

Hadejia Valley

MIXED ECONOMY

Jigawa State



NIGERIA



Save the Children

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The Currency Rate:

At the time of field work, in November 2012, the value of the Nigerian Naira was NGN 150 = USD \$1.

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The photographs in the report show the people of Furfuri, Tofa and Wanke Villages @ by Jennifer Bush, Nov 2012.

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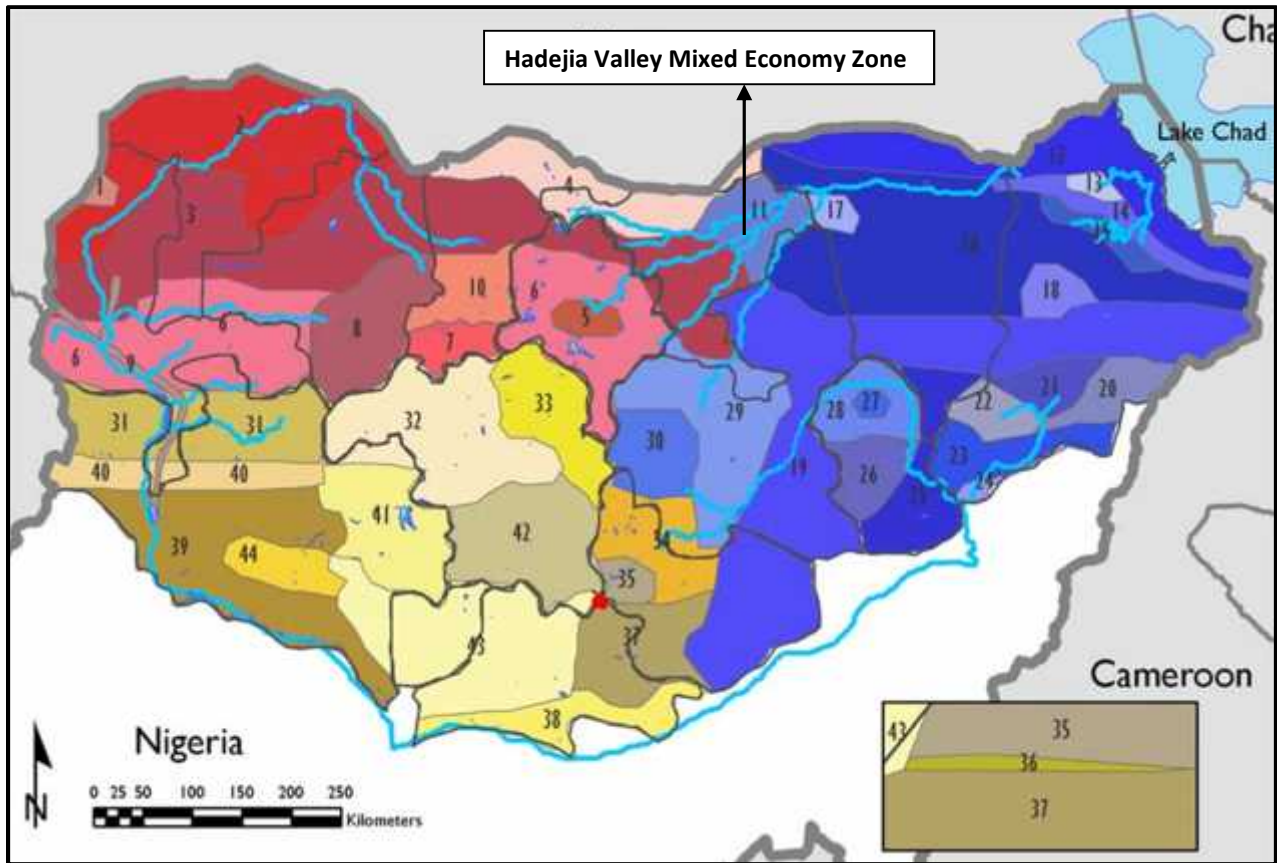
All the food, income and expenditure data graphed in the report is from primary field work. Production data is from Jigawa State (source: Jigawa State Agriculture and Rural Development Authority). Price data is from KiriKasamma, Marma, Madachi, Kafin Hausa and Hadejia markets and is based on primary data collection.

Thanks to:

Special thanks to SC UK Zamfara office for hosting the training and to ACF Jigawa for facilitating the field work in the Hadejia Valley LZ. Thanks also to the villagers for their great patience answering our many questions about how they made ends meet.

Livelihood Zone Map of Northern Nigeria

(Source: FEWS NET)



Hadejia Valley Mixed Economy Livelihood Zone Profile

Jigawa State, Nigeria

Map of Jigawa State, Nigeria HVM Livelihood Zone



Background and Methodology

For 3 weeks from 3 to 21 December, SCI staff (Katsina) and ACF staff (Jigawa) took part in an intensive Household Economy Analysis / HEA training and village baseline assessment. The HEA training involved classroom instruction as well as practical field work to apply the skills learned in class. The HEA baseline assessment investigated the household economy of one livelihood zone, the Hadejia Valley Mixed Economy. 8 villages were selected purposively to represent the livelihood pattern of the zone. The HEA field inquiry focused on household food and income access as well as expenditure patterns. These three elements, together with an asset profile, provide an excellent overview of household food and livelihood status. An important factor in the inquiry was organising and analysing data by wealth group rather than by a generic “average” household.

The Hadejia Valley Mixed Economy is one of 44 livelihood zones across the 15 states of northern Nigeria that were identified during a

FEWS NET zoning exercise in 2007. Livelihood zones themselves are geographical areas in which households roughly share the same production and income options, as well as similar market access. The Hadejia Valley Mixed Economy Zone is located in 8 Local Government Authorities or LGAs of Jigawa State. The 8 villages selected for the HEA baseline assessment were located in 4 LGAs: Auyo, Kafin Hausa, Guri and Kiri Kasamma.¹ As its name suggests, the zone is primarily agricultural, supporting a combination of wet season upland farming with dry season *fadama* (i.e., flood retreat) cropping as well as irrigation. Fishing and livestock production are key economic activities as well.

There are three main steps in the HEA baseline assessment. At state and LGA level, secondary data on production, prices, population and hazards are collected and local units of measure are verified. At the village level, a meeting with key informants is held to develop a seasonal calendar and 5 year timeline of major events as well as a summary of the characteristics of very poor, poor, middle income and better-off households in the village (as defined locally). The wealth breakdown exercise allows the team to organise the next stage of interviews. 6 household representatives from each wealth group are selected. Interviews are conducted separately for each focus group. When possible, male and female household representatives are chosen. During the 3-4 hour interview, household representatives are asked to provide

¹ The 8 villages were: Mado and Tsaka (Auyo LGA); Hago (Kafin Hausa LGA); Wareri, Abur and Adiyeni (Guri LGA); and Suga and Marma (Kirikasamma LGA).

quantified information about the amount of food and cash typically secured by households like them from a variety of different sources (production, purchase, wild foods, gifts, savings, and so on). This data is stored in a baseline storage spreadsheet. In future, it can be used in conjunction with a livelihood impact assessment spreadsheet to predict or assess the impact of change.

The HEA training and assessment in Jigawa built on a similar effort in Katsina State (the Millet and Sesame Livelihood Zone), which was carried out in November 2010. The Jigawa State assessment was complemented by a parallel effort in Zamfara State (the Cotton, Groundnut and Mixed Cereals Livelihood Zone) led by SCI with support from local partners. These three HEA baseline assessments will be used to help design hunger and poverty reduction programmes in ACF and SCI's operational areas. The baseline data and the Livelihood Impact Assessment Spreadsheet (LIAS) allow planners to quantify the magnitude of seasonal and/or annual food and income gaps measured against transparent survival and livelihood protection thresholds. This type of analysis is useful in determining how much support is needed, when, and to meet what type of need.

The reference year selected for this study was the 2010-2011 consumption year beginning with the harvest in September 2010 and ending in August 2011. This was an average rain-fed production year marked by fairly low dry season production. (See the timeline on page 18.)

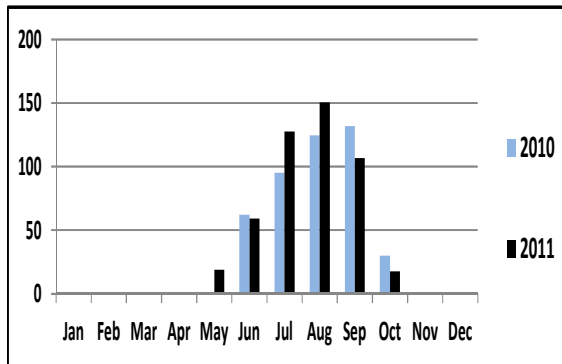
Overview of the Livelihood Zone

The Hadejia Valley Mixed Economy Zone is located in Jigawa State of north-western Nigeria. The northern edge of the state shares an international border with Niger. There is a

Free Trade Zone established at the border town of Maigatari to facilitate cross-border trade between the countries. The agro-ecology of the zone is strongly shaped by the Hadejia-Nguru wetlands. Two key rivers – the Hadejia and the Jama'are - as well as their various tributaries feed the fertile floodplains (*fadama*) used for irrigation or flood recession farming. The rivers flow from west to east toward Chad. Near the eastern border of Jigawa State the two rivers converge to form the Komadugu Yobe River which then empties into the Lake Chad basin. Dry season irrigation and flood retreat agriculture is combined with wet season upland farming in semi-arid conditions. Hence, much of the farm land is part of the vast sudan-savannah agro-ecological belt. Within this agro-ecological belt, there is just one rainy season during the year. The wet season runs from May to October with rains peaking in July, August and September. Cumulative total annual rainfall has varied in the last 5 years but the long term annual average is an estimated 600-650 mm. Local rainfall observations show lower totals (450 mm in 2010). Local data is likely indicative of overall trends which showed higher rainfall from 2010 to 2011 compared to 2008 and 2009. Rainfall patterns upstream (i.e., in the Jos Plateau) are also important to flood retreat and irrigation agriculture. Local rainfall, therefore, is only one part of the production picture. In the uplands, the rain-fed growing season is from June to November. Dry season *fadama* farming along the Hadejia or Kafin Hausa Rivers is typically undertaken from December to May.

On the rain-fed dryland farms, maize, millet, and sorghum are the principal crops grown for food as well as cowpeas which are grown for consumption and sale. On irrigated farms, rice, wheat and vegetables are grown for subsistence and sale.

2010-2011 Annual Rainfall (in MM), Jigawa State
 (Source: ADP Jigawa State)



Irrigation in the state has been boosted by investments under the *Fadama I, II* and now *III* Projects. The *Fadama III Project* is a national project supported by World Bank funding that aims to raise the incomes of rural farmers by providing a inputs, assets and infrastructure (such as water pumps, sprayers, bore holes, drains and culverts, milling machines and feeder roads) to control excessive flooding, increase water access and strengthen marketing in *fadama* areas.

The flood plains and savannah grasslands also provide suitable grazing for livestock. Cattle, including plough oxen, goats and sheep are kept by most farming households as well as poultry. Some better-off households keep horses (although mainly for festivals rather than for draught power). Both Fulani and Hausa farming households keep mixed herds although the Fulani are traditionally associated with large herds of cattle.

There are few industries in the state. Most industrial development in Jigawa is related to agro-processing. Agro-based industries include the processing of fruit, dairy, and sugar as well as flour and rice mills. The state has a wide variety of mineral resources but formal sector mineral extraction is limited.

Population numbers in Auyo, Kafin Hausa, Guri and Kirikasamma LGAs are an estimated 709,600 people (based on the 2006 census). Added to the population of the other 3 rural LGAs in the zone, this comprises about 26% of the total population of Jigawa State (4,361,002).² Dutse is the state capital. The rural population is comprised mainly of Hausa and Fulani although the urban centres are home to a greater mix of ethnicities and nationalities.

Crop Production

In northern Nigeria, land is measured in *ridges*. Approximately 133 *ridges* (0.75m) by 100m equal one hectare. Different plots of land are acquired separately as both husbands and wives inherit land. Land can also be rented in or out or purchased. As a result, most farmers cultivate plots of land that are scattered rather than consolidated. In total, very poor and poor households own about 1 – 1.5 ha. This contrasts with middle income and better-off households whom own an estimated 7.5 – 12 ha. Most of this land is cultivated. In the Hadejia Valley Livelihood Zone, cultivated farm land is divided into dryland and wetland farming. Wetland or *fadama* agriculture is itself divided into flood retreat agriculture and/or irrigation (i.e., farmers use small pumps to bring water from the river to their crops as well as tube wells). This dryland / wetland system roughly parallels a food and cash cropping production system. A general rule of thumb is that about 50% of farm land is reserved for food crops and 50% is used for cash crops except in the case of the better-off. About 65% of their land is used for food crops. This breakdown is a little oversimplified as several dryland food crops – specifically maize and cowpeas but also millet – are also

² The other rural LGAs in the zone are Kaugama, Malam Madori and Biriniwa, and Hadejia town LGA.

sold for cash. Furthermore, certain wetland cash crops – notably rice – are both sold and kept for home consumption. Wheat is predominantly a cash crop grown on irrigation schemes; sorghum, by contrast, is predominantly a dryland food crop. The other crops straddle both categories.

Crop output is measured in *bundles*. Once threshed, grain and pulses are measured in *tiers*. There are a different number of *tiers* in a *bundle* depending on the crop. These local units of measure were verified both in the market as well as in each village to ensure accurate calculations of output and consumption in kilogrammes (kgs).

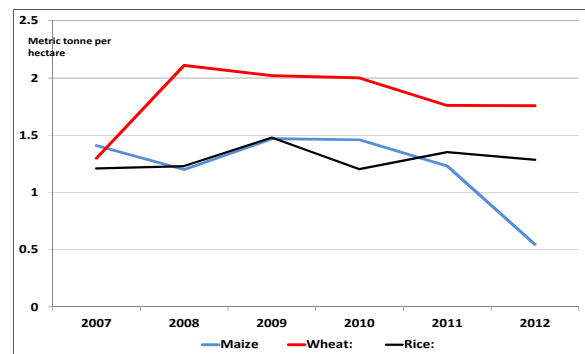
A number of different factors affect production. Dryland cropping depends on local rainfall whereas wetland or dry season irrigated cropping depends on upstream rainfall conditions and water flow. The region suffers from periodic (but regular) drought episodes which reduces rain-fed crop output as well as reduces the flood waters for wetland crops. There is evidence that the maximum extent of flooding has declined since the 1960s and 1970s by significant amounts (IUCN/Natural Heritage Institute, 2008: *Concept Paper-Nigeria*, p. 7). Indeed, the 1950s and 1960s were wetter decades. Since then, the following decades have been drier.

Water use upstream also affects water availability downstream. Water diversion to the Kano River Irrigation Project from water supplied by the Tiga Dam (the largest dam in the Hadejia River basin) affects water availability for downstream farmers. Water from the Tiga Dam also supplies Kano City. The Challawa Gorge Dam supplies water for the Hadejia Valley Project and water use in this project as well as other smaller irrigation

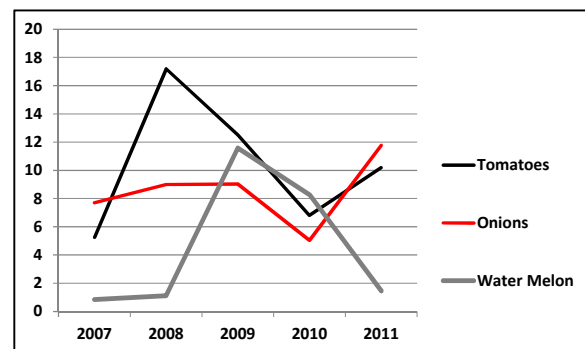
schemes also affects local *fadama* farmers. Whereas drought and water diversion reduce water supply downstream, flood events have also created production shortfalls in the region, notably in 2009 and 2012.

Looking back over the last 5 years of production data, there is little evidence of a uniform production pattern for all crops. See graph below. Maize, in particular, has shown trends that differ from wheat and rice (note the example from 2010 to 2012). In fact, the variety of grains grown is an advantage for farmers in the zone because it allows for risk spreading.

Yields of Major Crops (in MT), Jigawa State, 2007-2012



Market Vegetables, Yields in MT, Jigawa State, 2007-2011



The production pattern for irrigated market vegetables is similar to the production trend for rice. See graph above. Production rose in 2008 and 2009 then fell in 2010 but rose again in 2011. Watermelon, like rain-fed millet, saw a

drastic drop in production in 2011, matching 2007 levels.

As elsewhere in the country, cuts to the national **fertiliser** subsidy programme have hit farmers hard. Under the national fertiliser subsidy programme, a sack of fertiliser sold for NGN 1,000. Farmers could purchase 2-3 bags at the subsidised price. Additional bags (i.e., 2-5 bags) were bought at the prevailing market price. Since 2011, the subsidy has been slowly phased out, leading to a rise in fertiliser prices and declining use. Very poor and poor farmers reportedly did not purchase even one (100 kg) sack of fertiliser in the reference year. Wealthier households bought about 1 sack. Declining fertiliser use from higher prices may be one reason for lower maize output in 2011.

Livestock Production

The Hadejia Valley Mixed Economy Zone is an area relatively rich in livestock. The floodplains provide good grazing although there are competing land use demands between farmers and herders. During the wet season, cattle are usually taken to pastures outside of the intensively farmed areas. In the dry season, post-harvest (i.e., around January), cattle are brought back to feed on crop residues and to graze locally.

Livestock have many functions. Milk is both consumed and sold; livestock are sold for cash income; rams are slaughtered for meat during certain religious festivals, and new animals are purchased as a safety net against harvest failure or simply as a place to bank money. Manure is used to fertilise fields and oxen provide draught power to pull a plough or to transport goods.

In the Hadejia Valley Livelihood Zone cattle are kept both for dairy and for draught power.

Poor households keep only a few cattle which are used mainly for draught power. Wealthier households keep oxen and dairy cows. In the wet season, dairy cows produce about 2 L per day per cow over a 6 month period. Yields drop in the dry season to about 1 L per day per cow over a 3-4 month period. In the reference year, middle-income and better-off households sold about 33-66% of the milk produced.



Cattle are rarely slaughtered for meat. Cattle are sold, however, to meet pressing cash needs. In the reference year, poor, middle-income and better-off households typically sold about 20-25% of the herd (the very poor do not own cattle). This is higher than normal herd dynamics and may reflect rising prices in 2011 (particularly fertiliser prices) and the associated need for cash.

In addition to cattle, almost all households own sheep and goats. Small stock and poultry are kept (particularly by women) as an investment

to be sold when cash needs arise. During the reference year, about 35-45 percent of the flock was sold. As with cattle sales, these figures are slightly higher than pastoralist herd dynamics. Notwithstanding these sales, herd and flock sizes stayed relatively stable over the year due to good health conditions and new births.

Markets

Market Routes, Demand and Supply

Markets are important in rural life and major towns select different days for their market so as not to compete with the market days in other major towns. In the Hadejia Valley, for instance, Kafin Hausa's market day is on Tuesday whereas the Marma market in KiriKasamma LGA is on Wednesday.

Market routes depend on the item sold. In general, the market flow for livestock is from north to south. The livestock trade originates in the northern states of Nigeria as well as from Niger then travels south to meet demand in the major urban centres of central and southern Nigeria (including Kaduna, Zaria, Abuja, Lagos, Port Harcourt, and so on). See Annex 1.

In contrast to livestock's southern market flow, grains and legumes are typically exported north to Niger. Overall, Jigawa State is a net exporter of grain, particularly wheat and rice. In 2012, the government put a temporary ban on cross-border exports of grains due to concerns about prices rising locally after a poor production year. Notwithstanding occasional trade restrictions, Niger and other neighbouring sahelian countries are a major destination market for Nigerian grain, including crops from the Hadejia Valley.³

³ According to Jenny Aker's 2008 report (Aker, 2008: *How Can We Avoid Another Food Crisis in Niger*, Centre for Global Development) Nigeria supplies 75

Typically, grains are exported first to Kano State (Dawanau market) or to Yobe, Katsina, Borno, Zamfara and Sokoto States where wholesalers amass the grain for onward export to Niger.

During the hunger season, millet and maize are bought by local farmers for home consumption. This grain is local, originating from markets within the Hadejia Valley. In drier years, local grain is supplemented with grain brought in from neighbouring states, such as Kaduna (Makarfi market), Bauchi and Yobe.

Market vegetables from the Hadejia Valley Livelihood Zone are purchased by wholesalers in local markets then transported to intermediate markets in Kano. From there, some of the vegetables are taken to southern destination markets in Edo, Lagos, Ondo and the Niger Delta states.

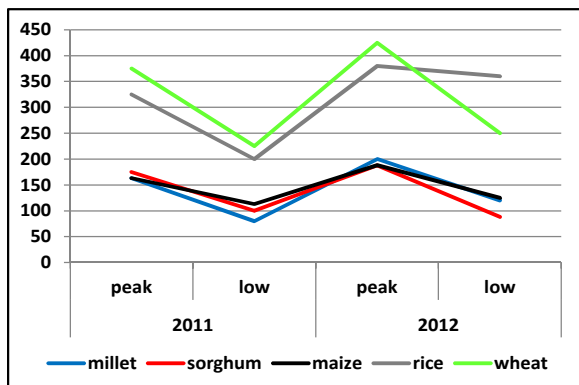
Sesame, which is grown in Jigawa State but was not a major crop in the livelihood zone, is exported to the Middle East and India.

Cereal Price Trends

During the year, there are normal highs and lows in price trends for the main cereal crops. It is not unusual for cereal prices to almost double in price from post-harvest lows to pre-harvest highs. See graph next page. In 2011 in the Hadejia market, for example, the low price of millet during the year was NGN 80 per *tier* (about NGN 35 per kg). The peak price, by contrast, was NGN 163 per *tier* (NGN 68 per kg). Prices for staple food grains were typically around the NGN 150 per *tier* mark. Cash crops – wheat and rice – typically sold in the NGN 300 per *tier* range, roughly double in value of the staple grains.

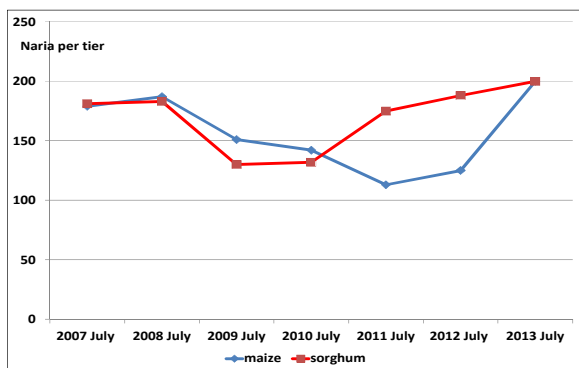
percent of Niger's millet and sorghum, and 35 percent of Niger's maize imports.

Seasonal Price Trends per tier for cereals, in Naira, Hadejia Market, 2011-2012



In the last 6 years, prices for staple grains increased (see graph below). Price increases reflect higher input costs (fuel and fertiliser) and supply shortages (i.e., flood impacts), a trend that is likely to continue into August 2013.

Annual trends in Grain Prices in Naira per KG, Hadejia 2007 – 2013, peak prices



Livestock Price Trends

Livestock prices also have seasonal highs and lows which reflect seasonal trends in demand as well as trends in animal health and condition. Prices peak during religious festivals in November / December when demand is highest. Sales are also high in April/May at the start of the growing season when farmers need to pay for inputs. Over the last two years,

prices have risen slightly. In Hadejia market, peak prices from 2011 to 2012 increased by 10 percent for cattle and by 15 percent for goats.

Seasonal Calendar

In the Hadejia Valley, agricultural activities are year round. The **rain-fed** agricultural season gets underway with land preparation in April/May. Farmers plant their crops when the first rains begin. June-July-August marks the period of weeding while crops are growing. By mid to late August, maize can be eaten fresh, or green, from the field. By September through to October, maize, millet and cowpeas are harvested. The sorghum harvest follows in October-November (and into December). Rain-fed rice is harvested during this same period.

Flood retreat crops – mainly maize and cowpeas – are planted once the flood waters recede but while there is still good moisture in the soil. October to December is the typical time period for flood retreat agriculture.

Dry season irrigated farming begins once the rain-fed harvest has been threshed and stored. Land preparation and planting are carried out in December-January, followed by weeding in February. Crops are harvested in March-April-May. This is the period when wheat, rice and vegetables are grown primarily for sale.

Milk production from dairy cows peaks during the rainy season when good pasture is more commonly available. However, there is also more competition over land at this time. For this reason, cattle are often taken to rainy season pasture away from the farms. As a result, access to milk can be a problem.

Seasonal Calendar, Hadejia Valley Mixed Economy

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainy Season												
Millet, Maize, Cowpeas				LP	LP	P	W	GH	H	H		
Sorghum				LP	P	W	W	W		H	H	H
Rice			LP	P	W	W				H	H	H
Irrigated crops	P	W	H	H	H							
Livestock milk production						peak	peak	peak				
Livestock sales				peak	peak							peak
Fishing	peak	peak	peak	peak								
Labour - on-farm + construction												
Food purchase						peak	peak	peak				
School expenses	peak			peak					peak			
Health expenses	cough			cholera		malaria						cough

Dry season activities include irrigated agriculture as well as casual labour for the poor. Poor labourers typically find jobs on the farms of better-off households. In the reference year, the very poor typically worked 3-8 months as farm labourers throughout the year.

During the dry season, some men find work in construction or hauling goods or fetching water. Brick production is another source of income for the poor as well as other odd jobs in town. Some women sell firewood but it is not as common in this zone as in other areas.

Fishing is a year-round food and income source. Fishing peaks during the dry season months (January to April). It is lowest at the height of the rains in July due to the challenge of fishing when the rivers are very full and when labour is needed on the farms. An increasing problem for fishers is the growth and spread of Typha grass. This weed inhibits fish and fishing. It's spread is attributed to changes in river water flow.

Household expenditures have seasonal peaks and lows. Farm input expenses are highest in January and April when fertiliser is purchased and labourers need to be paid. Better-off and middle-income households typically sell cattle to pay for these farm inputs. April to August is also the period when food expenses are highest. Poor households pay for food purchases mainly through casual labour. Health and education costs are other key seasonal expenses. Treatment drugs – if they can be afforded – are often paid for through livestock sales. Malaria is highest during the rainy season but the cooler dry season brings coughs and colds too. School uniforms and supplies are due in January and money must be raised to meet these school expenses. The other school terms begin in April and September.

Wealth Breakdown

A number of different assets are associated with wealth in the Hadejia Valley Zone.

Land is the most important asset. Two factors are important: (i) total hectares cultivated; and (ii) type of land cultivated. Better-off households have more plots – both inherited and/or purchased - and they cultivate a mix of *fadama* and upland farms. Other productive assets are critical too, including owning cattle and plough oxen; plough(s); fertiliser, irrigation pumps and tubewells. Wealth status is also reflected in education levels. Some children from very poor households do not even complete primary school.

The major difference between middle-income and better-off households is land size. Better-off households cultivate significantly more land: typically 12 ha (or 1600 *ridges*) which is twice as much land as most middle-income households. Both upper wealth groups typically produce sufficient food for their annual consumption needs. Better-off households earn more income from crop sales, and they also generate more income through trade and livestock (as well as milk) sales.

Wealth Breakdown Hadejia Valley LZ, 2010-2011

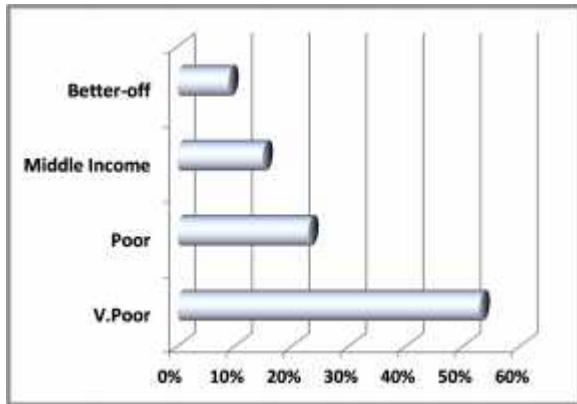
	Wealth Group Information			
	Very Poor	Poor	Middle	Better-off
HH Size	8	10	17	24
No. of wives	1	1-2	2-3	3-4
Area cultivated**	133 ridges	200 ridges	820 ridges	1600 ridges
Livestock	0 cattle 0 ox 0-10 shoats*** 15 hens	0-4 cattle 0-2 ox 2-10 shoats 15 hens	5-12 cattle 3-7 oxen 15-50 shoats 20 hens	13-30 cattle 5-9 oxen 30-70 shoats 35 hens
Assets		0-2 ploughs	1-2 ploughs	3-10 ploughs
Main food sources	purchase crops	crops purchase	crops purchase milk & meat	crops milk & meat purchase
Main Income Sources	crop sales labour shoat sales	crop sales livestock sales labour	crop sales livestock + milk sales trade	crop sales livestock + milk sales trade
** 133 ridges x 100m = 1 ha		*** shoats = goats + sheep		

Sources of income also differ by wealth group. The table above summarises the characteristics of each wealth group. The difference between the two poorest wealth groups is the size of land. The very poor cultivate about 1 ha (133 *ridges*). In the reference year, harvest output lasted 4-6 months. The poor typically cultivate 1.5-2 ha (200 – 266 *ridges*) and may own a plough ox and plough. Their harvest output lasted about 6-7 months. They also earned more income from crop sales.

Wealth Group Proportions

In the Hadejia Valley livelihood zone, the very poor comprise the majority (about 50-55 percent) of households. An estimated 20-25 percent of households are considered “poor”. The remaining 20-25 percent of households fall in the upper two wealth groups (about 10 percent are better-off and 12-15 percent are middle-income).

Proportion of Households in each Wealth Group, 2010-11



Household Size

Household size typically increases with wealth. Very poor households typically have 7-9 members. Poor households are slightly larger, typically about 10 family members. As wealth increases, a husband is more likely to marry 2-3 wives and hence household sizes are quite large. In the middle-income group, 15-18 people is a common household size. For the better-off, 20-25 family members are typical. Larger households not only reflect polygamous marriages but are also a case of other relatives (either elderly or unmarried adults) living together in the ‘large house’.

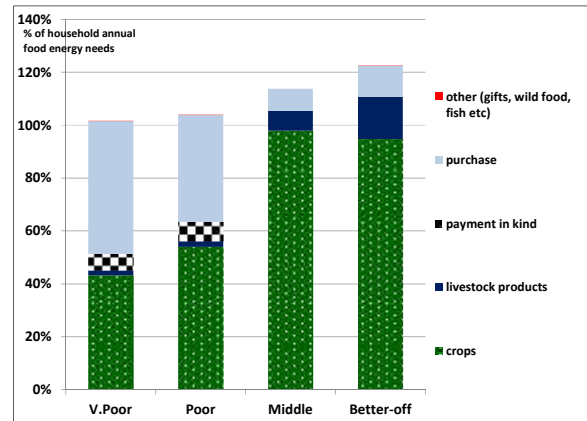
Given different household sizes, the proportion of the population in each wealth group is as follows: 38 percent are very poor; 20 percent are poor; 23 percent are middle-income; and 19 percent are better-off.

Food Sources

The Hadejia Valley economy is centred on agriculture (supplemented importantly by fish and livestock). In an average year, such as the 2010 harvest, middle-income and better-off households typically met their annual food needs from their own production. Poor and very poor households met about half (45-55

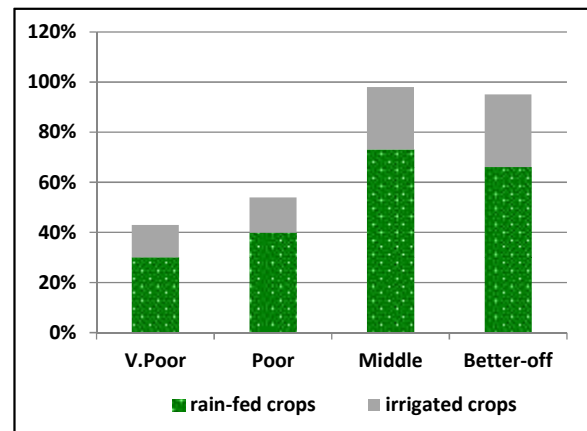
percent) of their annual food needs from own crop production.

Annual Food Sources, 2010-2011



All wealth groups could consume more of their crops but crop sales are also an important way to raise cash. In terms of the balance between rain-fed and irrigated crops, in the reference year the rain-fed crops (maize, millet, sorghum and cowpeas) made up 65-75 percent of total crop production (this does not take into account market vegetables). See graph below.

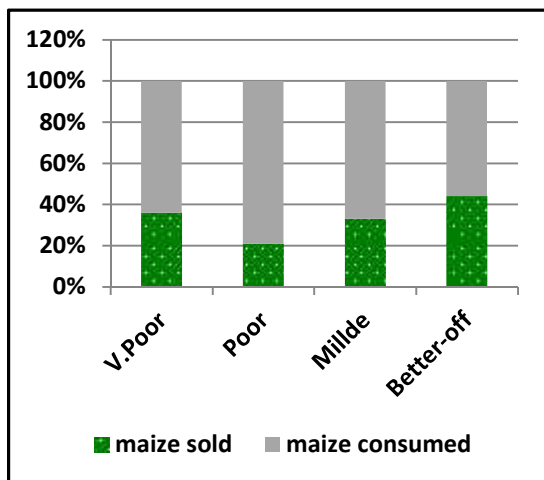
Contribution of Different Crops to Annual Food Needs, 2010-2011



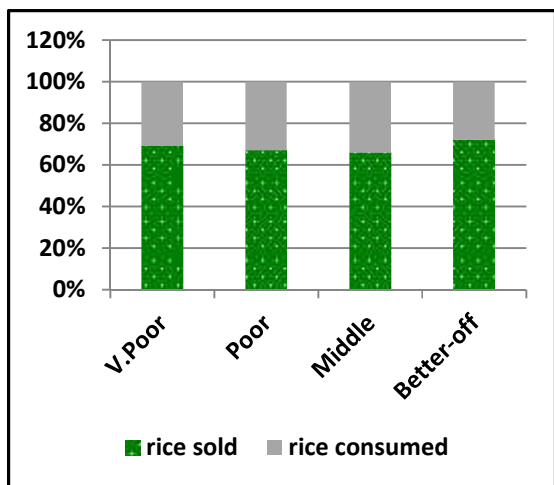
This split between rain-fed and irrigated crops is not a pure food crop / cash crop split. Much of the rain-fed crops are also sold. For example, 20-40 percent of rain-fed maize was sold in the

reference year compared to about 65 percent of rice and over 85 percent of wheat. Only the better-off sold millet. See the graphs below.

Proportion of rain-fed maize sold / consumed, 2010-11



Proportion of rice sold / consumed, 2010-11



In addition to food secured from their own crop production, the poor and very poor also earn food from in-kind payments. In the reference year, in-kind paid labour was secured for 3-5 months of the year, mainly for land preparation and weeding. Payment is either in grain or in the form of a meal (plus a daily wage).

Working either as farm labourers or in construction to earn cash, poor households

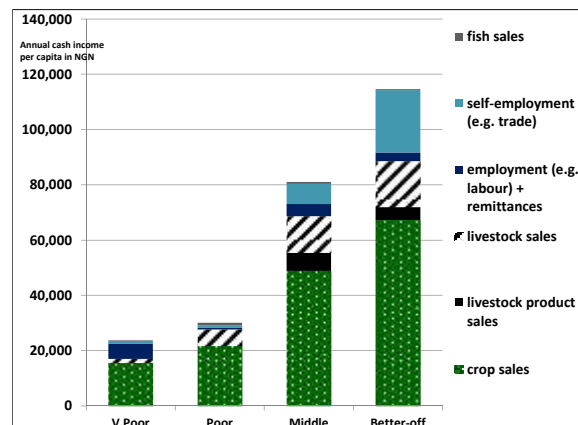
purchased about 40-50 percent of their annual food needs during the reference year. The majority of purchased food was staple grain (namely maize, millet and sorghum in that order of importance). Only about 4-6 percent of their annual food was on non-staple purchase such as oil, sugar, cassava flour, sweet potato and wheat. Thus, the poor’s diet is principally staple grains with limited protein diversity.

Middle-income and better-off households also purchased staple grains. However, they supplement their diet with their own milk and meat, cowpeas from the field, and vegetables and fruit grown on their land. Milk, meat and cowpeas comprised 15-20 percent of their annual food needs.

In the 2010-2011 reference year, food gifts were not typically received by the “active” poor. Such gifts were given to other vulnerable groups (the elderly; the disabled; and the sick) who were unable to work.

Income Sources

Per Capita Annual Income Sources, 2010-2011

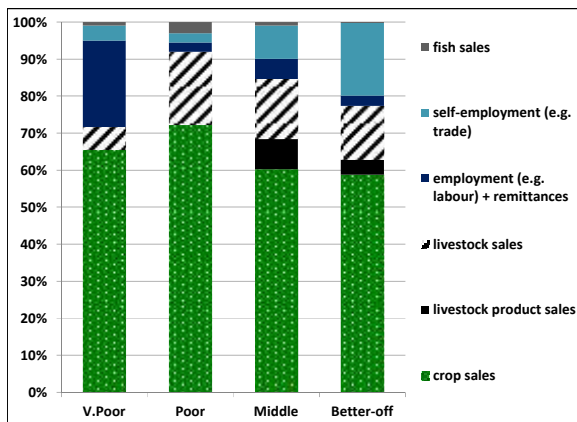


In the Hadejia Valley Livelihood Zone, crop sales are the most important source of income for all wealth groups. See graph above. The very poor combine this crop income with labour earnings.

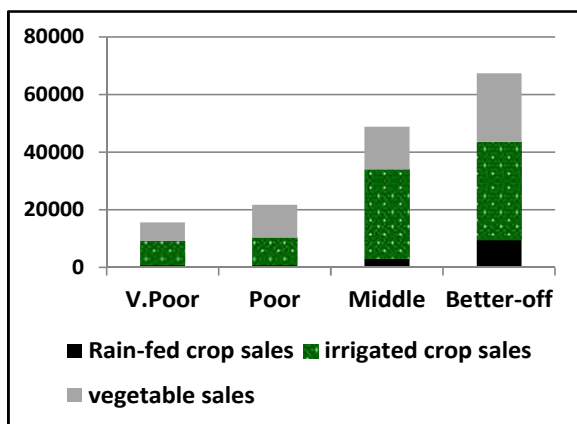
The other wealth groups supplement crop income with livestock sales. The better-off are also very active in trade activities.

The graph showing the proportional importance of different income sources reinforces these points. Poor households produced more crops and sold more crops than the very poor. They also own more *fadama* land on which to grow and sell market vegetables. On average, poor households earned NGN 6,119 per capita per year more than very poor households from cash cropping (i.e., sales of rice, wheat and market vegetables).

Proportional Importance of Income Sources, 2010-2011



Annual Income per capita from Crop Sales, in Naira, 2010-2011



For the very poor, cash earned from agricultural and construction work is sometimes sup-

plemented by other work. Both men and women carry out petty trading and women also sell prepared meals or earn money pounding grain.

Better-off households earned about 20 percent of their annual income from trading activities. They earned a similar proportion from livestock and milk sales (i.e., about 20 percent of annual household income).

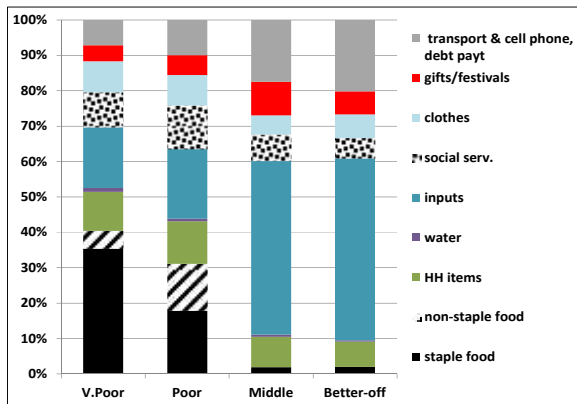


Expenditures

For the very poor, about 40 percent of their annual expenditures in the reference year was on **food**. Own crop production lasted the very poor about half the year; the other 6 months they bought their food, or received some grain from in-kind payment. The black bar in the graph below illustrates staple food spending. Poor and very poor households principally bought maize and millet as well as some sorghum. Middle-income and better-off households bought some millet but little else. In total, food purchases by the wealthier

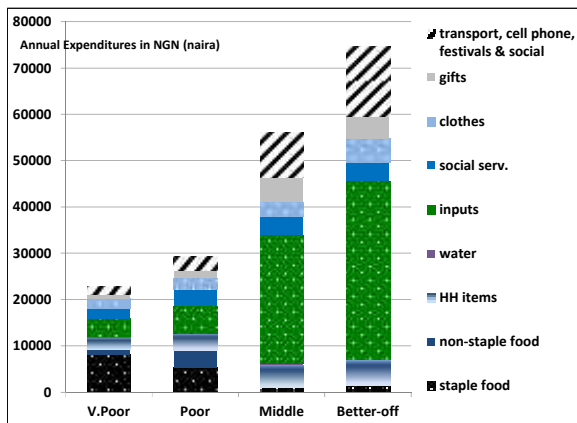
households comprised just 8-12 percent of their annual food needs (and only 2 percent of their annual expenditures).

Proportional Expenditures by Wealth Group, 2010-2011⁴



The graph below shows per capita spending over the reference year for each wealth group. In both graphs, it is clear that the principal expenditure during the reference year for middle-income and better-off households is on **livelihood inputs**.

Annual Expenditures per Capita in Naira, 2010-2011

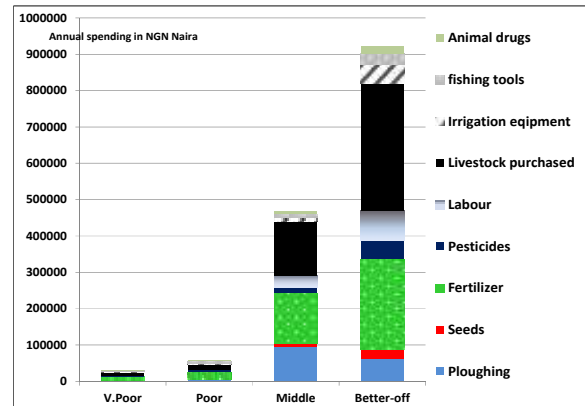


Fertiliser is a key expense for these wealthier farmers (see the green bar). This emphasises the central importance farmers place on

⁴ Not all expenditures were captured for the middle-income and better-off wealth groups. Hence, there was a significant ‘miscellaneous’ category. Only reported expenditures are graphed in this graph.

securing fertiliser to boost yields. The second major livelihood expense is livestock purchase. Livestock purchase represents a form of savings as well as an expenditure on consumption.

Household Annual Expenditures in Naira on Livelihood Inputs, 2010-2011



For very poor households, their limited income led to very low spending on **health** (1 percent of annual household expenditure in the reference year). Per capita spending on health was only NGN 1,500 for the very poor. By contrast, better-off households spent on average NGN 2,125 per person on health costs in the reference year. These differences could shed some light on nutritional outcomes in the zone.

Hazards and Coping

The Hadejia Valley is located in a dryland environment crossed by two major rivers and their tributaries. Dry periods and flood events are expected in the area. Extreme events are less frequent and, in the case of drought events, have been associated with certain decades. The 1940s witnessed major droughts, as did the 1970s and 1980s.

Timeline of Events, 2008-2012, Hadejia Valley LZ

YEAR		Rank	EVENT
2012	rains+harvest	1 & 5	A very excellent year for rice, maize and some millet and sorghum production. Due to flooding in some parts of the state, some areas experienced food shortages. Government, in collaboration with private companies, planned disaster relief (food aid) to those affected.
	dry season	2	Partial removal of fuel and fertiliser subsidies. Relatively high food prices due to removal of subsidies. Violence and displacement in the north. Quila birds destroy grains.
2011	rains + harvest	3	Relatively good rains and a decent harvest. Groundnuts, rice, sesame and vegetable were affected by disease and pest.
	dry season	2	National elections with associated violence.
2010	rains + harvest	3	Government provided free certified seeds (cowpea and rice) and fertiliser was subsidised . These efforts helped farmers replant their flooded land and supported fadama farming.
	dry season	2	Insecurity in the north. Food prices were relatively high.
2009	rains + harvest	2	A relatively poor year. The beginning of flooding in some parts of the zone. The Government provided relief food and staple food prices were subsidised in the market.
	dry season	3	Beginning of insecurity in the north
2008	rains + harvest	4	Good rainfall conditions. Agricultural inputs were available. Good harvest.

The 1980s were particularly severe. Drought affected more than 70% of northern Nigeria and occurred almost every year from 1982-1987. The drought probability rate for the 1980s was 83%. The 1970s were almost as dire with a 50% drought probability rate. Extreme dryness occurred almost every other year (affecting 50-70% of the north). The last crisis drought year affecting northern Nigeria was 2007.

In addition to drought events that are common in dryland regions, the Hadejia Valley is also subject to floods, both “normal” and extreme. In recent years, the Hadejia Valley was affected by bad floods in 2009 and 2012 prompting seed distribution (for the 2010 agricultural season) and disaster relief (in 2012).

One aspect of climate change is an increase in extreme hazard events, including not just flooding or droughts but also major pest and disease epidemics. Another aspect is a gradual warming of temperatures and a greater unpredictability in the seasons.

Research from Nigeria confirms that these trends are already being observed. For instance, a 2007 study showed that during the 34 year period between 1973-2007 there was an increase in 1.43 degrees celcius and a decrease of 178 mm rainfall from the 34 year period just prior i.e., between 1938-1972 (Odjugo 2010, p:4).⁵ These figures are a worrying trend for northern Nigeria.

When there are significant production shortfalls, households have 3 basic options: (i) increase income; (2) reduce non-essential expenditures and buy staple food; and (3) reduce food intake.

Increase Income - In the Hadejia Valley Livelihood Zone, households faced with an economic shock try to make up production or income gaps through a number of different

⁵ Dr. Odjugo, Peter. 2010: *Adaptation to Climate Change in the Agricultural Sector in the Semi-Arid Region of Nigeria*. Paper presented at the Climate, Sustainability and Development in Semi-Arid Regions Conference, Brazil.

measures. These coping mechanisms are summarised below.

Coping Strategies to Increase Food and Income

<u>Very Poor, Poor</u>	<u>Middle, Better-off</u>
Sell assets (land and household items)	Increase livestock and milk/meat sales
Increase livestock sales (although prices then drop so income improves just a little)	Increase trade activity (e.g., grain stocking and trade).
Increase firewood sales from 1 bundle p. month to 3 bundles p. week (but higher supply leads to lower sale prices)	Reduce labour costs by paying labourers 50% of reference year rate.
Increase daily labour from 2 days to 4 days p. week and from 2 people to 5 people.	Replace tractor use with plough oxen.
	Try to secure loans.

Reduce and/or Switch Expenditures

Very Poor, Poor	Middle, Better-off
Reduce:	Reduce:
festivals	festivals
clothes	clothes
soap	fertiliser and inputs
fertilisers / pesticides	transport
seeds	health expenses
livestock purchase	yearly Hajj
	land rented in
	amount of land cultivated

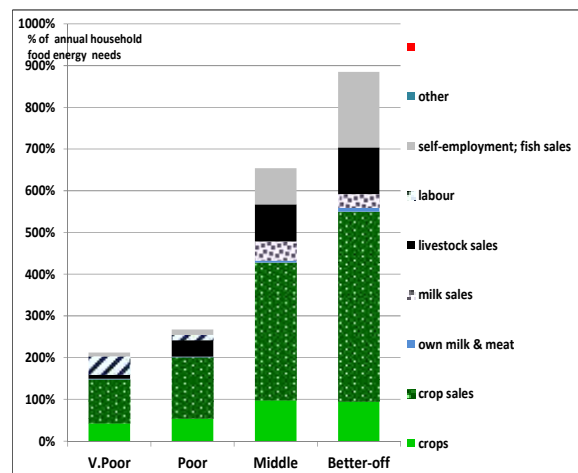
Poor households do not have many expenses on non-essential goods or services. However, there are ways to cut spending. Households from all wealth groups limit spending on festivals when stressed. Spending on clothes is also reduced as people make do with their old clothes. Certain labour-intensive services– such as grinding grain

or fetching water – are also reduced. When households are really stressed, the poor and the wealthy alike reduce their livelihood inputs. They also reduce health and hygiene expenses (including soap purchase). Finally, wealthier households may delay the yearly Hajj until their economic situation improves.

Implications of HEA Results

The total resources available from all food and income sources can be expressed as a percentage of annual food energy requirements. In this case, not only the food sources but also cash income is calculated in terms of how many household kilocalories that source secures. On first glance, the graph (see below) underlines previous observations: the value of agriculture for own consumption and for income generation for all wealth groups in the zone. The graph also visually reinforces the other findings, namely the importance of livestock production for most wealth groups, and of labour for the very poor.

Total Household Food + Income expressed in percentage of annual food energy needs, 2010-11



The value of this calculation lies in using the data to assess what household resources are available for basic survival and livelihood

protection when a shock occurs. This analysis can be combined with an assessment of the positive contribution of a project intervention (or interventions). For example, let us imagine a hypothetical example whereby a severe drought leads to crop shortfalls of 50 percent of normal. Both rain-fed and irrigated crops are affected as water flow – in this scenario - is reduced due to drought in the rivers' origins. There are a number of consequences of a wide-spread drought. In addition to harvest shortfalls, sparse grazing and early livestock migration leads to low milk availability. Furthermore, a reduction in grain supply causes a doubling of staple grain prices by the following rainy season. A further consequence for the very poor is that despite continuing strong demand for labour, wages decline by 30 percent as the competition for casual work increases. In such a hypothetical case – which perhaps under-estimates the strong demand and prices for cash crops – we could see total food and income for the very poor drop from about 210 percent of annual food needs in an average production year to 95 percent in the bad year, without coping. (This is based on a rough calculation of the effects of the hypothetical shock.) This level of total household resources leaves a survival deficit of 17 percent of household annual resource needs for the year as well as an expenditure deficit of NGN 54,000 per household. A food and cash transfer could be designed to cover the food and expenditure deficits facing affected households. The timing of a potential cash transfer would be determined on the basis of what items are forgone in a bad year to meet food needs and hence when during the year cash would be needed to cover those items. Subsidising a delay in fertiliser loan repayments for middle-income farmers is another strategy that could be calculated from an analysis of

expenditure deficits created by a major drought event.

The HEA baseline is useful as a stand-alone product to understand how local farmers secure their food and income, and how food and income access differs depending on a household's level of assets. The baseline becomes an even more powerful tool when combined with impact (or scenario) analysis. The HEA data and spreadsheet tools allow planners to run scenarios – predicted or real – in order to judge what is really needed to meet project goals as well as to protect livelihoods and prevent hunger in the event of a crisis.



ANNEX 1: Markets

Trade routes of main goods



Livestock trade route —————→

Grains and legumes trade route —————→