

SELLING TO THE WORLD'S POOREST

THE POTENTIAL ROLE OF MARKETS IN INCREASING ACCESS TO NUTRITIOUS FOODS



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ABOUT GAIN

The Global Alliance for Improved Nutrition (GAIN) is a Swiss-based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition. Working with governments, businesses and civil society, we aim to transform food systems so that they deliver more nutritious food for all people, especially the most vulnerable.

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The GAIN Working Paper Series provides informative updates on programme approaches and evaluations, research, and other topics relevant to helping reshape the food system to improve the consumption of nutritious, safe food for all people, especially the most vulnerable.

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SUMMARY

Poor people in the global South eat diets with few nutrient-dense foods, putting children and adults alike at risk of malnutrition. Strategies to improve their diets will look different depending on whether current access to such foods is mostly via home production or via purchase and on whether poor families actually want to consume more of specific nutrient-dense food groups. This paper uses secondary data from nine countries where GAIN works to investigate whether poor consumers currently access healthier foods via market purchases and whether they would choose to purchase additional quantities of healthier foods if they had the income.

We find that there are very large differentials in the value of consumption of many food groups between poorer and less poor households, indicating substantial pent up demand. This is especially true for animal-source foods (in Africa, Bangladesh, and Indonesia) and sugary foods (in all countries). Even in the poorest countries, many food groups are mostly accessed as purchased commodities (in South Asia almost exclusively). We find this to be true even for the poorest 20% of the population in each country. For this group, though, it is often the case that neither home production nor purchase offers a viable route to regular consumption of nutrient-dense foods.

For each of the nine countries studied, we are able to identify priority nutritious food groups that fall into one of three categories: (i) those that need concerted efforts to reduce consumer prices in order to release pent up demand, (ii) those that need promoting and marketing in order to increase consumption in all kinds of households, and (iii) those that could benefit from a focus on improved productivity at the household level.

KEY MESSAGES

- Poor people in the global South struggle to access nutrient-dense foods because they are unavailable, unaffordable, or both.
- Across nine countries in Africa and Asia, richer households consume much more of certain kinds of foods than poor households, especially animal-source foods and sugary foods. This indicates pent up demand for these foods.
- Even for the poorest households in these countries, home production is generally not as important as purchase, but there are exceptions.
- To increase consumption of healthy, nutrient-dense foods, policies and programmes need to consider whether there is already pent up demand and whether consumers are best reached via home production or via market mechanisms. ‘Low-hanging’ targets can be identified in each category.

BACKGROUND AND OBJECTIVE

Although much progress has been made in reducing poverty around the world, there were still, in 2015, 736m people living in extreme poverty (1). With less than USD 1.90 per person per day¹ for all their needs, these people struggle to survive. In the same year, many more people—over a quarter of the world’s population, in fact—lived on less than USD 3.20 per day, a second World Bank threshold chosen to represent the typical poverty line in lower-middle income countries. Two-thirds of the population of sub-Saharan Africa were living below this slightly more generous poverty line, as were nearly one half of the population of South Asia. Tragically, the global Covid-19 pandemic is expected to dramatically increase the numbers of poor people, with one model predicting an additional 148m people falling into extreme poverty as a result (2).

Poverty and malnutrition are inextricably linked. A ‘nutrient-adequate diet’ always costs more than USD 1.90 in every region of the world except for Western Asia (3),² and a ‘healthy diet’ (one that is both nutrient-adequate and diverse) costs more than USD 3.20 in every region except Oceania.³ Clearly, these costs make nutritious diets utterly unaffordable for the poor, and their greater exposure and vulnerability to infectious disease further elevate their risk of malnutrition. The 2020 State of Food Security and Nutrition in the World (SOFI) report (3) estimates that 3 billion people are unable to afford a healthy diet, with 965 million being in Africa and 1.34 billion in South Asia. In addition, the 2020 Global Nutrition Report (4) shows that across 98 countries, stunting affects over two-fifths of children (43.6%) in the poorest households compared to less than one-fifth (18.6%) in the richest households.⁴ The same report also draws attention to the burgeoning epidemic of obesity and diet-related non-communicable disease among poorer populations.

A conventional image of global poverty is that of the rural household living far removed from food markets, producing most of what they consume and relying on social safety nets for the rest. This vision leads naturally to the conclusion that market-based mechanisms are at best irrelevant to the poor and probably likely to enhance rather than diminish existing inequalities. However, there are also large and increasing numbers of poor people in urban areas (currently 21% of all extreme poor (1)), as well as rural poor who own no land or are engaged in non-agricultural livelihoods and cannot or do not produce their own food—both groups that depend heavily on the market for their food access. Even smallholder farmers usually sell part of their produce and buy other foods, as shown by studies in Ethiopia (5) and in Malawi (6). An alternative view would then see the world’s poor as an important segment of consumers, with significant market power resulting from their sheer numbers if not from their individual wealth. This narrative is more aligned with Prahalad and Hart’s (2004) concept of the ‘bottom of the pyramid’ consumer (7).

¹ The two World Bank poverty lines discussed in this paper are adjusted for the cost of living in each country—the so-called Purchasing Power Parity adjustment. They are also anchored to costs in 2011, a year that prices were collected in a standardised way across the world.

² Average costs range from USD 1.87 per person per day (Western Asia) to USD 3.04 (Central America).

³ Average costs range from USD 3.06 per person per day (Oceania) to USD 4.69 (Eastern Asia).

⁴ This population-weighted analysis includes India, which famously has high levels of stunting even in the wealthiest households.

The Global Alliance for Improved Nutrition (GAIN) exists to advance nutrition outcomes by improving the consumption of nutritious and safe food for all people, especially the most vulnerable to malnutrition. Vulnerability is not determined by poverty alone, but as shown above, poverty is an aspect of vulnerability that is clearly linked to malnutrition. Relieving poverty by growing incomes could lead to the consumption of more nutritious diets if households preferentially choose to spend increases in income on nutritious foods (relative to their spending on unhealthy or neutral foods). Previous studies have shown that in Africa (as elsewhere), consumption of nutrient-dense food groups such as dairy, meat, fish, and eggs is particularly responsive to increases in income, but unfortunately, consumption of (largely unhealthy) beverages is even more responsive (8).

Even if incomes do not grow, the diets of the poor can become more nutritious if individual nutritious foods become cheaper or, potentially, if other foods or non-food items become cheaper, creating more 'space' in the family budget. Cornelsen et al. (9) have shown that the extent to which price changes for a given food influence consumption of that food is particularly marked in low-income countries. This route to improving dietary quality—via changes in food prices—is, however, only relevant for those households that do (or at least could) buy foods in the market.

GAIN works mostly in nine countries in sub-Saharan Africa and South and South-East Asia. In this paper, we use recent surveys from these countries to find out (a) whether poor consumers currently access healthier foods via market purchases and (b) whether they would choose to purchase additional quantities of healthier foods if they had the income. Based on our findings, we make specific recommendations to prioritise a small number of 'high-return' strategies for improving the diets of the poor in these settings.

METHODOLOGY

This paper uses two related sets of household survey data from nine countries in Asia and sub-Saharan Africa to shed new light on the potential of market-based strategies to help poor families access nutritious foods. In each case, specific foods that individuals report consuming are grouped together using the definitions of the international Classification of Individual Consumption According to Purpose (COICOP). COICOP (10) is a reference classification developed by the United Nations to analyse individual consumption expenditures according to their purpose. Twenty-nine of the 110 'basic headings' in COICOP refer to foods and non-alcoholic beverages and are reported here. For convenience, we refer to each of these 'basic headings' as a 'food group'.

Socioeconomic differentials in acquisition of specific foods

For this analysis, we use data available through the World Bank's Global Consumption Database to quantify socioeconomic differentials in the acquisition of specific nutritious foods in the nine low- and middle-income countries (LMICs) where GAIN primarily works. The database collates information from relatively recent household surveys undertaken in LMICs and presents tabulations that are fully standardised across countries. The surveys included are listed in **Annex Table 1**.

The main indicator analysed is per capita total household expenditure on food, disaggregated by food group as discussed above. This quantity includes the value of food acquired through the market, plus the value of the household's own production and/or wild harvest, plus the value of the same food transferred to the household as a gift or social benefit. For this analysis, we focus on two groups of households in each country, both defined according to the total value of their per capita consumption of all goods and services (as is standard for poverty measurement around the world). The 'Lowest' consumption segment in the database includes households roughly below the second World Bank poverty cut-off of USD 3.20 per capita per day described in the introductory section of this paper.⁵ In the global database, 68-95% of the population of these nine countries are found in this segment. We compare them to another group, referred to in the database as the 'Middle' consumption segment, which has much higher values of total consumption expenditure, at USD 8.44 - 23.03 per capita per day.⁶ In none of the countries analysed from the Global Consumption Database did this group exceed 2% of the total national population, so this group may reasonably be considered to illustrate unconstrained consumption in these regions.

We report, for each of 29 different food groups and nine different countries, the average annualised per capita consumption expenditures of households in the poorer and richer groups, as well as the ratio of the two values. We assume that the poorer households would like to consume the same foods in the same quantities as their richer peers, and that if the data shows that they do not do that, this is because either the food is not readily physically accessible where the poor live or, more likely, they do not find the food affordable. Note that this is not intended as a benchmark of consumption reflective of a healthy diet, but rather a measure of potential **pent up demand** within the specific country and the context of current dietary trends.

Building on this assumption, where the ratio of the value of consumption between the two groups of households exceeds five,⁷ we identify a serious problem of access/ affordability for the poor (the analysis does not permit the separation of accessibility from affordability, so we

⁵ The database actually uses a cut-off of USD 2.97 per capita per day to identify this group, which is (or was) the 50th centile of global consumption.

⁶ The database also has a 'Higher' consumption segment, of >USD 23.03 per day, but this group constitutes just 1% of the population in these regions, and their consumption patterns are unstable (due to small sample sizes) in the Global Consumption Database, so they were excluded from this analysis.

⁷ Since the ratio of total per capita consumption between the two groups also varies from between 5 to ten depending on the country, these cut-offs are chosen to roughly correspond to *elasticities* of demand of +1 to +2. Elasticity, as used here, is a measure of responsiveness of the quantity demanded of a good to a change in overall consumption level, defined as the ratio of the percentage change in demand to the percentage change in the total value of per capita consumption.

use a single merged concept). Ten-fold or greater differences are assumed to indicate extreme levels of inaccessibility/unaffordability for that food. For food groups showing these very large differentials, any growth of income for the poor (or equivalently, drop in price of the specific foods) is almost certain to lead to a sharp increase in consumption. On the other hand, low ratios of the value of consumption between the two groups of households (especially ratios below two) indicate little pent up demand for this food group, so if health and/or environmental concerns suggest that higher levels of consumption are desirable, targeted 'marketing' would likely be required.

Source of household food acquisition

In our second analysis, we use data from a related set of household consumption surveys⁸ (listed in **Annex Table 2**) to identify the *source* of foods consumed by each household, categorised as (i) purchased from outside the home, (ii) produced (or gathered from the wild) by the household, or (iii) received as a gift or benefit. To achieve a finer socioeconomic differentiation than in the first analysis, we divided all households in each survey into five equally sized groups (quintiles) based on their total per capita consumption expenditure on all goods and services (the same indicator as above). Within each quintile, we estimated the *percentage* of the total value of consumption coming from each source.

The data is presented graphically, such that for each food group, the percentage of the value of food consumption sourced from the market (purchased) is shown in the top half of the panel in burgundy, while the percentage of the value of food consumption sourced from home production or gathered from the wild (green) and the percentage of the value of food consumption received as a gift or benefit (blue) are shown in the lower half of the panel. To aid in the interpretation of these numbers, sub-populations (i.e., individual quintiles within a country) with high rates of consumption of the food in question have their bars shown in bold colours, while sub-populations with low rates of consumption of the food have their bars shown in faded colours. This is illustrated in the figure below:

⁸ For this purpose, a bespoke analysis of household survey datasets was undertaken by colleagues at the World Bank. The surveys were from the same survey series as those appearing in the Global Consumption Database, but more recent surveys could be used in six of nine countries.

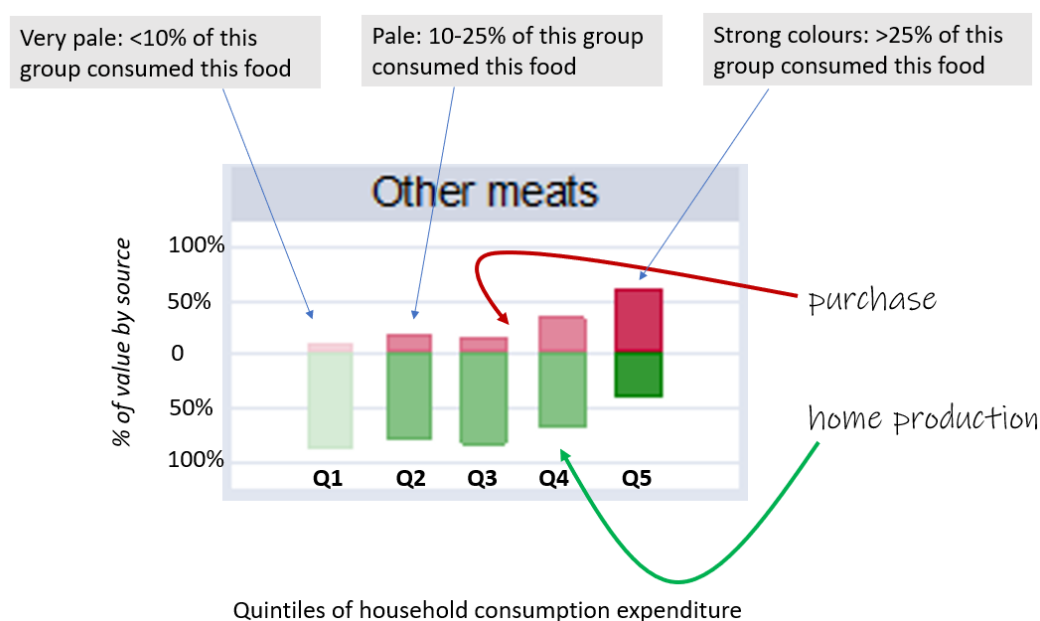


Figure 1. Example figure showing household food sources by quintile

RESULTS

SOCIOECONOMIC DIFFERENTIALS IN LEVELS OF ACQUISITION OF SPECIFIC FOODS: WHICH FOODS WOULD POORER HOUSEHOLDS CONSUME MORE OF IF THEY COULD?

Figure 1 shows the differential acquisition of specific foods in the 'Middle' and 'Lowest' socioeconomic groups of each of nine different countries considered in the analysis. In each column (country), food groups where the wealthier group consumed 5-9.99 times more in value than the poorer group are shown in amber, and food groups where the wealthier group consumed ten or more times more than the poorer group are shown in red. The underlying values are provided in **Annex Table 3** (Africa) and **Annex Table 4** (Asia).

All nine countries have *at least* 11 of 29 food groups for which the poorer segment is not able to 'keep pace' with the wealthier segment in terms of quantities consumed (fivefold or greater differentials, shown in amber or red). In general, the African countries have more affected food groups than the Asian countries, with Mozambique having the largest number of very big differentials (tenfold or greater) in food acquisition between the two groups of households.

A number of food groups consistently showed relatively similar levels of consumption between wealthier and poorer groups of households, regardless of the country (shown in pale yellow or green). These included: rice and other cereals; vegetables⁹, fresh and processed, including potatoes; sugar; and condiments (a category also including unspecified food products). These foods are clearly recognisable as the 'basics' for all households; they are currently consumed regularly by the vast majority of households, and it appears that there is little pent up demand for further consumption. Economists will find the small differentials

⁹ 'Vegetables' in COICOP includes legumes.

(low income elasticities of demand) familiar for staples, but the inclusion of sugar in this group is less familiar.

A second set of foods showed consistently *large* differentials between the poorer and wealthier segments (tenfold or more in at least four countries in both Africa and Asia, shown in red), including: bread; pasta; 'other' meats and meat preparations; butter/margarine; jams; confectionary; and cold beverages. These foods are recognisable as (largely unhealthy) foods typical of 'Western' diets; they are socially aspirational, but their increased consumption could increase the risk of diet-related disease.

A third set of animal-source foods—meat, fish (to a lesser degree), and eggs—showed big differentials in consumption (red or amber) in Africa but not so in Asia. (Lamb, mutton and goat were an exception to this rule, showing big differentials in a couple of countries in each continent). The remaining food groups—dairy products, edible oils and fats, fruits, and hot beverages—showed a more mixed picture, with some large differentials in some countries.

In summary, poorer households, as expected, cannot 'keep pace' with wealthier households in the consumption of many food groups. Of 29 food groups, only staple grains and potatoes showed near identical levels of consumption between poorer and wealthier households, and many food groups showed very large differentials. If poor households were to get richer, they would eat more of these foods. The problem of inequitable food acquisition appears to be more significant in Africa than in Asia, although both continents show considerable variability between countries. The most affected food groups tend to be those with the highest social desirability; sometimes these are relatively healthy foods, such as poultry meat, and sometimes they are very unhealthy foods, typified by confectionary. Two of the relatively healthy groups of foods—vegetables (including legumes) and (to a lesser extent) fruit—are less affected by large socioeconomic differentials in acquisition, so if consumption is low for these food groups, it does not appear that the binding constraint is access or affordability.

Figure 1. Differential consumption of 29 different food groups in the ‘middle’ and ‘lowest’ socioeconomic groups in each of nine countries where GAIN has an extensive presence.

| | Nigeria 2009 | Ethiopia 2004 | Kenya 2005 | Tanzania 2007 | Mozambique 2008 | Bangladesh 2010 | India 2009 | Pakistan 2010 | Indonesia 2010 |
|---|-------------------|-------------------|-------------------|-------------------|--------------------|--------------------|-------------------|-------------------|-------------------|
| Product or Service | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst | Ratio Mid:Lwst |
| All products/services | | | | | | | | | |
| Rice | | | | | | | | | |
| Other cereals, flour and other products | | | | | | | | | |
| Bread | | | | | | | | | |
| Other bakery products | | | | | | | | | |
| Pasta products | n/a | | | | | n/a | | n/a | |
| Beef and veal | | | | | | n/a | | n/a | |
| Pork | | | | | | n/a | | n/a | |
| Lamb, mutton and goat | | | | | | | | | |
| Poultry | | | | | | | | | |
| Other meats and meat preparations | | | | | | | n/a | n/a | |
| Fresh, chilled or frozen fish and seafood | | | | | | | | | |
| Preserved or processed fish and seafood | | | | | | | | | |
| Fresh milk | | | | | | | | | |
| Preserved milk and other milk products | | | | | | | | | |
| Cheese | | | | | | | | | |
| Eggs and egg-based products | | | | | | | | | |
| Butter and margarine | | | | | | | | | |
| Other edible oil and fats | | | | | | | | | |
| Fresh or chilled fruits | | | | | | | | | |
| Frozen, preserved or processed fruit and fruit-based products | | | | | | | | | |
| Fresh or chilled vegetables other than potatoes | | | | | | | | | |
| Fresh or chilled potatoes | | | | | | | | | |
| Frozen, preserved or processed vegetables and veg. products | | | | | | | | | |
| Sugar | | | | | | | | | |
| Jams, marmalades and honey | | | | | | | | | |
| Confectionery, chocolate and ice cream | | | | | | | | | |
| Food products n.e.c., incl. condiments | | | | | | | | | |
| Coffee, tea and cocoa | | | | | | | | | |
| Mineral waters, soft drinks, fruit and vegetable juices | | | | | | | | | |

Note: red blocks indicate that the value of consumption of the food in the ‘middle’ consumption segment is at least 10 times higher than in the ‘lowest’ segment; amber blocks indicate a 5 to 9.99-fold higher consumption in the ‘middle segment’; pale yellow blocks a 2 to 4.99-fold higher consumption, and green blocks a less than two-fold higher consumption in the ‘middle’ segment (or higher consumption in the ‘lowest’ group). Source: Global Consumption Database.

SOURCE OF HOUSEHOLD FOOD ACQUISITION: FOR WHICH FOODS ARE COMMERCIAL APPROACHES RELEVANT TO THE POOR?

Figure 2 shows the acquisition of foods in Ethiopia, by quintile of per capita total consumption expenditure. For each food group¹⁰, the top half of the panel, in burgundy colours, shows the proportion of all acquisition (by value) that was purchased from outside the household. The bottom half of each panel shows the proportion of all acquisition that came from home production, in green, and the proportion of all acquisition that came from a gift or other transfer, in blue.

In Ethiopia, only the wealthiest households are able to access a large number of food groups, with the lower four quintiles limited to very few food groups. This is evidenced by the large number of pale bars evident in the data, referring to the lower four quintiles. In general, there is a mixture of home production and purchase, depending on the food group; only bread shows any significant amount of inter-household transfers. Home production is more common among poorer households but by no means restricted to these groups.

Only edible oil and fats, and condiments ('food products N.E.C.') are (almost) exclusively purchased by all households, poor or rich. The same is almost true for vegetables other than potatoes (which includes legumes) and coffee/tea/cocoa; in both cases, however, a minority of households do harvest their own produce, and this is more common among poorer households. Bread is mostly purchased but is not that commonly consumed by poorer households. Cereals (other than rice), potatoes, and processed vegetables are widely consumed and mostly produced at home except by the wealthiest households. Dairy products are moderately commonly consumed by all groups, with home production far more common than purchase. Meat, fish, and eggs are very rarely accessed except by the richest households, which are able to purchase beef and eggs.

There is little evidence to suggest that food groups for which home production is the dominant mode of acquisition are more widely consumed by the poor than food groups for which purchase is the dominant mode. This suggests that *both* market-based *and* own-production approaches to increase consumption of nutritious foods among the poorest households in Ethiopia are likely to struggle due to the sheer lack of resources of these families. Fortification of condiments and edible oils is a critical strategy in this context, since it increases the nutrient-density of products that are consumed even by the poorest and nearly always purchased commercially. Growing household incomes is the clear priority for Ethiopia in the longer term, while reducing the price of food groups that are routinely purchased could also have the effect of creating space in highly constrained household budgets.

¹⁰ This analysis does not present data on unhealthy sugary foods and cheese (which is barely consumed by poor households in any of the nine countries). It also excludes food very rarely consumed in any group, such as pork in predominantly Muslim countries.

Figure 2. Acquisition of foods in Ethiopia, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 1 shows the acquisition of foods in Kenya, by quintile of per capita total consumption expenditure.

Unlike in Ethiopia, consumers in Kenya access a large number of food groups, and even households in the poorest quintile access a moderately large number of food groups. There is a mixture of home production and purchase, depending on the food group; however, purchasing dominates home production. Home production is more common among poorer households and is rare among the wealthiest quintile households. For several food groups, including non-rice cereals, beef/veal, lamb/mutton/goat, and fresh fish, poorer households access some of their consumption via gifts or other inter-household transfers; however, this modality is only really significant for processed vegetables.

Only edible oil and fats, condiments ('food products N.E.C.'), and coffee/tea/cocoa are exclusively purchased by all households, poor or rich. The same is almost true for rice, bread, other bakery products, beef/veal, and processed fish; however, these are relatively infrequently consumed by the poorest households (rice, bread and especially other bakery products) or the richest households (processed fish). Fresh milk, fresh fruits, potatoes, and processed vegetables are widely consumed across all quintiles, with home production dominating among poorer households and purchasing among the wealthiest. A similar pattern is seen for poultry and eggs, though poorer quintiles are less likely to consume these. Cereals (non-rice), lamb/mutton/goat, fresh fish, and vegetables other than potatoes are food groups for which there is only limited home production in Kenya. Pasta, other meats, butter/margarine, and cold non-alcoholic beverages are more commonly accessed by wealthier households in Kenya, and exclusively market sourced.

Based on this analysis, there are many opportunities to support better diets for the poorest households in Kenya based on commercial approaches that improve affordability. Such approaches could allow greater consumption for those households already accessing nutritious foods through markets and/or potentially allow households to diversify away from a reliance on home production for additional foods.

Annex Figure 2 shows the acquisition of foods in Tanzania, by quintile of per capita total consumption expenditure.

In Tanzania, a moderately large number of food groups are consumed at high rates across quintiles, from poor to wealthier. There is a mixture of home production and purchase, depending on the food group, and very limited acquisition of food from inter-household transfers. Home production is more common among poorer households but not entirely restricted to these groups.

Several food groups—other bakery products, beef/veal, processed fish, edible oils and fats, condiments ('food products N.E.C.'), and coffee/tea/cocoa—are (almost) exclusively purchased by all groups of households, poor or rich. The same is almost true for rice and unprocessed fish, although in these cases a minority of households do harvest their own produce, and this is more common among poorer households. Bread and cold non-alcoholic beverages are mostly purchased but are less commonly consumed by poorer households.

Fresh fruit, vegetables other than potatoes, and potatoes are widely consumed, mostly produced at home by the poorer households, and most purchased by the wealthier households. The same is true for poultry meat, eggs, and fresh milk, but in these cases (particularly for poultry and very markedly for eggs) access is limited among the poor. Pork, butter/margarine, processed fruit, and (to a lesser degree) pasta products are consumed by few households, poor or wealthier. Of these, pork and pasta are mostly purchased, and butter and processed fruits are home produced in the poorer households and purchased by the wealthiest households.

Overall, Tanzania presents a scenario intermediate between Ethiopia and Kenya, with some potential for market-based approaches to improve the diets of the poorest.

Annex Figure 3 shows the acquisition of foods in Mozambique, by quintile of per capita total consumption expenditure.

In Mozambique, consumers acquire very few food groups, regardless of their socioeconomic level. The poorest households in this country even show limited access to cooking oil and condiments. There is a mixture of home production and purchase, depending on the food group; there is almost no evidence of inter-household transfers. Home production is more common among poorer households but by no means restricted to these groups.

Only processed fish and cooking oil are (almost) exclusively purchased by all households poor or rich. The same is almost true for unprocessed fish and condiments, although in both cases a minority of households do produce their own produce, and this is more common among poorer households. Bread is mostly purchased but is not that commonly consumed by poorer households. Vegetables, including potatoes, are overwhelmingly home produced, except for consumers from the wealthiest households, who have mixed acquisition patterns. The same is true for fresh fruit, which, however, is less frequently consumed in all quintiles. Non-rice cereals are overwhelmingly home produced, and this is even true as socioeconomic level increases. Rice and processed fruits show a preponderance of home production among the poorer households (and some limitation of access in the bottom quintile) but a preponderance of market acquisition among wealthier households. Most households are not acquiring fresh milk or eggs, but for those that do, home production is overwhelmingly important for the lower quintiles and market purchase for the wealthiest quintile.

Overall, consumption challenges in Mozambique show some similarities to those in Ethiopia, and growing the incomes of the poorest households is a clear priority. However, purchasing is already important for fish and (to a lesser extent) meat, and these sub-sectors in particular offer short-term opportunities for intervention.

Annex Figure 4 shows the acquisition of foods in Nigeria, by quintile of per capita total consumption expenditure.

In Nigeria as in Tanzania, a moderately large number of food groups are consumed at high rates across quintiles, from poor to wealthier. There is a mixture of home production and

purchase, depending on the food group, and very limited acquisition of food from inter-household transfers. Home production is more common among poorer households but not entirely restricted to these groups.

Several food groups—bread, processed fish, edible oils and fats, and condiments ('food products N.E.C.')—are (almost) exclusively purchased by all groups of households, poor or rich. Other bakery products, beef and veal, lamb/mutton/goat, other milk products, coffee/tea/cocoa, and cold non-alcoholic beverages are also almost entirely purchased but are less commonly consumed by the poorest households (pork is also largely purchased but is rarely consumed in any quintile). Rice, unprocessed fish, and vegetables other than potatoes are mostly purchased, although in these cases a minority of households do harvest their own produce, and this is more common among poorer households (for rice and vegetables).

Non-rice cereals, fresh fruit, potatoes, and processed vegetables are widely consumed, mostly produced at home by poorer households and most purchased by the wealthier households. The same is true for poultry meat, other meats, butter/margarine, eggs, and fresh milk, but in these cases, access is limited among the poor. Eggs are mostly purchased except for by the poorest, who have little access and when they do consume them, there is a slight dominance of home production. Fresh milk is more commonly consumed among poorer households than among richer ones, with purchasing dominating over home production and/or transfers/gifts in all quintiles.

Annex Figure 5 shows the acquisition of foods in Pakistan, by quintile of per capita total consumption expenditure.

Households in Pakistan acquire a rather large selection of different food groups, and most of these are purchased. For fresh milk and non-butter milk products, there is a mixture of home production and purchase, trending towards more purchase among wealthier households. The same is true for eggs and for rice, although for these, home production accounts for a small minority of overall consumption value. The same is true for non-rice cereals and butter/margarine, although for these two food groups it is the wealthier households who source some of their consumption from home production. For red meats, a significant proportion of consumption comes from gifts or other inter-household transfers. These are particularly important for lamb/mutton/goat meat, although this type of meat is characterised by less frequent consumption than beef, especially among poorer households.

In this setting, all efforts should be dedicated to improving the affordability of nutritious foods through commercial channels.

Annex Figure 6 shows the acquisition of foods in Bangladesh, by quintile of per capita total consumption expenditure.

The pattern is very similar to what was observed for Pakistan, but with more limited sourcing from home production. Home production is only significant for rice, fresh milk, eggs, fresh

fruits, and cold beverages; even for these groups, home production only constitutes a small proportion of the value of all consumption, especially for wealthier households. As in Pakistan, gifts and other inter-household transfers are significant for red meats.

In this setting, all efforts should be dedicated to improving the affordability of nutritious foods through commercial channels.

Annex Figure 7 shows the acquisition of foods in India, by quintile of per capita total consumption expenditure.

In India, many households do not consume meat, so the graph shows a more restricted diet than in the other two South Asia countries. Once again, there is a huge preponderance of households that purchase the food that they consume. The major exception to this pattern is for fresh milk, which shows mixed sourcing except for the wealthiest households. The four lower quintiles also produce some of their own rice and other cereals. These are the only food groups that show a significant role for home production, and inter-household transfers are barely reported except, on a very small scale, for fresh fruits.

In this setting, most effort should be dedicated to improving the affordability of nutritious foods through commercial channels.

Annex Figure 8 shows the acquisition of foods in Indonesia, by quintile of per capita total consumption expenditure.

In Indonesia, many households, of all socioeconomic levels, do not report consuming meat, fresh milk, or butter, making for a somewhat less diverse pattern of consumption than Bangladesh, for example. A number of food groups—especially potatoes, but also non-rice cereals and fresh fruits and, to a lesser extent, processed fruit and vegetables other than potatoes—show significant home production in households in the poorest quintiles but a complete predominance of purchasing among wealthier households. Other food groups, including rice, fresh fish, condiments, coffee/tea/cocoa, and cold beverages—show a small proportion of home production across quintiles. Most other food groups are entirely accessed through the market.

Overall, the pattern seen in Indonesia is more reminiscent of Tanzania than South Asia. Likely there are very stark sub-national differences, which are masked in this country-wide analysis. Clearly, there is significant potential for improving the affordability of nutritious foods through commercial channels.

BRINGING IT TOGETHER: PRIORITISING FOOD GROUPS AND INTERVENTION APPROACHES FOR REACHING THE POOR

Table 2 summarises the findings of the previous two sections,¹¹ showing which nutritious food groups are the most obvious targets to improve the diets of the poorest 20% of households in each country. In this table, we show:

- i. The nutritious food group that is best suited to tackling by scaling business models that reduce prices for the poorest, because it is already mostly acquired by purchase and characterised by high-levels of pent-up demand;
- ii. The nutritious food group that could be prioritised for category marketing (demand creation) because it is mostly acquired by purchase but not characterised by pent-up demand;
- iii. The nutritious food group that is—at least in the short term—best suited to efforts to raise the productivity of home production, because it is mostly home produced and characterised by high-levels of pent-up demand, and
- iv. The nutritious food group that is best suited to a combination of (ii) and (iii) because it is mostly home produced but not characterised by high levels of pent-up demand.

¹¹ In general, the same criteria are applied as in the previous sections, although the thresholds were relaxed slightly where no food group strictly met all criteria. We have not included red meat in these selections, in light of potential concerns about health and environmental impacts.

Table 1. Food groups that emerge from analyses as stand-out targets for improving the diets of the poorest in each of nine countries.

| Country | Nutritious foods for which there is a pent up demand AND which are mostly purchased. Need: Business models that reduce price of NF to poorest. | Nutritious foods for which there is NOT pent up demand AND which are mostly purchased. Need: Demand Generation for NF | Nutritious foods for which there is a pent up demand AND which are consumed from home production. Need: Raise productivity, sustainably | Nutritious foods for which there is NOT pent up demand AND which are consumed from home production Need: Demand Generation & raise productivity, sustainably |
|------------|--|---|---|--|
| Nigeria | <i>Processed dairy</i> | <i>None</i> | Poultry meat, eggs | Processed vegetables |
| Ethiopia | <i>Poultry meat</i> | Fresh vegetables | Eggs | Processed dairy |
| Kenya | <i>Fresh fish or processed dairy</i> | <i>Fresh vegetables</i> | Poultry meat, eggs | <i>None</i> |
| Tanzania | <i>None</i> | Processed fish | Eggs | <i>Vegetables</i> |
| Mozambique | Poultry meat | Processed fish | Eggs | Fresh vegetables |
| Pakistan | Processed fruit | <i>Fresh vegetables</i> | Lamb/mutton/goat | <i>None</i> |
| India | <i>Fruits</i> | <i>Vegetables</i> | <i>None</i> | <i>None</i> |
| Bangladesh | Processed dairy | <i>Fresh vegetables</i> | <i>None</i> | <i>None</i> |
| Indonesia | Processed dairy | Processed fish or vegetables | <i>None</i> | <i>None</i> |

It is notable that across the nine countries, (minimally) processed foods commonly fall into the first category, vegetables commonly fall into the second category, and eggs and poultry meat commonly fall into the third category.

CONCLUSION

Our analyses suggest a number of important conclusions that can guide the future work of GAIN and other organisations to improve food systems in Africa and Asia for the benefit of the poorest.

1. **For South Asian countries, the obvious route to improving the diets of the poorest is via markets.** In the three countries studied, there is virtually no acquisition of nutritious foods from home production, even for the poorest quintile of households. The only exception to this pattern is milk.
2. **For vegetables, the priority action is to boost demand.** Despite sub-optimal current levels of consumption, we find consistently little difference in levels of consumption (by value) between poorer and richer households, suggesting that vegetable consumption is not aspirational. For East Africa, home production of vegetables is important for the poorest households and should be protected, but for all income groups and all geographies, the priority must be to boost demand. Further research is needed to understand what exactly would make consumers in Africa and Asia want to consume more vegetables.
3. **The huge pent up demand for sugary products is a threat to diet quality across all countries.** Action is needed to suppress burgeoning demand for confectionary, jams, and

cold beverages, which all divert cash resources from the consumption of more nutritious foods. Shaping consumer preferences will be important *both* to reduce demand for less nutritious foods *and* to direct the 'surplus' cash to more nutritious foods.

4. **There is pent up demand for meat and fish, and market-based solutions are needed to meet it.** For the following foods in particular, there are huge differentials in the value of acquisition between poorer and richer households, and even the poorest households rely on purchases for the majority of their acquisition: beef (Nigeria, Kenya, Tanzania, Ethiopia, Bangladesh, Indonesia); fresh fish (Nigeria, Kenya, Mozambique, Pakistan), and poultry meat (Bangladesh). Since there are potential health and/or environmental downsides to large increases in the consumption of these products, the growth of these categories needs careful management (11).
5. **Models of egg production need to be re-thought, especially in Africa.** The dominant mode of acquisition of eggs in Africa is from home production, but the very small scale and technical inefficiency of such production limits access for the poor—the data presented in this paper shows that consumption is currently very limited.
6. **Home production of fruit is important for Africa and Indonesia.** In these countries, there is pent-up demand for fruit, and home production is very important for the poorest households. Further efforts could be invested in yield, diversity, and reduction of post-harvest loss. Interventions that extend availability throughout the year may also be helpful.
7. **There is no generalisable recommendation emerging from this analysis for increasing the consumption of milk.** Unmet demand for milk is muted in some countries but strong in others, and among the poorest households, consumption ranges from entirely from home production or entirely purchased. Furthermore, dairy production has major environmental and food safety risks if not managed carefully. Context-specific analyses are essential.

Previous studies describing similar or contrasting findings are summarised in **Box 1**.

BOX 1. CONTEXTUALISING THESE FINDINGS IN THE LIGHT OF RELATED EVIDENCE

Although these findings are based on new analyses, they are very much consistent with findings from previous research:

- **Limited role of home production in the diets of the poorest in South Asia.** Reardon et al. (12) have already noted the very low share of own production in consumption in Asia. They ascribe this to the rise of urbanisation, high marketed surplus rates in many farm areas, and a focus on horticulture and aquaculture with sales for cash.
- **Low demand for vegetables and legumes.** Colen et al. (8) group vegetables and fruits when characterising the income elasticities of demand for vegetables in Africa, but the present analysis suggests that these two food groups behave differently and should not be combined. The same caveat applies to the analysis of price elasticities of demand by Cornelsen et al. (9). Colen et al. find that income elasticities of legumes and nuts (combined, in their analysis) are very low in Africa (median=0.46), almost as low as for cereals.
- **High demand for sugary products.** Colen et al. (8) find that the median income elasticity of demand for beverages in Africa is greater than one (1.24). Cornelsen et al. (9) have shown that in low-income countries, consumption of “sweets” is also highly price-sensitive (own-price elasticity=-0.74).
- **Meat and fish.** Colen et al. (8) find that the median income elasticity of demand for meat, fish and eggs in Africa is just below one (0.80). In addition, Cornelsen et al. (9) have shown that in low-income countries, consumption of each of meat and fish is highly price-sensitive (own-price elasticities of -0.78 and -0.80 respectively).
- **Eggs.** Morris et al. (13) have shown that low-income countries rely heavily on extensive (“back-yard”) production of eggs and that this results in very low availability for consumption. The authors also demonstrate that trying to improve the productivity of individual small-scale producers is unlikely to significantly improve egg consumption at national level. Novel business models, such as egg ‘hubs’, are essential scale up production and reduce prices to the consumer.
- **Fruit.** There are few cross-country analyses of determinants of production and consumption of fruit in Africa and Asia. ICRAF (14) have proposed a “fruit tree portfolio” approach to contribute to closing dietary nutrient gaps throughout the year.

Our study has a number of limitations. Firstly, we used data either already published (Global Consumption Database) or already processed at the World Bank for our analyses. These datasets are up to 16 years old, with the African data more dated than the Asian data, and there are some differences in data year between our two sets of analyses. Further, the data were coded using the COICOP classification of consumption by purpose, which was not developed with a nutrition lens. This obscures differences between specific foods within the same food group and has led to some rather unfortunate groupings, such as the combination of legumes with other vegetables. Our first analysis also compares a very large and probably

heterogeneous population segment (referred to as the 'Lowest' consumption segment) with a much smaller group (the 'Middle' consumption segment), likely to be almost exclusively urban. In this analysis, we make the strong assumption that the poorer households would ideally like to consumer the same basket of goods as this 'local elite'. Finally, our conclusions can only ever be as good as the data itself: by definition, we are not able to consider seasonal variation in access (as the surveys are cross-sectional) or intra-household distribution of consumption.

Nonetheless, our analyses provide important insights. Overall, our findings suggest that there is a critical need to grow the incomes of the poor so that they can access more nutritious and safe food, while at the same time efforts are needed to encourage greater consumption of healthier foods and to discourage the consumption of sugar, salt, and unhealthy fats.

Working to bring down the prices of nutritious foods is essential—the current study adds to a long tradition of research showing that the most nutritious foods are particularly expensive in lower-income countries (15) and that cost holds back consumption (9) and leads to worse child nutrition outcomes (15). Already, purchase is the main route of acquisition of nutritious foods for most households and most food groups in the nine countries studied. As market reliance inevitably grows in the future, the need to focus on affordability will become even more pressing. How to bring down the cost of, and how most effectively to boost demand for, nutritious diets and specific healthy food groups within them remains a largely unanswered question and is a strategic priority for GAIN over the coming years.

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ANNEXES

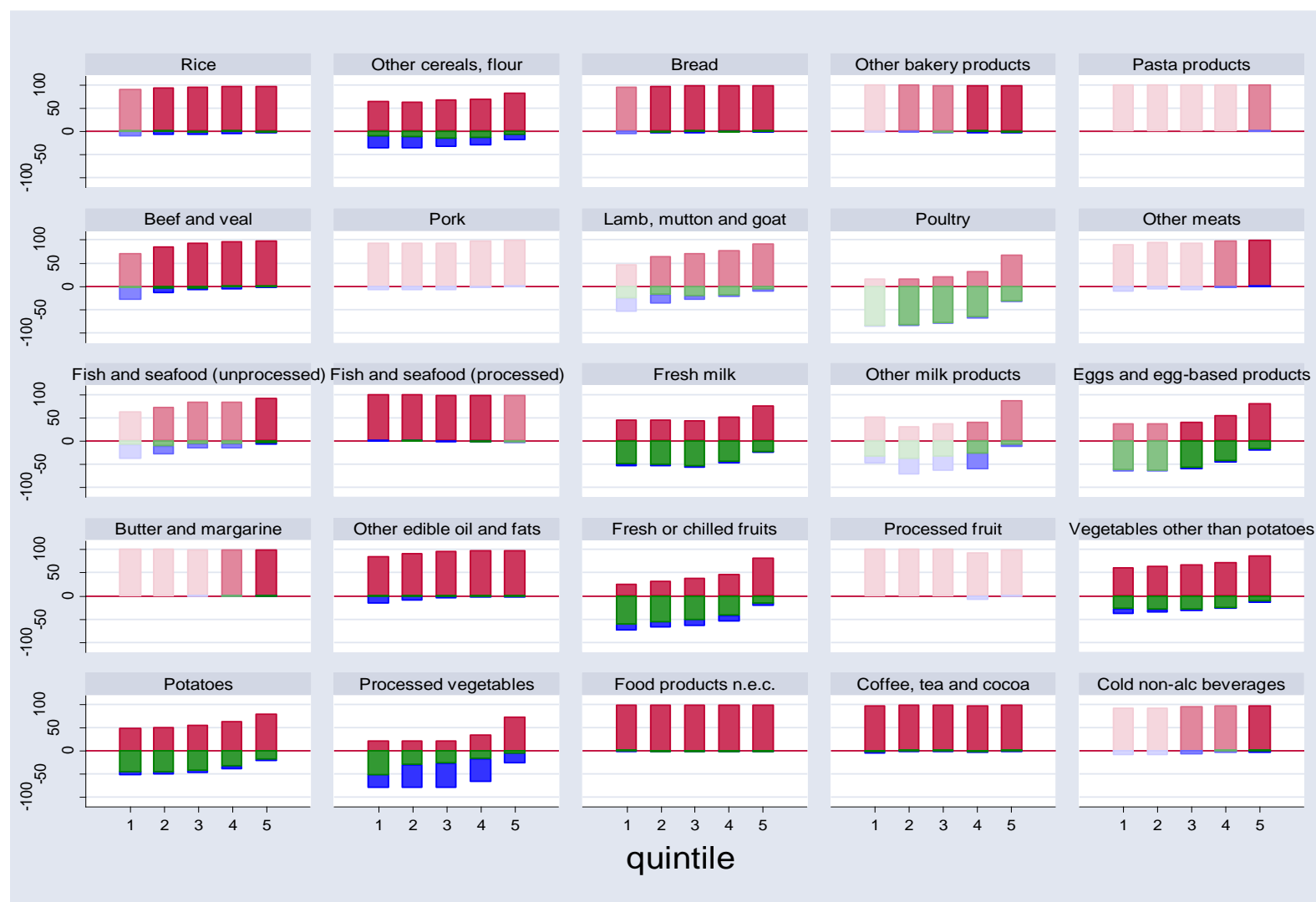
Annex Table 1: Data sources for socioeconomic differentials in acquisition of nutritious foods.

| Country | Survey | Survey year | % population in 'Lowest' consumption group in database |
|------------|---|-------------|--|
| Nigeria | Living Standards Survey | 2009 | 89.6% |
| Ethiopia | Household Income Consumption & Expenditure Survey | 2004-5 | 68.2% |
| Kenya | Integrated Household Budget Survey | 2005 | 83.6% |
| Tanzania | Household Budget Survey | 2006-7 | 94.6% |
| Mozambique | Inquérito aos Agregados Familiares | 2008 | 93.7% |
| Pakistan | Social and Living Standards Measurement Survey | 2010-11 | 76.5% |
| India | National Sample Survey 66 th Round | 2009-10 | 84.2% |
| Bangladesh | Household Income and Expenditure Survey | 2010 | 85.2% |
| Indonesia | National Socioeconomic Survey | 2010 | 73.9% |

Annex Table 2. Data sources for source of food consumed by households of different quintiles of household consumption expenditure.

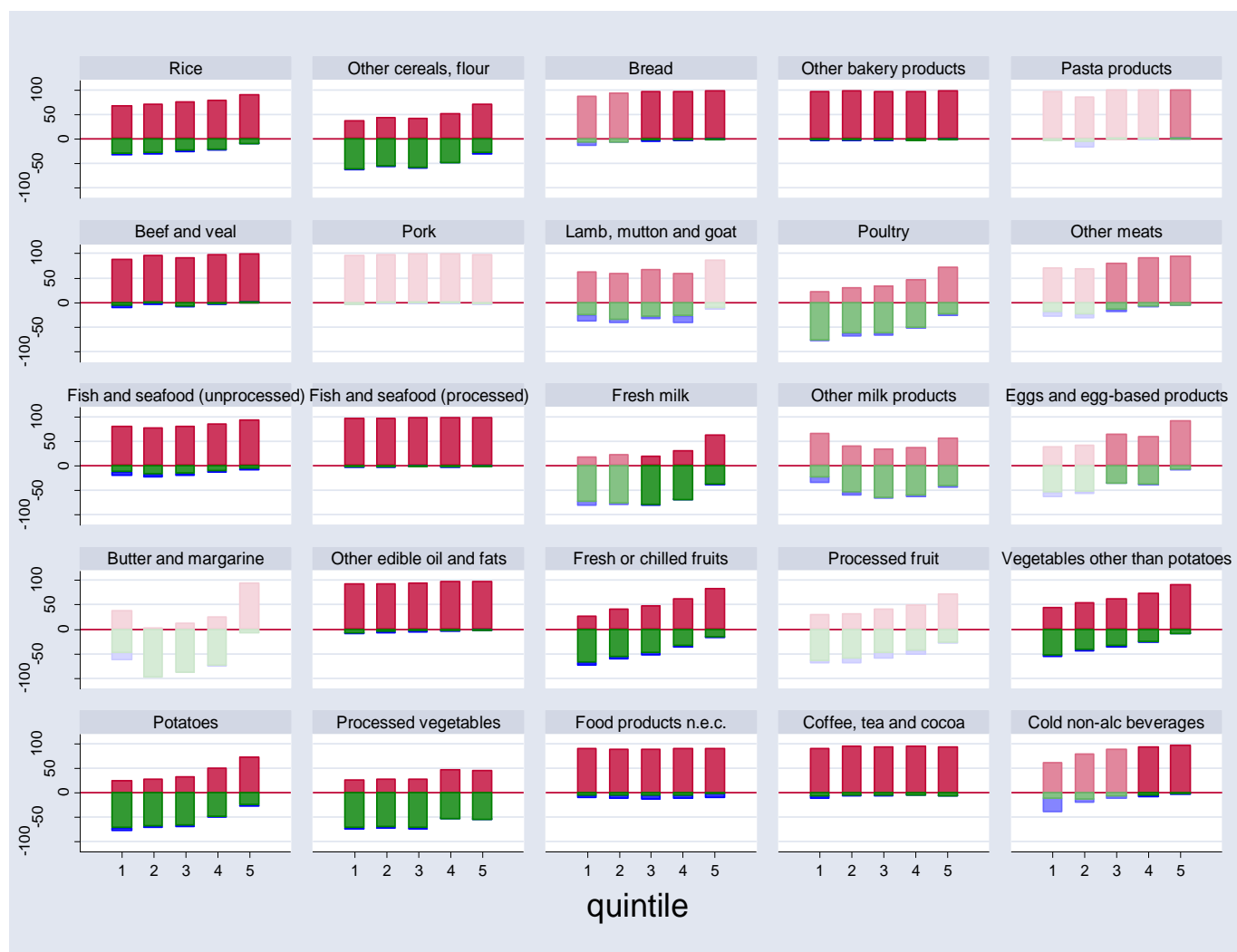
| Country | Survey | Survey year |
|------------|---|-------------|
| Nigeria | Living Standards Survey | 2018-9 |
| Ethiopia | Household Income Consumption & Expenditure Survey | 2010-11 |
| Kenya | Integrated Household Budget Survey | 2005 |
| Tanzania | Household Budget Survey | 2011-12 |
| Mozambique | Inquérito aos Agregados Familiares | 2008 |
| Pakistan | Social and Living Standards Measurement Survey | 2013-14 |
| India | National Sample Survey | 2011-12 |
| Bangladesh | Household Income and Expenditure Survey | 2016-17 |
| Indonesia | National Socioeconomic Survey | 2012 |

Annex Figure 1. Acquisition of foods in Kenya, by source and quintile of per capita total consumption expenditure.



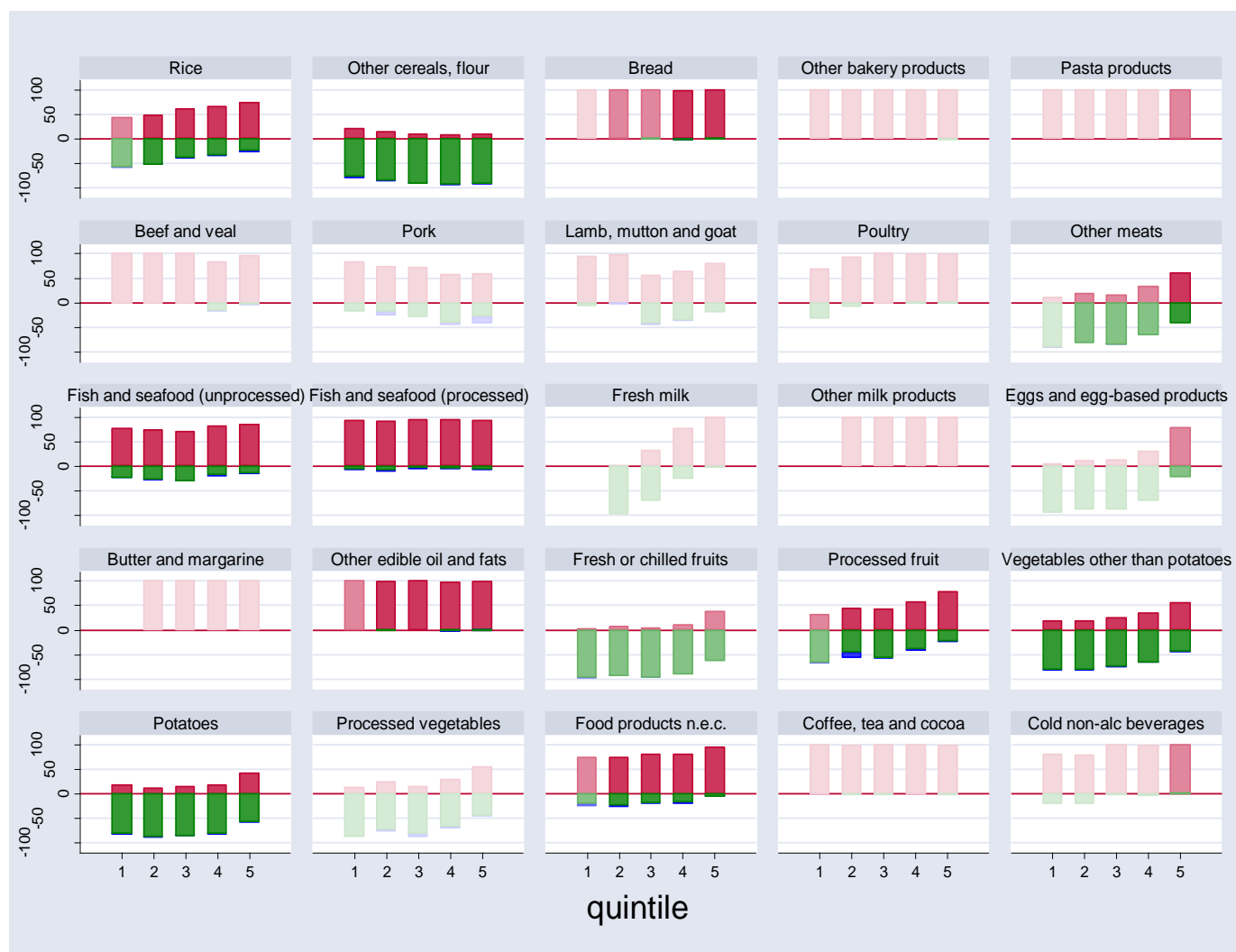
Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 2. Acquisition of foods in Tanzania, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 3. Acquisition of foods in Mozambique, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 4. Acquisition of foods in Nigeria, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 5. Acquisition of foods in Pakistan, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 6. Acquisition of foods in Bangladesh, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 7. Acquisition of foods in India, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.

Annex Figure 8. Acquisition of foods in Indonesia, by source and quintile of per capita total consumption expenditure.



Note: The y-axis, in either direction, measures the percentage of all consumption by value.