shocks and stressors:

1. Understanding the **context**: what is the type of food system and what is the governance model in which the localisation of a food value chain will take place?
2. Understanding the **scope**: which components and activities of the food system are impacted when localising a value chain, and in what ways?
3. Understanding the **vulnerabilities**: how will localisation affect the value chain's vulnerabilities to potential shocks at the local, regional and global level?
4. Understanding potential impact on food system **outcomes**: what is the impact of localisation on economic livelihoods, food and nutrition security, and sustainability?

[5] 'Local food systems, short supply chains and rural development in France', FAO 2012, see: http://www.fao.org/family-farming/detail/en/c/288530/

[6] See, for example, the European 'Zero Miles to Our Mouths project': http://www.shortfoodchain.eu/News/Articles/Zero-Miles-To-Our-Mouths-Shortening-Food-Supply-Chains.kl

[7] See, for example: https://www.empowerafrica.com/the-future-of-food-production-in-africa/

5. Understanding the **trade-offs**: What are the positive or negative effects in terms of the different outcomes, as well as vulnerabilities to shocks?

3.1 Step 1: Understanding the context

To understand potential implications of localising value chains, it is important to define the socio-economic and political context within which the value chain is situated. This can be done by a) defining the food system type and b) mapping the political economy of the food value chain to be localised, including relevant actors, their interests and underlying power configurations.

Value chains operate as part of a wider food system with several characteristics. These relate to the type and shape of food environments, consumer behaviour, and external drivers such as demographic growth, politics and policy environment, and the broader socio-cultural context. To categorise food systems based on general characteristics, the Global Alliance for Improved Nutrition's food system dashboard identified a set of five archetypical food systems:

A. Rural and traditional
B. Informal and expanding
C. Emerging and diversifying
D. Modernising and formalising
E. Industrialised and consolidated

There is no consensus on this typology of food systems. For example, one could question whether types D and E are sufficiently distinct or whether the first category (A) might better be referred to as 'natural resource-based' food systems. In addition, we can see a new type of food system emerging: 'sustainable' food systems (also referred to as 'alternative' food systems). A sustainable food system 'delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised' (FAO, 2018). The point here is mainly to illustrate that different types of food systems have different characteristics that should be considered when addressing our key question.

Once the general type of food system is identified, we can specify the governance model that will define the policy and implementation strategy of the localisation of a particular value chain. It is important to consider that different food system governance actors may have different interests, ambitions and opportunities when it comes to localising a food value chain. For example, consumer representatives may prioritise accessibility of food whereas private sector stakeholders may value economic return and profit most; these can be conflicting values that require governance. Actors from governments, the private sector and civil society all have different interests and ambitions that must be accounted for.

3.2 Step 2: Understanding the scope

Depending on the type of food system and its governance model, impacts of localising a value chain will differ in scope and magnitude. These impacts can range from mere adaptations of a single value chain to transformations of the entire food system. The latter may include changes in power relations with significant effects on the livelihoods of large numbers of consumers, producers, businesspeople, and other actors in the food supply chain. Figure 3.2 presents a schematic picture of the different impact areas, including general market characteristics and different food system activities.

First, we describe the impact of localisation on the general market characteristics. When a particular food value chain is localised, this will always lead to significant adaptations and reconfigurations. For example, a shift in what crops are grown or the kind of food that is available in local markets. It is therefore important to first assess what localisation means for these broader market configurations.

As a second step, we zoom in and investigate which activities in the value chain (see Figure 3.1) are likely to be impacted by localisation and in what ways. Answers can range from minor adaptations to large-scale transformations. This can be described according to four predefined categories within the

food supply system: Production (ranging from smallholders to larger corporations); Mid-stream actors (processors, traders, transporters, input suppliers, etc.); Food Providers (retailers, restaurants, food vendors, etc.) and lastly: Consumers (in different wealth segments).

3.3 Step 3: Understanding the vulnerabilities

This step focuses on how these changes in characteristics, activities and interactions affect the vulnerability of the food value chain to different shocks and stressors. For this purpose, we can differentiate between different *types* of shocks and stressors (climate, economic, political, security, etc.) as well as different *scales* (global, regional, national, and local) at which these shocks and stressors occur. Figure 3.2 illustrates these potential shocks by listing a few examples of global and more local shocks. In principle, we expect the vulnerability to 'local' shocks, such as droughts, to increase after localisation. At the same time, we expect the vulnerability to global market shocks to decrease, for example due to a combination of improved self-sufficiency and decreased import dependency of a particular staple food.

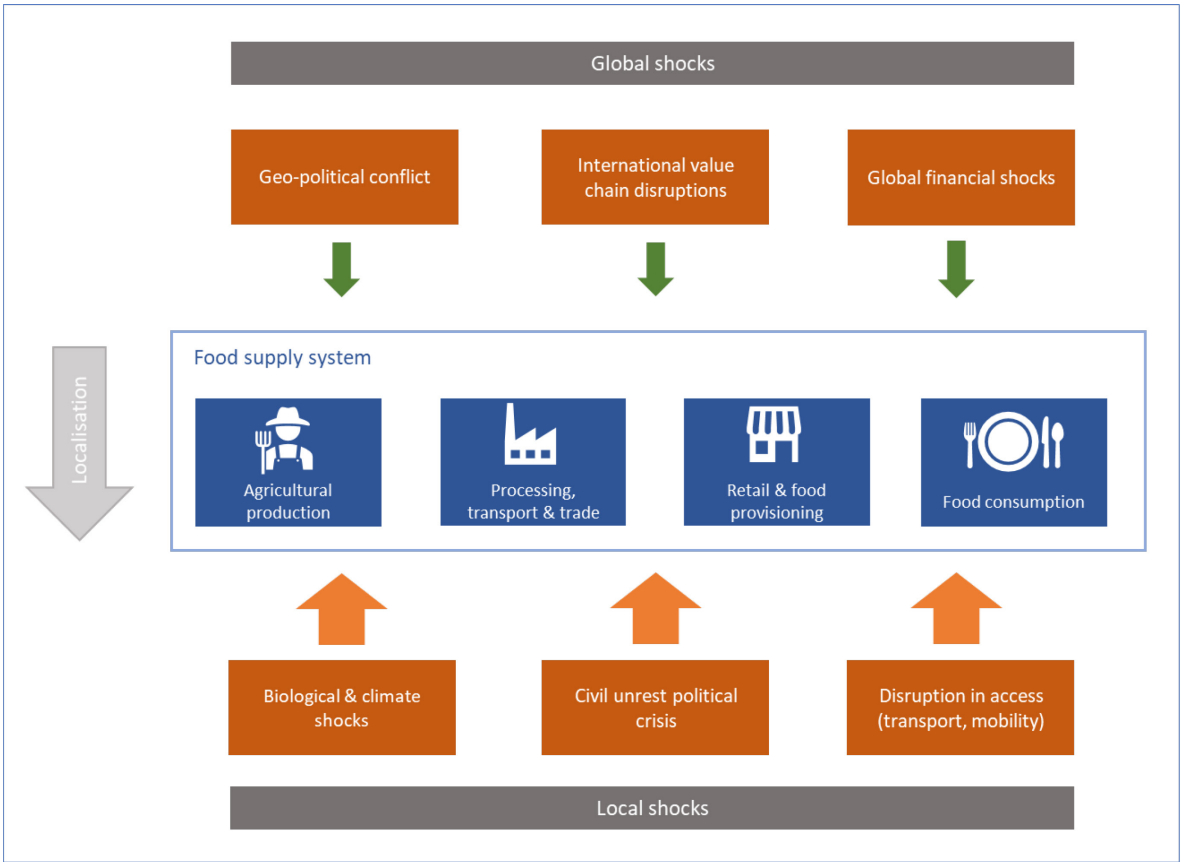

Figure 3.2 *Potential global and local shocks*

Table 3.1 provides a simple assessment tool to describe how localisation might affect the vulnerability of different actors/activities in relation to different types of shocks. The selection of shocks is by no means exhaustive but provides a few examples of food system vulnerabilities subjected to potential global and local shocks as depicted in Figure 3.2.[8] The change in vulnerability can be visualised in relation to the arrows in Figure 3.2. Larger arrows suggest a larger potential impact and the green or orange colour indicates a potential positive or negative change, compared to the situation before localisation. Even though resilience capacity is a more comprehensive concept than vulnerability, it is immeasurable by implication. Therefore, the vulnerability assessment serves as a proxy to assess the resilience capacity of value chains.

[8] For a more detailed overview of different shocks per type and scale, see Table A.2 in the Appendix.

Table 3.1 *Step 2 and 3 – Assessment tool for understanding scope and vulnerability*

Step 2: Impact on food system activities				**Step 3a: Assessment of resilience to socio-economic and political shocks after localisation**				**Step 3b: Assessment of resilience to environmental, biological and climate shocks after localisation**			
Food system activities	**Please specify and define the affected actors according to the different food supply system activities (column C)**	**Will these actors/activities be impacted by the localisation policy? Step 3**	**How will these actors/activities be impacted by the localisation policy? Step 3**	**Imagine that there is a global economic shock such as the financial crisis in 2008. Will this localisation policy reduce the vulnerability of different actors in column C?**		**Will localisation reduce the vulnerability of the actors specified in column C to local political shocks?**		**Will localisation reduce the vulnerability of the actors in column C to biological shocks?**		**Imagine that there is a long period of drought. Will localisation reduce the vulnerability of all actors in column C, or a specific actor segment?**	
See categorisation and definitions below	*Definition of the relevant actors in the context of the case*	*Yes, directly; Yes, to some extent; No*	*Describe and link to defined actors in Q3*	*Yes, it might decrease the vulnerability or No it will not change, No it might increase the vulnerability*	*Why?*	*Yes, it might decrease or No it does not change No it might increase*	*Why?*	*Yes, it might decrease the vulnerability or No it will not change, No it might increase the vulnerability*	*Why?*	*Yes, it might decrease the vulnerability or No it will not change, No it might increase the vulnerability*	*Why?*
	Q2.1	Q2.2	Q2.3	Q3.1.1	Q3.1.2	Q3.2.1	Q3.2.2	Q3.3.1	Q3.3.2	Q3.4.1	Q3.4.2
Agricultural production Ranging from smallholder farmers to larger corporations											
Mid-stream actors Processors, storage providers, traders, transporters, input suppliers, etc.											
Food provision Retailers, restaurants, supermarkets, kiosks, food vendors, etc.											
Consumption											

3.4 Step 4: Understanding the impact on food system outcomes

In this step, we focus our assessment on the potential impact of localisation on three different types of outcomes: 1) economic livelihoods (income, employment, etc.), 2) food and nutrition security, and 3) environmental outcomes (sustainability and biodiversity). There are many different indicators to assess food and nutrition security. Here, we focus on diversity, quality and safety, availability, affordability and access of food. Importantly, for all three types of outcomes we are explicitly interested in their *stability*, as opposed to *volatility.* This directly relates to the question of resilience: are food supply systems able to deliver stable outcomes in the long-term, even in the face of shocks and stressors? More specifically, what is the impact of localisation on the stability/volatility of these three types of outcomes?

Figure 3.3 provides an overview of the three types of food system outcomes with arrows indicating the positive (green), neutral (yellow) or negative (orange) impacts of localisation. For example, it could be the case that economic livelihoods of different actor groups are negatively impacted by localisation, but in contrast, localisation might contribute to more sustainable outcomes with less pollution due to reduced international transportation. In other words, there might be a trade-off between different outcomes, and thus, it is important to assess their impacts independently.

Figure 3.3 *Impact of localisation on food system outcomes*

Table 3.2 provides a simple tool to assess and describe how localisation might affect the different food system outcomes based on a few indicators. Figure 3.3 visualises the aggregate impacts across these different indicators with the green, yellow and orange arrows per food system outcome. For 1) Economic livelihoods and 2) Food and nutrition security, the expected impacts can be differentiated according to the actor groups in the food supply chain. Meanwhile, the consumer category reflects the general impact on the population, as every actor is also a consumer. The questions regarding environmental outcomes only explore a general impact, as environmental outcomes affect all actors or activities.

Table 3.2 *Step 4 – Assessment tool for understanding impact of localisation on food system outcomes*

STEP 4															
General policy questions				**Food security outcomes**								**Income and employment outcomes**		**Environmental outcomes**	
1. What is the policy? Describe it	**2. What is the type of localisation that the policy propose?**	**Food system actors (Activity specific)**	**Below: define who is the actor in column C for you to make sure that you keep consistent throughout filling the Excel sheet.**	**Does the localisation increase the supply of food products and services from following actors?**	**Why? Explain in detail**	**Does the localisation policy affect the price of food products and services supplied by the following actors?**	**Why? Explain in detail**	**Does the localisation will increase the food access or consumers?**	**Why? Explain in detail**	**Does the localisation will increase the food affordability for consumers?**	**Why? Explain in detail**	**Does the localisation increase the employment, profits and wage rates in the following actors?**	**Why? Explain in detail**	**Does the localisation increase the environmental harms of the following actors? (e.g., Carbon emissions)**	**Why? Explain in detail**
Text detailed.	*(global to regional, regional to national, national to local)*		*Definition of the actors*	*Yes, it will increase, Ambiguous, no it will decrease, no change*	*Describe and link with the actors in Column 3*	*Yes, it will increase, Ambiguous, no it will decrease, no change*	*Describe and link with the actors in Column 3*	*Yes, it will increase, Ambiguous, no it will decrease, no change*	*Describe and link with the actors in Column 3*	*Yes, it will increase, Ambiguous, no it will decrease, no change*		*Yes, it will increase, Ambiguous, no it will decrease, no change*	*Describe and link with the actors in Column 3*	*Yes, it will increase, Ambiguous, no it will decrease, no change*	*Describe and link with the actors in Column 3*
Q1.1	Q1.2		Q2.1	Q4.1.1	Q4.1.2	Q4.2.1	Q4.2.2	Q4.3.1	Q4.3.2	Q4.4.1	Q4.4.2	Q4.5.1	Q4.5.2	Q4.6.1	Q4.4.2
0	0	**PRODUCTION: Ranging from smallholders to larger corporations**	0												
		MID-STREAM: Processors, traders, transporters, input suppliers	0												
		FOOD PROVIDERS: Retailers, restaurants, supermarkets, kiosks, food vendors, etc.	0												
		CONSUMERS	0												

3.5 Step 5: Understanding trade-offs: What are the positive or negative effects in terms of the different outcomes, as well as vulnerabilities to shocks?

In the fifth and final step of the assessment, we list the results from steps 1-4 to obtain an overview of the foreseen effects of food value chain localisation on the food system components, actors, their capacity to respond to shocks and the (stability or volatility of) desired outcomes. This overview highlights the synergies and trade-offs associated with localisation policy. Policymakers can identify leverage points for interventions to optimise the synergies and to limit trade-offs as much as possible. In this step, the following questions are addressed:

1. What are the trade-offs that localisation triggers in the food system between:
    a. Economic, food security, and environmental outcomes?
    b. Vulnerabilities to global and local shocks?
    c. Different food system actors (who are winners and losers)?
2. What policy measures and other actor interventions are needed to assure that localisation will positively outbalance potential negative effects on actors & agents, outcomes and resilience?

An example of a policy measure that generates synergies is subsidising farm input supplies to farmers to sustainably intensify domestic rice production. This will result in lower production costs, hence lower purchase prices which translate, if value chains are sufficiently efficient, into lower retail prices. Resulting food system outcomes would include: more stable and higher income to farmers, more employment in midstream value chain segments, and affordable consumer prices of rice.

An example to reduce a potential trade-off is the provision of purchase vouchers to vulnerable consumers, or for inputs to less-endowed farmers. These are very specific measures to mitigate possible negative effects for one segment of society.

In the next chapter, we apply the assessment framework on the case of regional rice value chains in West Africa.

4 The case of regional rice production in West Africa

4.1 Step 1: Understanding the context

Over the past decades, the governments in the Economic Community of West African States (ECOWAS) have considered localisation of rice production a way to reduce the dependency of those countries on imports from Asia. Several West African countries (i.e. Mali, Senegal, Benin) may have access to irrigation facilities, which would potentially enable them to increase rice production enough to provide rice for the entire region. If implemented, this transition would allow for global to regional localisation. We expect that such localisation would require trade and import restrictions for Asian rice to improve the comparative advantage of local producers in the region and boost regional production. In this case study, we primarily focus on the potential influence of such trade restrictions.

The archetypical food system (based on the Food System Dashboard) of these West African countries can be defined as a mix between rural and traditional, and informal and expanding. Farming is mainly done by smallholders, and agricultural yields are typically low. Most farmers produce staple crops and a limited number of cash crops. Food imports represent a small percentage of domestic consumption, but rice is an exception as consumers depend on imported rice to a significant extent. Many food supply chains are short, resulting in many local, fragmented markets though, again, there are exceptions, such as the trade of meat from interior to coastal countries and rice across Mali, which is traded over long distances. The lack of refrigeration and storage facilities results in considerable food losses for some crops, which may make producers less likely to diversify into perishable foods. The lack of refrigeration can also contribute to the fragmentation of markets. The quantity and diversity of foods available varies seasonally, often with a pronounced lean season, during which less food is available. Seasonal price swings tend to be large. Many countries with rural and traditional food systems are experiencing rapid growth in rural non-farm employment opportunities (e.g. sales of agricultural inputs, basic food processing, small-scale trading, and storage).

Food is generally sold in informal market outlets, including independently-owned small shops, street vendors, and central or district markets. Supermarkets are rare outside of capital cities, though they are beginning to grow in number along with fast food chains.

The governance model of the West African food system is defined by a distinct dichotomy between formal and informal actors. The formal actors include the government and larger, registered corporations, sometimes including formal farmers' associations. Meanwhile, the informal actors include a vast array of smaller enterprises and producers who operate on their own terms of engagement. Although powerful informal actors influence the government, they co-exist and operate in parallel. This impacts the effectiveness of government policies which are put into place but may lack either implementation or adherence by informal actors.

Figure 4.1 summarises the ECOWAS food system context.

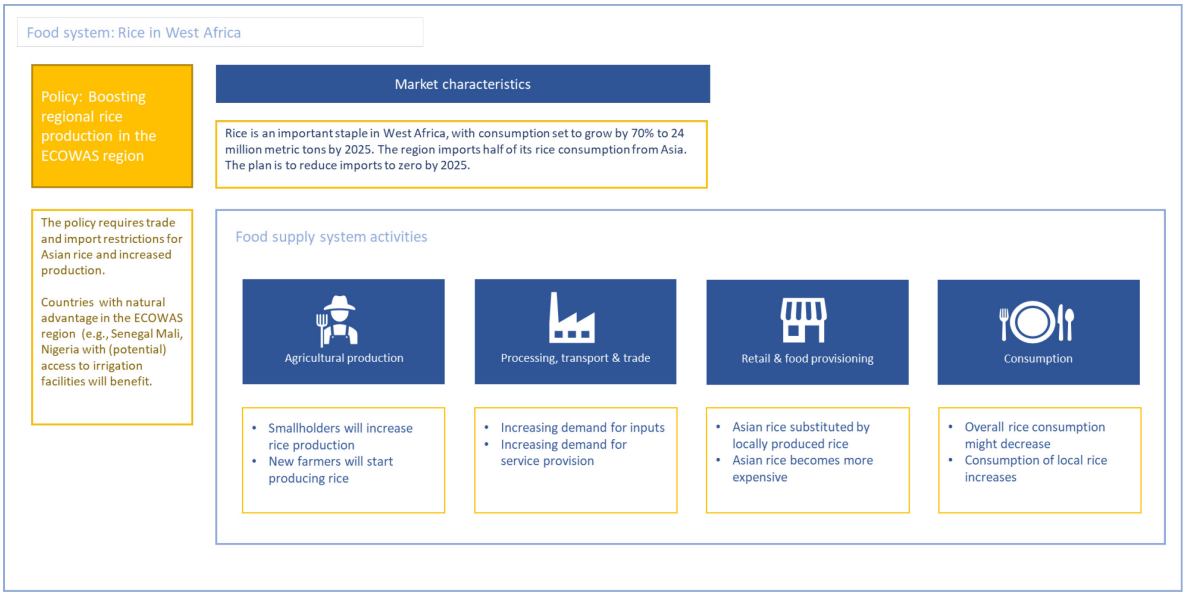

Figure 4.1 *Step 1 - Context of rice in West Africa*

4.2 Step 2: Understanding the scope

Localisation of the rice value chain will affect agricultural production, food storage transport and trade, food retail and provisioning, and consumption components of the food system in ECOWAS countries. It will influence the activities of the following actors involved in the affected food system components.

Smallholders in Mali, Senegal, northern Benin who either have access to river-based irrigation or small, inland valley-based irrigation ('bas fonds') suitable for rice production. These individuals are the first agents that such a localisation policy will directly affect. Specifically, we expect that these smallholder producers will expand rice production by opening new rice cultivation areas. This will have implications for their cropping systems, as resources are transferred from other crops to rice production. Moreover, some new farmers will start producing rice.

Midstream businesses that collect, buy, process, and transport rice, and provide inputs to rice-producing smallholders, who serve as the so-called mid-stream actors between smallholders and food providers. This group of actors will be the second sector that the localisation of rice production will affect. We foresee that the need for inputs for rice (e.g. seeds, pesticides), transportation, processing, and extension services will increase due to increased production. This will increase the number of and the service provision by mid-stream actors.

Food providers, including retailers, restaurants, supermarkets, kiosks, food vendors, etc. will be the third group affected by this policy shift. We predict that these retailers will start substituting Asian rice with local rice in their businesses, as the cost of Asian rice relative to local rice will increase as a result of import tariffs for Asian rice or subsidies for local production. On the short run, the price of locally produced rice will increase.

Poor and middle class, urban and rural consumers for whom rice is an important staple food will be the final group affected. As a result of localisation, these consumers' consumption behaviour will transition as the price of Asian rice will increase more as compared to local rice and the latter becomes their preference. Moreover, rice consumption might decrease if the average price of rice overall increases as a result of localisation.

Rice importers have a powerful position in West Africa's food systems but will be the first to experience negative impacts of government measures that promote more local rice production. These stakeholders are likely to resist such measures.

4.3 Step 3: Understanding the vulnerabilities

Localisation might reduce the vulnerabilities of actors to the effects of global economic shocks, as local production is less affected by external, global events. For example, a global financial crisis might disrupt rice imports, whereas localisation will guarantee a stable availability of rice. However, increased dependency on local supply of rice compared to global supply might also increase the vulnerability of the food system to other shocks. For instance, there will be more smallholder rice producers concentrated in specific regions that might be affected by drought and pest attacks, or domestic political shocks. Hence, midstream businesses and local food producers might become more vulnerable to various local shocks, as they have become increasingly dependent on local rice production (see Figure 4.2).

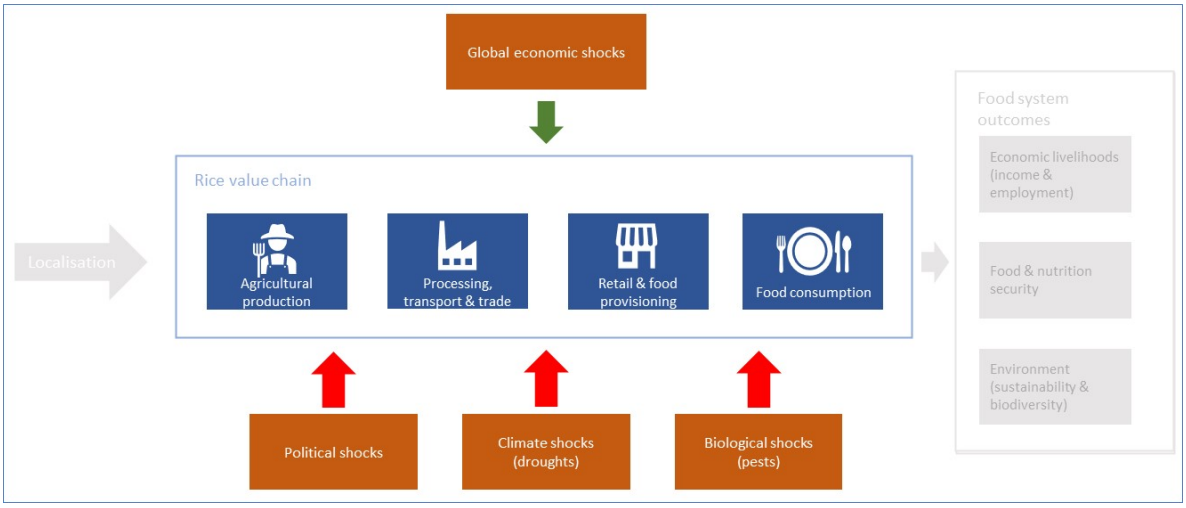

Figure 4.2 *Step 3 - Vulnerabilities to shocks*

4.4 Step 4: Understanding the impacts on food system outcomes

Localisation of rice production will likely have a wide variety of impacts on food system outcomes, ranging from positive to negative. For example, it will increase the supply of rice by local smallholders and local midstream businesses processors, traders and transporters, benefitting them. Meanwhile, the impact on food retailers, and the subsequent effect on the retailers' communities, is ambiguous. This ambiguity results from retailers' inevitable desire to substitute Asian rice on their shelf with local rice, as government policies favourable to local rice value chains make Asian rice more expensive. However, whether they can supply enough local rice to satisfy the consumers will depend on the extent and stability of the local rice production. Finally, consumers might not have access to enough rice in the short run, as it takes time to increase domestic rice production.

We also expect that in the short- to medium-term, rice prices will increase, affecting the affordability of rice, specifically for consumers with lower purchasing power. Farm gate prices of local rice will be higher than prices of Asian rice, as the smallholder rice producers' costs are higher than those of their international counterparts. As local production grows, value chain actors should allocate more capital and labour to the rice value chain. Though this will increase the costs of value chain services in the short-term, as time passes and those services develop further, one can expect that economies of scale develop, decreasing the costs and eventually the price of those services.

Increased local production will increase employment opportunities and income for smallholders and midstream businesses. However, upscaling of local rice production may lead to environmental effects, including deforestation, increased water use and greater GHG emissions as a result of local

transportation and manufacturing activities (involving increased petroleum use in ECOWAS region). These negative impacts may, however, outbalance the effects of long-distance transportation and production elsewhere, depending on the modes of production and associated environmental impacts.

Figure 4.3 *Step 4 - Impact of localisation on food system outcomes*

4.5 Step 5: Understanding the trade-offs: What are the positive or negative effects in terms of food system outcomes and vulnerabilities to shocks?

ECOWAS's localisation of rice production aims to improve rice production in West Africa and to reduce the region's dependency on imported rice. The actors expect that localisation would mitigate the effects of fluctuations in global rice prices and supply, as well as improve food security in those food systems. West African governments are the main drivers of this policy. However, we have identified three main trade-offs of the localisation policy: 1) Economic outcomes versus food and nutrition security, 2) global versus local shocks, and 3) consumers versus smallholder producers and midstream businesses. Table 4.1 explains those trade-offs and provides an overview of interventions that could address them, and align the interest of different food systems actors.

Table 4.1 *Summary of trade-offs and mitigation interventions*

Trade-offs	Interventions to address trade-offs
Economic outcomes vs. food and nutrition security: After the localisation, we expect an improvement in economic livelihoods due to increased local production of rice. However, food and nutrition security might deteriorate if rice prices increase. Moreover, increased rice production might lead to deforestation and increased carbon emission in Western African countries.	• Market price subsidies for rice to decrease the market price of rice for consumers. • Income support to vulnerable groups. • Input subsidies to smallholders to increase local rice production further and decrease the cost of rice production. • Controlled import of rice from Asian economies to ensure sufficient market supply of rice until local production improves.
Global vs. local shocks: Rice value chain activities and consumption become more resilient and, hence, less vulnerable to global shocks such as global financial crises (e.g. the 2008 financial crisis) or a global pandemic (e.g. COVID-19). However, the local food system may become more vulnerable to local shocks, such as droughts, pests or political unrest.	• Upscaling of climate-smart agriculture practices among rice producers that might mitigate the effects of local climatic shocks. • Maintaining the mechanism and knowledge to import Asian rice in case of local shocks, such as political unrest and pest and diseases.
Consumers vs. smallholder producers and midstream businesses: After localisation, the consumers from West African economies might pay higher prices for local rice than imported rice in the medium-term. In contrast, smallholder producers' and midstream businesses' income levels will improve due to increased economic activity after localisation.	• Market price subsidies for rice can (partially) be financed through tax incomes from improved economic activities due to increased rice production or by revenues from rice import tariffs.

5 Discussion

Whether or not to pursue a localisation process is a political question of balancing norms and values, as well as powers and interests.
Since the outbreak of the COVID-19 pandemic, there has been increasing attention for the resilience of food supplies (Bakalis *et al.*, 2020). Localisation of food value chains is widely seen as a means to increase food system resilience (Kalfaganni and Skordili, 2019). In this paper, we argued that this trend contrasts with the predominant neoliberal economic and globalisation policies of the past decades. Localisation of food value chains takes place in a crowded stakeholder environment, as it touches on the interests of many different segments of society. This complex system of involvement creates challenges for the adequate governance of a localisation process, which are further complicated by an unequal distribution of representation and power between stakeholders (Hinrichs, 2003; Scott, 2015). We also observe that opinions on the virtues of localisation of food value chains are based on assumptions which are often not factual, or evidence based (Born and Purcell, 2008). It is against this background that we developed an assessment tool to highlight the effects and consequences of food value chain localisation on a food system in terms of actors and outcomes. By making explicit which components of the system are affected and who will benefit, and who will not, we provide insights that facilitate more evidence-based decision-making. Yet, we realise that we cannot make up the final balance between positive effects and trade-offs, as such an equation is composed of entities of different natures which cannot be simply added up. In the end, a decision as to whether or not to pursue a localisation process is a political question of balancing norms and values, as well as powers and interests. However, with our tool, this process can be made more transparent.

Different approaches to promote localisation of food value chains, will come with different benefits and trade-offs.
The rice localisation case clearly indicates that a food value chain transformation affects multiple components in the food system. Not only will it change the terms of trade of the value chain, but to make it successful, national trade and agricultural development policies will need to be adjusted. Moreover, this will require cross-ministerial alignment and cooperation which is known to be a difficult process. In the example of rice localisation in West Africa, regional trade cooperation through agreement and implementation by ECOWAS-member states would be required. Evidence from recent regional policies in the ECOWAS region suggests a rather poor track record of enforcement and implementation of regional trade policies.

An alternative approach would be to promote consumption and production of local rice through 'nudging' consumer behaviour and supporting local production. This would require public campaigning or private sector marketing, including promotion, to improve visibility of and information about locally-produced rice. This promotion should likely be combined with subsidised rice production, such as through the provision of affordable inputs and extension services, or private sector tax exemptions and market price subsidies.

Whatever approach is chosen, there will inevitably be both benefits and trade-offs to the localisation of rice value chains. In the short-term, vulnerable consumers will be confronted with higher retail prices, affecting the affordability of rice. As such, their resilience in terms of capacity to respond to a shock may be reduced. In addition, importers may experience barriers to their businesses and may mobilise their political influence to counteract such decisions. Localised rice production may also be susceptible to climate variability and biological shocks, while localised supply chains may be disrupted by political instability, all together reducing the resilience of the food system.

Localising food value chains is about creating hybrid food systems, combining local and global elements.

Whereas the debate on localisation is heating up, we may pose the question whether the contrast between localisation and globalisation is that strong. We postulate that localising food value chains is about coming to hybrid food systems, where some of the food value chains become more local, while others remain global (Schmitt *et al.*, 2018). Consumers are often connected to a variety of food value chains, both longer and shorter ones (Filippini *et al.*, 2016; Malak-Rawlikowska *et al.*, 2019). The resilience of food systems may be found in this combination, as it supports resilience attributes such as diversity and flexibility. Rather than focusing on how short or long value chains and food systems need to be, the question is what type of hybrid combination of short and long, as well as orientations on local and beyond-local, best support resilience in various situations (cf. Burnett, 2019). Evidence on such interacting global and local food value chains is still lacking (Feyaerts *et al.*, 2019).

Our assessment tool simplifies reality, as capturing the full complexity of the impact of localisation is a mission impossible.

Food systems and their resilience are more than the sum of value chain actors and their activities, including many anthropogenic and biophysical drivers. In this paper, we focused on the primary actors and activities to be affected by localisation of a food value chain. We only briefly touched on some of the more indirect drivers of changes in food systems. With our tool, we navigate between simplicity and complexity, as the latter may result in slow response or even inertness. Although not complete, our tool adds insights which are of use to those involved in the critical decisions regarding the pursuit of localisation of food value chains.

6 Conclusion and recommendations

Attention for localising food value chains is on the rise, fuelled by global crises including the COVID-19 pandemic. Societal organisations, international research institutes, and various national governments have put the topic of local versus global food systems, in relation to food system resilience, high on their agendas. After a few decades of market liberalisation, which sped up the integration of African economies into global value chains, African governments and societal organisations have recently called for action to improve the resilience of African food value chains through increased regional and domestic agricultural production.

Although there are many different approaches and schools of thought regarding the pros and cons of food value chain localisation, these discourses and debates lack empirical evidence. Literature on ways to assess localisation of value chains and results from evidence-based assessments of its implications remain scarce. Hence, in this paper, we set out to unpack the question as to whether promoting localisation of food value chains enhances the capacity of food systems to deliver desired outcomes in the face of shocks and stressors.

In order to advance our understanding on the plausible effects of localisation of food value chains on food system actors and outcomes, we developed a framework of analysis consisting of five questions that need to be addressed, to be able to unpack the main research question. These questions are:

1. Understanding the **context**: what is the type of food system and what is the governance model in which the localisation of a food value chain will take place?
2. Understanding the **scope**: which components and activities of the food system are impacted when localising a value chain, and in what ways?
3. Understanding the **vulnerabilities**: how will localisation affect the value chain's vulnerabilities to potential shocks at the local, regional and global level?
4. Understanding potential impact on food system **outcomes**: what is the impact of localisation on economic livelihoods, food and nutrition security, and sustainability?
5. Understanding the **trade-offs**: What are the positive or negative effects in terms of the different outcomes, as well as vulnerabilities to shocks?

This framework can add to more transparent food system governance by informing stakeholders on foreseen effects on actors, their capacity to respond to shocks, and outcomes of localising a food value chain. These insights create clarity on who will potentially win and who may lose, as well as policy options to mitigate trade-offs and other negative effects. The development of this assessment framework provides a first step to gather evidence on the impact of localising food systems on food system resilience. In a follow-up stage of this research, the assessment framework can be applied on other case studies to come to comparative analyses of the impacts of localisation of food systems in different contexts, and can be validated in stakeholder consultations.

We applied the framework to the example of the localisation process of rice production in West Africa, and conclude that this localisation policy potentially leads to three trade-offs: 1) Economic outcomes versus food and nutrition security, 2) Resilience to global versus local shocks, and 3) Consumers versus smallholder producers and midstream businesses. Applying the assessment framework in a systematic way contributes to overall understanding of these (potential) trade-offs – to be analysed in further detail in a follow-up stage of the research. The outcomes of this analysis will help policymakers in their decision-making process and in choosing appropriate instruments to mitigate trade-offs.

We conclude this paper with five key recommendations:

1. The assessment tool that we propose will only achieve its purpose of more transparent decision-making if results are made public and shared with all stakeholders involved. It is even more advisable to follow an iterative process of applying the tool and answering the five questions through debate among various interest groups.

2. We recommend that careful attention is paid to roles and responsibilities associated with different actors in the governance of the food system. Quite often, much is expected of the scope and impact of government policy, but despite this, track records of effective implementation are limited. Meanwhile, other actors can achieve desired outcomes if acknowledged and included in the decision-making process, and provided with facilities for their empowerment. This is not an easy process but given the stakes and challenges of food system transformation that deliver more on desired food system outcomes, changing the terms of food system governance must be considered.

3. We explored the impacts of localisation of a food value chain on the resilience of a food system but were limited to the assessment and response capacity of value chain actors and effects on food system outcomes. This only includes parts of the more generic resilience capacity of a food system. We have discovered that this is rather unchartered territory with limited empirical work done so far, and therefore recommend that additional and more comprehensive research is done in this area.

4. Our case study shows that policymakers might come across various trade-offs when localising food production. It might increase the food system's vulnerability to local shocks while improving food systems' resilience to global shocks. Moreover, in the medium-term, it might create challenges for food security and nutrition, although it might enhance local production. Some actors may benefit (small-scale producers in our case) from the localisation, while others lose. Therefore, policymakers can estimate the costs and benefits of the policy on the food system actors, outcomes, and vulnerabilities, and design complementary policies (e.g. input or price subsidies, upscaling climate-smart agricultural practices) to the localisation of food production so that the food system benefits from the localisation to the greatest extent possible.

5. The framework that we propose does not conclude on the net effects of the localisation on the food system outcomes and vulnerabilities at an aggregate level. Future research should be conducted to understand how one can combine the effects of localisation on different actors and food system outcomes.

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Appendix 1

Table A.1 *Type of arguments and counterarguments*

Aspects of food systems	Argument for making food systems more local in orientation	Counterargument	Types of questions to be addressed
Quantitative (discrete amount)	Food is best produced where it is consumed	There will not be sufficient food in some areas. Food is best produced where conditions are most favourable	How does it affect food sufficiency?
Spatial (continuous extension)	It supports a sense of place by connecting people to their "roots" in a particular locality through consuming local food	This does not have to be through food alone; different geographies provide different opportunity which, if exchanged, add value for all. This includes comparative advantages and related opportunities for specialisation.	How does it affect place-based qualities? How does it connect to spatial comparative advantages?
Kinetic (movement)	Transportation and mobility challenges will be less		How does it affect/connect to circularity, continuity, mobility?
Physical (energy, material)	Less CO2 emissions	CO_2 emissions from transport are coming down already	How does it affect food availability, accessibility?
Biotic (life, organism)	In shorter chains and local food systems, there will be more attention for biodiversity and reducing impact on the environment; a lower ecological footprint	Local does not automatically mean better for the environment	How does it affect biodiversity, health (security), ecosystem services?
Sensitive (perception, emotion)	Connectedness to the local makes people feel good	How it feels should not become more important than how it works	How does it affect a sense of security and safety?
Analytical (distinction)	It is easier to understand how issues along the food chain play out, including potential wrongs	In a globalised world there are many opportunities for understanding how food chains work	How does it affect the ability to understand relevant processes?
Formative (power, give function)	Local production will be more careful with resources, aiming for sustainable use	Local does not automatically make things more sustainable	How does it affect productivity?
Lingual (signification, symbolising)	Food has become too anonymous, too much a commodity without intrinsic value linked to its origin, whereas it supports a sense of identity if part of a sense of place.	This can be addressed in other ways as well, such as moving towards "the end of commodities"	How does it affect cultural expressions of food?
Social (company, community)	It offers more opportunities for connecting producers and consumers more closely	In a globalised world, there are many possibilities for social interaction across borders	How does it affect opportunities of inclusiveness, equity, participation?
Economic (provision)	It secures more stable food provisioning	In many/most cases provisions cannot be secured on the bases of only local	How does it affect affordability and efficiency?
Aesthetic (delight, enjoyment)	Enjoying "short/local is beautiful"	Short may be beautiful, but to some extent longer will be needed	How does it affect experienced beauty, appeal, recreation?
Jural (legality)	It is easier to control such things as food quality	If the value chain is well organised and monitored, quality requirements can be legally enforced.	Can it be regulated well?
Ethical (loving, morality)	It supports a sense of solidarity and responsibility for caring and sharing within the food system	In a globalised world, solidarity can also be expressed across borders.	How does it affect (mutual) accountability, responsibility, solidarity?
Fiduciary (belief, faith, commitment)	Local food systems can be based more on trust relationships between producers and consumers	Local not automatically means more trustworthy	How does it affect meaning, trust, hope, reliability?

Table A.2 *Shocks, stress by geographical impact, risk level, frequency, and impact area*

	Shock (event)	Stress (prolonged disruption)	Scale of impact	Risk level (likelihood of occurrence)	Frequency	Impact area
Socio-economic	Stock market or housing market crash	**Economic crises** e.g.: Financial crises, food price crises, exchange rate crises, inflation, reduced output/production (GDP)	International/ regional	Very high	Cyclical	▪ Income ▪ Employment ▪ Productive capabilities ▪ Food and nutrition security ▪ Price stability ▪ Investment opportunities and outlook
	Pandemic	Public health crisis, economic crises	International	Medium	1/100 year	
	Epidemic	Public health crisis, economic crises	National	Medium	?	
	Trade wars	Economic crises	International/regional	High	Uncertain	
	Legislation	Uncertainty	National/international	Medium	Uncertain	
Political	Coup d'état	Economic crises capital flight/reduced investment, physical insecurity	National	Depends on region	?	▪ Physical security and governance ▪ Investment outlook
	Post-election violence		National/regional	Depends on region	?	
	War (civil, regional, world)		National/regional/international	Depends on region	Constant	
Environmental	Drought	Prolonged over multiple seasons, fires, economic crises	National/regional	Depends on the region	?	▪ Livelihoods ▪ Food and nutrition security
	Heavy or erratic rains	Soil erosion, flooding, economic crises		Depends on region	?	
	Pests and disease infestation	Food price crises		Depends on the region	?	

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The mission of Wageningen University & Research is "To explore the potential of nature to improve the quality of life". Under the banner Wageningen University & Research, Wageningen University and the specialised research institutes of the Wageningen Research Foundation have joined forces in contributing to finding solutions to important questions in the domain of healthy food and living environment. With its roughly 30 branches, 6,800 employees (6,000 fte) and 12,900 students, Wageningen University & Research is one of the leading organisations in its domain. The unique Wageningen approach lies in its integrated approach to issues and the collaboration between different disciplines.