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Scientific Group

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Advance Equitable Livelihoods

- a paper on Action Track 4 -

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Introduction:

The purpose of the Action Track 4 science group is to provide the scientific basis for the work of the Action Track. Our task encompasses reviewing the evidence that studies the nature of the issues and the evidence that underpins potential solutions. The central issue identified by the AT 4 team has been stated as:

Inequality and power imbalances – at household, community, national and global levels – are consistently constraining the ability of food systems to deliver poverty reduction and sustainable, equitable livelihoods.

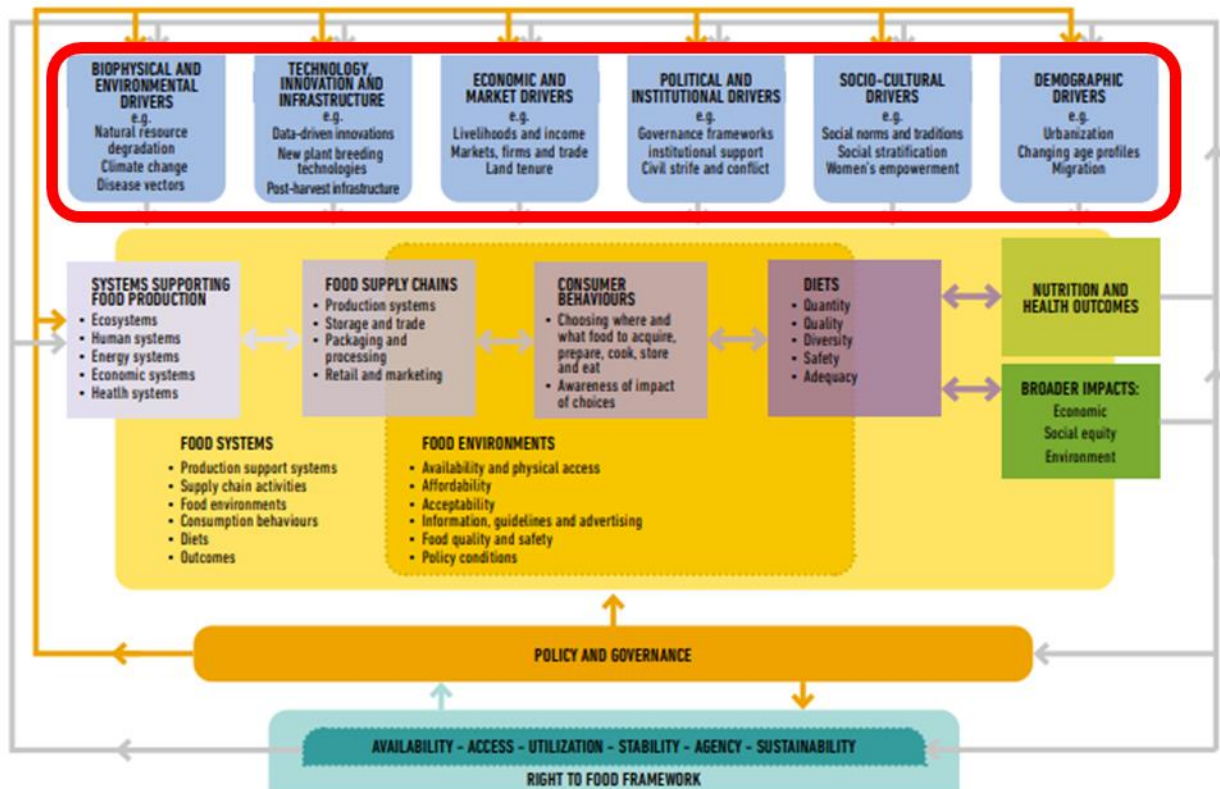
They explicitly call out inequities related to gender, youth, and indigenous populations. They focus on small and medium size food producers, but also equitable access to employment and livelihoods across the food system. The solutions they propose revolve around building agency, changing relations, and transforming the structures that underpin this imbalance of power and result in inequalities, as illustrated in the following figure (Figure credit: Action Track 4 Discussion Starter, October 2020):



The most effective way to sustainably eradicate poverty and inequality is to raise the productivity of resources that the poor and excluded depend on for their livelihood. Progress in advancing equitable livelihoods and value distribution therefore involve several key areas ranging from distribution of assets, access to infrastructure and services and quality of living spaces. Interventions to produce real change on the ground need to empower the poor and those living in vulnerable situations to (i) access and accumulate assets, (ii) participate gainfully in the broader economy and (iii) enjoy liveable spaces in healthy communities.

To fulfil the task of the science group, we need to step back and consider the evidence related to the drivers of this inequality and power imbalances, as they relate to livelihoods *within* the food system. To provide structure to this review, we refer to the conceptual framework of food systems developed by the High-Level Panel of Experts in 2017,¹ and updated in 2020,² illustrated below.

FIGURE 2
SUSTAINABLE FOOD SYSTEM FRAMEWORK



SOURCE: ADAPTED FROM HILPE 12, 2017

Specifically, we organize our review around the six drivers of food systems as identified by the red box. In the subsequent section, we will review the evidence for: 1) how these drivers influence equality and power balances as related to food systems livelihoods, and 2) what actions have shown potential to shift these, with particular consideration to how these actions may build agency, transform structures, and change relations. Achievement of equitable livelihoods in food systems will require that substantial progress be made across four areas:

1. **A rights-based approach:** recognition of and accountability for human rights including living wage and the right to food,³ and advance the agenda toward the right to a healthy food.
2. **Long-term investment for structural changes:** Foster, prioritize and invest in needed structural changes across the food system that result in true pricing of food; trade policies and practices that recognize and adequately balance challenges and trade-off including agricultural incomes and food access; endowments (productive assets); investment in rural areas and infrastructure and systems that will better link small producers to markets
3. **Local and national policy and programmes:** Strengthening and coordinating policies based on evidence and context including labour policies; agriculture and food policies that simultaneously foster healthy diets and fair pay; strengthened and well-targeted safety nets and social protection
4. **Research, development and deployment of innovation and technology** that favours those in situations of vulnerability and livelihoods across the food system

Framed around the drivers of sustainable food systems, this draft provides an updated description of key issues how each set of drivers relates to food systems livelihoods specifically. And begins to consolidate the evidence for solutions from the literature. Subsequent versions of this further expand

on potential solutions, explore the extent to which these 4 aspects have been sufficiently considered, and provide suggestion on appropriate metrics to track progress across each domain.

Biophysical and Environmental drivers, particularly soil, water, and climate change:

Nature of the issue as a driver of inequality and power imbalances

- Small and medium sized producers and people living in situations of vulnerability are disproportionately affected by all biophysical and environmental drivers including soil and water resources). Inequal in opportunities to access to these factors may determine productivity growth, resilience, need for migration, and thus affect their livelihoods via diverse pathways.
- Climate change is accelerating these issues; affecting the nutrient content of staple foods that populations rely on, increasing extreme weather, exacerbating the risks to livelihoods of low productivity, resilience, migration.

In the rural areas of many developing countries, natural resources are an important source of food, both through direct consumption and through providing the basis for income generating activities (e.g. cash crops, forest products) that enable people to purchase food. Access to natural resources like land, water and forests is a key element of livelihood strategies (“natural capital”), together with other elements such as access to employment and/or credit (“financial capital”). Because of this, measures to improve access to resources are an important element of strategies for the progressive realization of the right to food (IIED/FAO 2008).

“**Soil is soul and water is life**” is the central theme of sustainable soil and water management practices in India. ([D.J. Rajkhowa](#) et al 2015). The number of people whose livelihood depends on **degraded lands** has been estimated to be about 1.5 billion worldwide. People in degraded areas who directly depend on natural resources for subsistence, food security and income, including women and youth with limited adaptation options, are especially vulnerable to the consequences of land degradation and climate change. Land degradation reduces land productivity and increases the workload of managing the land, affecting women disproportionately in some regions. Land degradation and climate change act as threat multipliers for already precarious livelihoods, leaving them highly sensitive to extreme climatic events, with consequences such as poverty and food insecurity and, in some cases, migration, conflict and loss of cultural heritage (IPCC 2020). The major anthropogenic drivers of erosion are land use and potentially climate change through a more intense hydrological cycle. M.R. O’Neal et al., (2005). While much research attention has focused on arable agriculture, (J. Boardman, and Poesen J., 2006), it has been demonstrated that seminatural systems cannot be ignored, possibly accounting for ~half of global soil erosion by water (P. Borrelli et al., (2017). There are many indications **that water is** becoming an increasingly scarce resource, a point often made over the last 10 years (Falkenmark, 1997, Molden, 2007). Access to water is now recognised as a prerequisite for poverty reduction (Sullivan and Meigh, 2003), but in today’s complex and changing world, competition for water from many different sectors can divert attention from its role in the improvement of human livelihoods (Llamas and Rogers, 2005).

Climate change is the defining issue of our time and we are at a defining moment. From shifting weather patterns that threatened food production, to rising sea levels that increase the risk of catastrophic flooding, the impacts of climate change are global in scope and unprecedented in scale. The adverse effect of climate change and variability has become an environmental and socio-economic problem which is increasingly causing climate-driven hazards to people around the world ([Scholze et al., 2006](#)). They argued that climate change serves as a serious inhibitor to the attainment of food security and also to the fulfillment of major developmental agenda in the majority of global economies. Climate change could undermine social welfare, equity, and the sustainability of future

development. In particular, it is generally believed that developing countries and disadvantaged groups within all countries are more vulnerable to the impacts of climate change as a result of limited resources and low adaptive capacity, (Munasinghe, 2000).

Evidence for potential solutions:

For the world's poorest smallholder farmers and pastoralists, unpredictability is the only constant. Ending global hunger is not just about breeding drought-resistant corn; it is also about having a plan for when that corn fails anyway. In other words, it is as much about reimagining social networks as it is about deciding what goes into the ground. If global hunger is to be eradicated, the underpinnings of rural resilience must be supported, expanded, and diversified. One of the best ways to do this is by investing in new technologies that enable farmers to connect with information and institutions that can [decrease uncertainty and mitigate risk](#). S.J.Vermeulen (2012).

To mitigate risk, people in rural areas have always relied on their personal networks for information to help them weather crises, improve productivity, and limit crop losses. In return, these relationships have facilitated the exchange of information and goods, diversified diets, strengthened farming techniques, and guarded against hunger. According to a [2017 working paper](#) by the CGIAR Research Program on Climate Change, Agriculture, and Food Security, some of the most promising innovations in rural agricultural are technology- and service-based. With access to data, markets, and financial services, farmers can plant, fertilize, harvest, and sell products more effectively. At the moment, these types of innovations are not featured prominently in most hunger-alleviation strategies. But that is slowly changing, especially as [more people in emerging economies](#) connect to mobile networks, and [apps designed to collect and share agricultural information](#) become increasingly accessible. Of course, the mere existence of this technology will not end hunger. The challenge is to broaden access to all of these tools, and to ensure that they meet the needs of the farmers who use them. This demands that mobile technologies take into [account differences in gender, education, and resource levels](#) among farmers, and are responsive to changing circumstances. The [impact and success of these tools and programs should be monitored and evaluated](#), with ineffective approaches being improved or replaced. [Leah Samberg](#), (2018).

Successful initiatives and opportunities:

Since 2004, HarvestPlus has facilitated the release of 211 biofortified crop varieties in 30 countries. The biofortified crops are developed by the CGIAR Centers (refs). An estimated 7.6 million farming households in HarvestPlus focus countries are growing biofortified crops delivered by HarvestPlus and its partners, benefiting some 38 million farm family members who consume these crops. The figure of 38 million beneficiaries does not account for people who consume biofortified crops purchased in markets or who consume processed foods made from biofortified crop, Harvest Plus (2018) Annual report.

The FAO Rural Water Livelihood Index (RWLI) attempts to assess some of the more fundamental, water-related components which influence rural livelihoods, and which can support rural poverty reduction. In this way it can help decision makers target investments more effectively, ensuring funds get allocated to where there is most need. However, what is really needed is an objective, universal measure of water performance, calculated from a small number of specific dimensions of how water impacts on people's livelihoods. While such a measure has yet to be agreed upon, it is hoped that projects such as this will help to guide discussions toward a consensus on how such a measure may be derived.

Innovation, technology, and infrastructure drivers:

Nature of the issue as a driver of inequality and power imbalances:

- Innovation and technology have focused to date on high income country food system;
- Even where may be applicable for smaller businesses across the value chain – access constrained

Innovation, technology and infrastructure have been and will be major drivers for food system transformation.¹ Access to new technology has had large impacts on both agricultural production, transportation/processing, and marketing, as well as consumption including diets and nutrition^{4,5}. Mechanization, new breeding methods, chemical synthetic inputs, food processing have changed the way food is produced, stored, distributed, consumed. Essentially focusing on yield and productivity improvement and being key in the 20th century in achieving yield increases superior to the incredible demographic one, they have played a major role to prevent global famines and create equal or even better opportunities for women, young and the disabled to shrug of poverty. As an example, digital technology is highly consistent with sustainability in agriculture, supporting more rapid growth of small holders by reducing the sunk costs for them to participate into the market.

As any technology that would increase productivity throughout the whole food system, and it will not only promote agricultural and rural development but also help to reduce the diversity of different ethnic groups and alleviate poverty. In addition, technology progress will also generate externalities for production, trading and consumption, and thus generating additional benefits for improving livelihoods. As farmers are always looking for a better way to grow their crops, and scientists, manufacturers and service providers constantly respond through innovation, this provides significant off-the-farm employment in rural areas (in factories located near the farm where the technology will be used; for technicians and mechanics who operate and repair machinery and devices; for others who work in related businesses, such as book-keepers, sales staff, et.al). Such employment offers opportunities for skilled and economically sustainable employment to rural people helps rural poverty reduction and inclusive development.

For both short and long distances value chains, infrastructure strongly influences the way food is produced, processed, transported, distributed, sold, conserved, and ultimately consumed. Infrastructure is required for food to move long distances and to increase food security in areas of shortages, to stabilize food prices, to minimize food-borne disease and food waste. Roads, railroads, shipping, or cold chain facilities play an essential role. Access to infrastructure vary and are often limited for the rural poor. In South Sudan and Somalia for example, poor road infrastructure is a major barrier to food access.⁶ This has a particular impact on the different dimensions of livelihoods, and more specifically on the nutritious and sanitary quality of the food, on conditions to access food and on losses and waste⁷.

Evidence for potential solutions:

Building more sustainable food systems and addressing 21st century challenges will require new research and technologies. Breakthrough in digital sciences offer promising perspectives. New technologies are being used to very positive effect to ensure that nutrition does not “exit” the food supply chain⁸.

Yet, the availability of technology is not a sufficient condition to promote sustainability. Better access to and use of existing technologies, developing context-specific solutions and designing and implementing innovation that are adapted will be essential to improve livelihoods. While innovative technology has the potential to contribute to produce enough nutritious and sustainable food to feed the planet, it also presents the risk to damage human and environmental health, and, as a consequence, to directly and indirectly negatively affect livelihoods⁹. The need to produce healthier food and to address all SDGs through food systems transformation will thus require innovative and responsible efforts by the actors in the world’s food supply chains.

Many breakthrough technologies imply disputes and sociotechnical controversies¹⁰, that more and more generate dual oppositions and polarized polemics. The HLPE¹¹ has looked at different controversial issues that reflect contemporary debates around technology: the deployment of modern biotechnologies or digital technologies, the use of synthetic fertilizers, biofortification. Based on examples and evidence, it was for example shown that the livelihood and equity impacts generated using modern biotechnology vary considerably according to socio-ecological context. In some contexts such technology has resulted in market concentration in the industries that provide inputs to agriculture, shifts to larger farm economic units and displacement of smallholder farmers, reduced farmer participation in breeding and significant price increases in seeds¹²⁻¹⁵. These socio-economic trends then directly affect livelihoods, equity, knowledge and culture. Whatever the controversial issue, evidence highlights how institutional environments are essential to direct technology and innovation impact. Looking rigorously at all pros and cons about the use of digital technology in agriculture, the report concludes that the key question of impact not only depends on characteristics of the technology itself, but also on access patterns, innovation arrangements and governance about who controls the technology itself¹¹.

Successful initiatives and opportunities:

Making the rural space and other disadvantage geographies more liveable. Access to technology and infrastructure are just part of what is needed to create a solid foundation for productive and dignified livelihoods. Equally important are access to non-land assets as well as social and productive services. The ultimate goal ought to be to render rural and disadvantage communities more liveable. For that to happen, public investments outside of agriculture, whether in the social, infrastructure and technology sectors, need to be prioritized on the basis of their contribution to productivity, wealth and asset accumulation among rural and other disadvantaged communities. In other words, rather seeking to maximize the absolute level and share of sectoral budgets, negotiations between government agencies and department need to focus on aligning programming of interventions by individual ministries such as to maximize synergies across sectors around the liveability of vulnerable geographies and communities. Less competition and more coordination among government entities would internalize externalities across sectors such as to deliver the most impactful interventions for the poor and those living in vulnerable situations^{16 17,18}.

The importance of competitive food processing sectors for urban employment and the future of smallholder agriculture. The services sector is now the largest in the vast majority of African and many other countries in South Asia and Latin America. The sector, which tends to be dominated by clusters of informal activities, now constitutes the largest reservoir of low-productivity labor¹⁷. The pace of future growth, poverty reduction and decline in inequality will therefore depend as much on progress in raising labor productivity in services sector, in particular its informal segment, as in agriculture. The growth of the informal services sector is no longer just an urban issue. There is in fact recent evidence which suggests that the share of both women and men employed in the informal services sector is increasing faster in rural areas and towns than in major urban areas¹⁹.

The informal food processing sector has grown significantly over the last decade, thanks to rapid urbanization and growing middle class, and has become one of the most dynamic segments of food staples value chains²⁰. It is currently the fastest growing export sector, both to African and outside markets²¹. African food markets are projected to grow considerably over the next decade, most of the expansion driven by urban demand for processed staples (Haggblabe 2011). It is estimated that upward of two thirds of staples food consumed in Africa by 2040 will be in processed form (Dolislager, Tschirley and Reardon, 2015).

The emerging staples food processing sector is currently characterized by a large and growing number of primarily female headed small enterprises producing a similar assortment of low-quality products targeting the same customers. Low innovation capabilities resulting from limited access to financing and technology leads to low and declining profits, which stifles firm growth and job creation. Effective strategies to promote enterprise creation and growth and modernize the sector would not only help create better paying jobs in urban centers as in rural towns, but they would also help connect local smallholder farmers to the rapidly expanding urban markets. In contrast, a weak and uncompetitive domestic processing sector will cut smallholder producers from future demand growth to the profit of competing imports and reduce employment opportunities in rural areas²².

There are indications that the small and medium size enterprises in the food sector are not getting the attention they need. Recent evidence suggests that large, formal enterprises tend to receive public support more likely than medium size and small enterprises, in particular with respect to access to training and networking opportunities (Tadesse and Badiane, 2020). Future strategies to promote equitable livelihoods and value distribution in domestic food systems will need to reverse the current formality and size bias in order to tap into the employment and smallholder modernization opportunities resulting from the rapidly transforming staples value chains for the benefits of farmers and low skilled workers in urban centers and rural towns.

Political and economic drivers:

Nature of the issues:

Many political and economic factors are essential causes of inequality and power imbalances at household, community, national and global levels, which in turn constrain the ability of food systems to deliver poverty reduction and sustainable, equitable livelihoods, in many countries^{23,24}. These political and economic factors may cause inequality and imbalances through a complex mechanism, and also could be the consequence. On the one hand, both political instability and poor economic performance are believed contributing to rural poverty and inequality of livelihood in rural sectors of many developing countries in Asian, Latin African and Sub-Saharan African countries and regions^{25,26}. On the other hand, a burgeoning literature shows that rapid economic growth is not a sufficient condition for inclusive development²⁷⁻²⁹. In addition, the political and economic drivers may also interact with innovation, technology and infrastructure to influence food systems as well as inequality and power imbalances related to gender, youth, and indigenous people. Consequently, the question here is not whether but how economic growth and institutional/policy arrangements may affect inequality in access to production and employment opportunity (Losch et al., 2012; World Bank, 2013; IMF, 2015) and limit access to the public services that prevents the development of inclusive, equitable livelihoods³⁰, before proper policy implications could be generated.

Evidence for potential solutions:

Conflicts and crises: Conflicts and crises, usually resulting from an unstable policy system and uncertain property right arrangements, damage trust and social cohesion among the stakeholders throughout the food systems, discourage public and private investment and cause slowdown in economic growth and less inclusive rural and structural transformations^{27,29}. This will in particular do harm to the youth, women and other disabled who usually associated with small holders and workers along the whole food supply chain, since they are in the relatively more vulnerable situations when resource and employment opportunity are in paucity. Moreover, political and economic conflicts are also more likely to persist in the management of common resources where for example, limiting the poor to get the equal opportunity for accession and thus making “resolving disputes” more difficult (Bardhan, 2005, Lichbach 1989). While divers of conflicts and crises and their impact differ across countries for different

income groups, appropriate policies to resolve the issue would include a stable political system, transparent market mechanism for resource allocation and enforcement of clear property rights among others.

Leadership: Underrepresentation of youth, women and aboriginal population in the leadership positions imposes a great challenge to poverty and inequality reduction in most developing and transitional economies³¹. Without saying rights, these population groups living in vulnerable situations generally unable to obtain equal opportunities throughout the whole food systems. For example, recent empirical studies show that women's disadvantage starts long before reaching the executive level for off-farm employment³², and there is evidence that the rate of increase in profits of management entities is higher when women participate in farm management than when they do not. Similar situation is also faced by youth, and those in vulnerable situations (e.g., disabled, elderly people). Meanwhile, inequality in access to productive resources, working opportunities, market participation rights and public services, which is originated from lack of wide-representative leadership, also prevents the inclusive development in the food systems. Studies on almost all developing regions except Latin America and the Caribbean indicate the number share of farm less than 2 ha (small farm) is much higher than its size share of total farmlands³³, equitable livelihoods. In other sectors of the food systems, resources and public services are also unequally allocated.³⁴ As a solution, attention should be paid to improve the governance, In particular, policies around the food systems needs to explicitly recognize the *specific constraints faced by minority groups (particularly, women)* to join the leadership and their roles in agri-food systems in particular in the local regions, ensuring their participation in decision making and that their rights secured and protected such as land tenure and access to natural resources and markets³⁵.

Land tenure and labor institution: The livelihood inequality can be reduced through providing stakeholders with more equal accessibility to land and economic opportunities. Inequalities and specific vulnerabilities among stakeholders in the farm system, including smallholder farms, actors in food value chains living in vulnerable situations, usually arise from inequitable economic opportunities caused by rigid land, credit and labor market institutional arrangements, lack of market information, market segregation, and distorted government policies among others³⁵. Subdivision among siblings make it harder for rural youth to obtain as much land as their parents had³⁶, in most contexts have been historically marginalized economically, socially and politically. In addition, making value chains more inclusive by removing market monopoly and various discrimination also work. *Reduce and eliminate specific land institutional barriers to inclusive, equitable livelihood development:* Food system transformation that does not address inequalities and specific vulnerabilities runs the risk of reinforcing and deepening inequalities into the future and undermining the resilience of food systems.

Globalization and trade: As pointed out by the HLPE⁹, trade is a critical issue to ensure food security and nutrition and affect the inequality. Trade affects all four pillars of FSN in a complex way. Although international trade and financial flows may result in income inequality within a country^{37,38}, a massive amount of evidence overwhelmingly indicates that a critical role of globalization and international trade in generating sustainable global and national agriculture and equitable livelihoods among countries. The likely inequality within a country due to globalization and trade liberalization within a country can be minimized through capacity building and policy supports for disadvantage groups to adjust their agricultural production structure and enable them to engage more in employment in the exportable agricultural production. Meanwhile, globalization and trade also interact with other powerful drivers, especially technology and demographic trends, which shape food production, distribution and consumption, and provide a great opportunity to resolve the inequality problem throughout the rural development⁹. Although there is complexity coupled with the rapid pace of change generated by the pandemics and the renewed celebration of food sovereignty, the role of international trade in the realization of FSN is still regarded as the most essential and long-standing tool among governments, civil society organizations and academics to facilitate rural development and reduce poverty.

Food prices and volatility: Increase food prices and reduce their volatility will help to ensure the profitability of all stakeholders along the food supply chains, and in particular will bring benefits to the small holders who are more vulnerable in the production system. However, such a change may generate negative impact on the welfare of the poor through reducing their food affordability and physical access. This problem needs to be managed through enlarging the social protection system. On the other hand, decrease in food price and increase in food price volatility will hurt agricultural and food producers, agricultural insurance can be essential for the producers, particular small holders.

Trade can play an important role in raising local food supplies and stabilizing prices for domestic consumers and producers alike.³⁹ In general, food production is much more stable at the regional and global levels than it is within a given country. This is because production shortfalls and excesses across wider geographic areas tend to offset each other. Trade provides the opportunity to supplement supplies in cases of domestic production shortfall or rapidly expanding demand and thereby help prevent sharp price increases that would affect access to food negatively. Inversely, in cases where rising domestic supplies threaten to depress local prices, trade provides the opportunity to export excess quantities and maintain prices at more profitable levels for local producers. Consequently, the best strategy to mitigate the equity effects of trade and exploit its benefits for the poor and vulnerable is to invest in and support the productivity and competitiveness of smallholder producers to enable to capture a larger share of local markets.

Social protection: Based on evidence and experience, the HLPE⁴⁰ has assessed the current situation of social protection, as a menu of policy instruments that addresses poverty and vulnerability, through social assistance, social insurance and efforts at social inclusion. The report identifies experiences and challenges and proposes recommendations for using social protection more effectively to protect and promote food security and nutrition. The analysis is framed by the recognition that the right to adequate food and the right to social protection are human rights under international law that are not only morally and legally appropriate but also likely to lead to improved food security outcomes.

Successful initiatives and opportunities:

Protect livelihoods and boosting productive capacity among communities in vulnerable situations. In the context of limited resources and large-scale poverty and inequality, catalytic interventions based on synergistic investments to protect livelihoods and boost productive capacity among vulnerable communities are the most viable strategies. Most countries face a double challenge of finding sufficient resources to invest in growth and meeting the rising cost of social services in the face of a rapidly growing population. Given tight budget constraints, the pace of future economic growth and improvement in livelihoods will depend on the ability of governments to find ways to maximize the impact of rising expenditures in social sectors, such as health, education and safety nets, on agricultural and off-farm labor productivity. In other words, the strategic questions faced by countries searching for the highest returns to public investments in terms of alleviation of poverty and vulnerability and reduction of inequality are: (a) how to allocate public expenditure and maximize long-term growth while meeting short-term social services needs to the largest extent possible; (b) how to maximize the synergies between social services and direct productivity-enhancing investments in the short and long run; and (c) how to fully exploit the growth externalities of investments in social services.

Resolving the above trade-offs not only calls for better coordination of interventions across government but also recognition and effective exploitation of that fact that differences in services and how they are bundled produce different impact on productivity of the poor and those living in vulnerable situations, and thus their livelihoods. For instance, the magnitude of the impact of a given dollar amount spent on education services on smallholder and low skilled off-farm and urban

labor productivity will depend on the extent to which it targets vocational training and other efforts to upgrade and develop skills in the relevant sectors. Ulimwengu and Badiane⁴¹ provides evidence for this based on study on Vietnam. Against the background of the current Covid-19 pandemic, the same concept can be illustrated using the example health services. First, there is evidence that morbidity has a bigger impact on productivity of the poor and vulnerable than among better off segments of the population⁴². Second, it has been shown that different types of health services have different impact on disease prevalence and morbidity⁴³. It is therefore possible to allocate public investment in health services such as to target diseases that have the largest effects on the productivity of smallholders and low skilled laborers and excluded communities. For instance, a health budget that partly caters for services to control seasonal diseases that curtail labor availability during peak cropping seasons would contribute to smallholder productivity and livelihoods more than a budget focusing on modernization of hospitals in urban centers. Allen and co-authors⁴⁴ show that morbidity does not only affect labor availability and productivity, it also affects the choice of technologies and returns to use of fertilizers and mechanization. More importantly, different health services have different impact on disease prevalence which affects efficiency and thus livelihoods differently even among the poor, those living in vulnerable situations, and across gender^{42,45}.

Demographic and socio-cultural drivers:

Nature of the issues:

Vast evidence illustrates that several socio-cultural drivers underpin inequalities among and within societies and constrain the potential for some to benefit from actions to improve livelihoods, particularly women, youth, disabled, aged persons, and indigenous populations (IFAD, 2016; FAO, 2017; IFPRI, 2019). Socio-cultural drivers also impact and set the norms for the dynamics of the other drivers, including political and economic drivers (e.g. the kind of leadership, and therefore policy direction), demographic (e.g. population growth), innovation/technology (e.g. who has access to that technology), etc. As such, structural barriers for several groups particularly women and youth include land rights, access to financial services, among others (refs). In addition, inequality of opportunity is an important constraint. Social protection has an important role to play in protecting those living in vulnerable situations. Programs that direct resources to women, for example have shown greater impact on food security and other household-linked benefits.⁴⁰ However, social and structural barriers may limit women's access to several types of social protection programs, including public works and agricultural input and support.⁴⁰ In addition to these considerations, language, culture and tradition may influence willingness to participate and potential to benefit from social protection programs, unless national programs are adequately adapted to such sub-national contexts.⁴⁶

There are approximately 185 million indigenous women in the world, belonging to more than 5 000 different indigenous peoples. Despite the broad international consensus about the important role indigenous women play in eradicating hunger and malnutrition, there are still limitations in the recognition and exercise of their rights (FAO, 2020).

Few, if any, economic or social transformations over the past decades can be brought into focus without explicit attention being paid to the demographic transition, inextricably linked to several socio-cultural drivers. The growth of the urban sector, driven by both natural increase (fertility exceeding mortality) and rural-to-urban migration (Dyson, 2011; United Nations, 2001), helps to fuel agricultural transformation. Rural populations are declining. Both fertility and mortality have been falling in rural areas, converging from levels higher than urban areas towards urban levels. Pressure and opportunity

lead parts of growing rural cohorts to migrate to cities or to seek diversified livelihoods within the rural sector. This movement also contributes to the structural transformation of the economy.

Predominantly male (or female) migration among youths and young adults over the course of the urban transition may have additional impacts on the gendered nature of economic roles and overall status of women (Lastarria-Cornhiel, 2006; Gray, 2009).

Increased urbanization means a growing gap between the location of food production and food consumption. As a result, there is a growing need for food processing, transportation, and transformation beyond the farm level, providing opportunities for jobs and entrepreneurship. In Ethiopia, Malawi, Mozambique, Tanzania, Uganda and Zambia, the transformation of the food system is forecast to add more jobs than any other sector of the economy by 2025. This is an opportunity to see to it that these jobs are accessible also to rural women and youth who may disproportionately live in vulnerable situations, *FSP (2018)*. Yet evidence suggests that women entrepreneurs face many additional barriers compared to their male counterparts including lack of mobility, access to finance, access to business networks and mentors, limited leadership experience, lower literacy and numeracy, discriminatory gender norms and stereotypes (Nordhagen, 2020).

Today there are significant knowledge gaps on rural outmigration trends, which need to be tackled. This is particularly the case for migration driven by distress, when people do not perceive there is any other viable livelihood option except to migrate. Reliable data, disaggregated by sex, age, origin and destination are necessary to understand socio-economic conditions associated with migration. At the moment, these data are scarce (Carletto, C., Larisson, J. and Özden, C. 2014).

Evidence for potential solutions:

Changing demography is first and foremost about women and girls. Lower fertility and less child mortality constitute a gentle revolution of women's empowerment. Increased education of rural people is likely to encourage migration and urbanisation, not stem them. The global demographic patterns points towards an ageing population - with Africa as the exception - at least up to 2050 – and the overall implications of population growth for policy lie in the imperative for investments in health and education, and for sound policies related to labour, trade and retirement. Important key-factors for education *includes gender-equitable access to quality education* from early childhood to adolescence, including for children with disabilities, marginalized children and those living in humanitarian and emergency settings⁴⁷. *For the food system to grow sustainably and equitably, policymakers and development partners need to focus on the inclusion of women and youth.* This includes transforming land tenure in equitable ways⁴⁸, facilitating job training and education programs, affordable financial services for marginalized populations, and actively including women and youth in the policy-making process (FSP, 2018).

*Policies that help increase the productivity of rural youth through more and better educational investments at earlier ages and that help to incorporate them into productive jobs as they enter the labour force, will be sure ways to increase the first demographic dividend.*⁴⁹ But structural constraints must also be addressed, for example ensuring youth access to opportunities in diverse agricultural sectors.⁵⁰ *Similarly, strategies that raise the returns to labour in farming remain crucial for achieving rapid economic transformation and may constitute the core of effective youth employment strategies*¹⁷ (Yeboah et al, 2018; Badiane and Makombe, 2014). This also means that efforts to increase female productivity should be a principal concern. Policies to reduce rural population growth include direct measures such as family planning, but also poverty reduction, health improvements and schooling for girls can play a major role. Alongside these strategies, rural sector households must become confident in their options for life cycle savings and this will depend to a great extent on how credit markets

develop. *Here, policies that create greater trust and confidence in savings institutions – and this will depend on performance and accountability – will help foster a behavioural shift by households.*

The second demographic dividend, which can produce a permanent increase in economic growth, may depend on the ability of states to enact such policies⁴⁹. Sub-regional economic unions could help promote intra-regional labour mobility if concerted efforts are made to harmonise national laws with regional and sub-regional treaties (Aderanti Adepoju, 2002). According to Ambreena Manji (2010) commercial banks will come to play an increasingly important role in third world economies.

According to FSP (2018) it is critical for governments, development partners, and private sector actors to take advantage of the growth in the food system to improve employment prospects. This includes promoting the growth of food value chains, taking employment intensity into considerations in policy decisions, and facilitating inclusion of youth, women, and other marginalized populations. Policymakers can improve the quality of jobs available, as well as the quantity. At the same time, the valuation and rescue of food systems guarded by indigenous communities can constitute a strategy for designing and implementing public policies aimed at mitigating food insecurity worldwide. New food processing technologies can help to broaden the impact of new foods on the supply and its quality. The institutional resilience approach can be applied universally to mitigate food insecurity and generate new processes of local adaptation for many territories vulnerable to climate change. It is important to recognize that native or indigenous populations have ancestral knowledge of food systems they have maintained for millennia; the use and exploitation of these systems is the key to deciphering a new theoretical model oriented towards sustainability and food provision to the territories that need it (Lugo-Morin, 2020).

Successful initiatives and opportunities:

The Farmer Field and Business School model (Care FFBS)), synchronises gender dialogues (alongside dialogues about market, agriculture and nutrition) with the agricultural calendar, and creates structured spaces for reflection on gender social norms, beliefs and practices at both the community and household levels. This model transforms gender relations.

Another successful experience is that of the FAO Dimitra Clubs, comprised of groups of women, men and young people, who organise themselves and work together to bring about changes in their communities. The Dimitra Clubs help women and men to become more aware of gender inequalities and act to address them, particularly to change the roles and responsibilities within households and the community, working together to transform gender relations.

References [incomplete list; not edited]:

- 1 HLPE. Nutrition and Food Systems. A report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome, 2017.
- 2 HLPE. Food security and nutrition: building a global narrative towards 2030. A report by the High Level Panel of Experts on Food Security and Nutrition of the committee on World Food Security. 2020.
- 3 UN. Universal Declaration of Human Rights. 1948
https://www.ohchr.org/EN/UDHR/Documents/UDHR_Translations/eng.pdf.
- 4 Pingali PL. Green Revolution: Impacts, limits, and the path ahead. *Proc Natl Acad Sci U S A* 2012; **109**: 12302.
- 5 Hueston W, McLeod A. OVERVIEW OF THE GLOBAL FOOD SYSTEM: CHANGES OVER TIME/SPACE AND LESSONS FOR FUTURE FOOD SAFETY. National Academies Press (US), 2012
<https://www.ncbi.nlm.nih.gov/books/NBK114491/> (accessed Oct 25, 2020).
- 6 ACAPS. Famine: Northeast Nigeria, Somalia, South Sudan, and Yemen. 2017
https://reliefweb.int/sites/reliefweb.int/files/resources/20170522_acaps_famine_theme_final_report.pdf (accessed Nov 29, 2020).
- 7 Food losses and waste in the context of sustainable food systems. ; : 117.
- 8 Fanzo JC, Downs S, Marshall QE, Pee S de, Bloem MW. Value Chain Focus on Food and Nutrition Security. *Nutr Health Dev World* 2017; : 753–70.
- 9 HLPE Report # 12 - Nutrition and food systems. ; : 152.
- 10 Science in Action.
https://books.google.com/books/about/Science_in_Action.html?hl=de&id=sC4bk4DZXTQC (accessed Oct 25, 2020).
- 11 HLPE Report #14 - Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. ; : 163.
- 12 Mascarenhas M, Busch L. Seeds of Change: Intellectual Property Rights, Genetically Modified Soybeans and Seed Saving in the United States. *Sociol Rural* 2006; **46**: 122–38.
- 13 Bank W. World Development Report 2008. Washington, DC, 2007 DOI:10.1596/978-0-8213-6807-7.
- 14 (19) (PDF) Agribusiness Concentration, Intellectual Property, and the Prospects for Rural Economic Benefits from the Emerging Biofuel Economy. ResearchGate.
https://www.researchgate.net/publication/237739849_Agribusiness_Concentration_Intellectual_Property_and_the_Prospects_for_Rural_Economic_Benefits_from_the_Emerging_Biofuel_Economy (accessed Oct 25, 2020).
- 15 Heinemann JA, Massaro M, Coray DS, Agapito-Tenfen SZ, Wen JD. Sustainability and innovation in staple crop production in the US Midwest. *Int J Agric Sustain* 2014; published online March 3.
<https://www.tandfonline.com/doi/abs/10.1080/14735903.2013.806408> (accessed Oct 25, 2020).

- 16 Wouterse FS, Taffesse AS. Boosting growth to end hunger by 2025: The role of social protection. 2018. DOI:10.2499/9780896295988.
- 17 Badiane O, Makombe T. Beyond a middle income Africa: Transforming African economies for sustained growth with rising employment and incomes. 2015. DOI:10.2499/9780896298927.
- 18 De Pinto A, Ulimwengu JM. A thriving agricultural sector in a changing climate: Meeting Malabo Declaration goals through climate-smart agriculture. 2017. DOI:10.2499/9780896292949.
- 19 Badiane O, McMillan. Economic transformation in Africa: Patterns, drivers, and implications for future growth strategies. <https://ebrary.ifpri.org/digital/collection/p15738coll2/id/130007> (accessed Oct 25, 2020).
- 20 Reardon. Transformation of African Agrifood Systems in the New Era of Rapid Urbanization and the Emergence of a Middle Class. <https://ebrary.ifpri.org/digital/collection/p15738coll2/id/130005> (accessed Oct 25, 2020).
- 21 Bouët A, Odjo SP, Zaki C. Africa agriculture trade monitor 2020. 2020. DOI:10.2499/9780896293908.
- 22 Food for All in Africa by Gordon Conway, Ousmane Badiane and Katrin Glatzel | Paperback. Cornell Univ. Press. <https://www.cornellpress.cornell.edu/book/9781501743887/food-for-all-in-africa/> (accessed Oct 25, 2020).
- 23 International Monetary Fund. Fiscal Policy and Income Inequality. *Policy Pap* 2014; **14**. DOI:10.5089/9781498343671.007.
- 24 Rodríguez-Pose A, Ezcurra R. Is fiscal decentralization harmful for economic growth? Evidence from the OECD countries. *J Econ Geogr* 2011; **11**: 619–43.
- 25 Dutt P, Mitra D. Inequality and the Instability of Polity and Policy*. *Econ J* 2008; **118**: 1285–314.
- 26 Alesina. Income distribution, political instability, and investment. *Eur Econ Rev* 1996; **40**: 1203–28.
- 27 Bowling Alone. https://books.google.com/books/about/Bowling_Alone.html?hl=de&id=rd2ibodep7UC (accessed Oct 25, 2020).
- 28 Acemoglu D, Robinson JA. The Political Economy of the Kuznets Curve. *Rev Dev Econ* 2002; **6**: 183–203.
- 29 (19) (PDF) Equity and Development: Political Economy Considerations. ResearchGate. https://www.researchgate.net/publication/278777068_Equity_and_Development_Political_Economy_Considerations (accessed Oct 25, 2020).
- 30 UNDESA World Social Report | DISD. <https://www.un.org/development/desa/dspd/world-social-report.html> (accessed Oct 25, 2020).
- 31 O'Brien DJ, Wegren SK. The Underrepresentation of Women in Leadership Positions in Rural Russia. *Rural Sociol* 2015; **80**: 86–107.
- 32 Growth and Structure of Rural Non-farm Employment in Maharashtra: Reflections from NSS Data in the Post Reform Period | Elsevier Enhanced Reader. DOI:10.1016/S2212-5671(14)00184-1.

- 33 Lowder SK, Bertini R, Karfakis P, Croppenstedt A. Transformation in the size and distribution of farmland operated by household and other farms in select countries of sub-Saharan Africa. *2016 Fifth Int Conf Sept 23-26 2016 Addis Ababa Ethiop* 2016; published online Sept. <https://ideas.repec.org/p/ags/aaae16/246969.html> (accessed Oct 25, 2020).
- 34 Pryck JD de, Termine P. Gender Inequalities in Rural Labor Markets. *Gend Agric* 2014; : 343–70.
- 35 The future of food and agriculture – Trends and challenges. Summary version. ; : 52.
- 36 Land pressures, the evolution of farming systems, and development strategies in Africa: A synthesis. *Food Policy* 2014; **48**: 1–17.
- 37 Feenstra RC, Hanson GH. Globalization, Outsourcing, and Wage Inequality. National Bureau of Economic Research, 1996 DOI:10.3386/w5424.
- 38 Feenstra RC, Hanson GH. Global Production Sharing and Rising Inequality: A Survey of Trade and Wages. In: *Handbook of International Trade*. John Wiley & Sons, Ltd, 2008: 146–85.
- 39 Badiane O, Odjo S. Regional Trade and Volatility in Staple Food Markets in Africa. In: *Food Price Volatility and Its Implications for Food Security and Policy*. Springer Open, 2016: 385–412.
- 40 Devereux S, Eide WB, Hoddinott J, Lustig N, Subbarao K. HLPE Project Team members. 2012; : 100.
- 41 Ulimwengu J, Badiane O. Vocational Training and Agricultural Productivity: Evidence from Rice Production in Vietnam. *J Agric Educ Ext* 2011; published online Jan 6. <https://www.tandfonline.com/doi/abs/10.1080/1389224X.2010.515062> (accessed Oct 25, 2020).
- 42 Badiane O, Ulimwengu JM. Malaria incidence and agricultural efficiency in Uganda. 2013. DOI:10.1111/j.1574-0862.2012.00626.x.
- 43 Wouterse F, Badiane O. The role of health, experience, and educational attainment in agricultural production: Evidence from smallholders in Burkina Faso. *Agric Econ* 2019; **50**: 421–34.
- 44 Allen S, Badiane O, Sene L, Ulimwengu J. Government Expenditures, Health Outcomes and Marginal Productivity of Agricultural Inputs: The Case of Tanzania. *J Agric Econ* 2014; **65**: 637–62.
- 45 Quisumbing AR, Meinzen-Dick RS, Njuki J. 2019 Annual trends and outlook report: Gender equality in rural Africa: From commitments to outcomes. 2019. DOI:10.2499/9780896293649.
- 46 Théodore FL, Bonvecchio Arenas A, García-Guerra A, *et al.* Sociocultural Influences on Poor Nutrition and Program Utilization of Mexico’s Conditional Cash Transfer Program. *J Nutr* 2019; **149**: 2290S-2301S.
- 47 Every child learns. <https://www.unicef.org/reports/UNICEF-education-strategy-2019-2030> (accessed Oct 25, 2020).
- 48 Developing gender-equitable legal frameworks for land tenure: A Legal Assessment Tool | Gender and Land Rights Database | Food and Agriculture Organization of the United Nations. <http://www.fao.org/gender-landrights-database/resources/publications/publication-details/en/c/385329/> (accessed Oct 25, 2020).
- 49 Menashe-Oren A, Stecklov G. Rural/Urban Population Age and Sex Composition in sub-Saharan Africa 1980–2015. *Popul Dev Rev* 2018; **44**: 7–35.

50 Youth Driving Agricultural Transformation in the Cocoa Sector. Mastercard Found. 2016; published online Sept 16. <https://mastercardfdn.org/youth-driving-agricultural-transformation-in-the-cocoa-sector/> (accessed Oct 25, 2020).