About FEWS NET

Created in response to the 1984 famines in East and West Africa, the Famine Early Warning Systems Network (FEWS NET) provides early warning and integrated, forward-looking analysis of the many factors that contribute to food insecurity. FEWS NET aims to inform decision makers and contribute to their emergency response planning; support partners in conducting early warning analysis and forecasting; and provide technical assistance to partner-led initiatives.

To learn more about the FEWS NET project, please visit [www.fews.net](http://www.fews.net).

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Acronyms and Abbreviations

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<tr>
<td>CAIMA</td>
<td>Centrale d'Approvisionnement en Engrais et Matériel Agricole (Fertilizer and Agricultural Equipment Procurement Center)</td>
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<tr>
<td>CILSS</td>
<td>Comité Permanent Inter-Etats de Lutte contre la Sécheresse dans le (Permanent Inter-State Committee for Drought Control in the Sahel)</td>
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<tr>
<td>CPO</td>
<td>Crude palm oil</td>
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<tr>
<td>DNPGCA</td>
<td>Dispositif National de Prévention et de Gestion des Crises Alimentaires (National System for the Prevention and Management of Food Crises)</td>
</tr>
<tr>
<td>ECOWAS</td>
<td>Economic Community of West African States</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>FEWS NET</td>
<td>Famine Early Warning Systems Network</td>
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<tr>
<td>FOB</td>
<td>Freight on board</td>
</tr>
<tr>
<td>FUCOPRI</td>
<td>Fédération des Unions des Coopératives des Producteurs de Riz (Federation of Cooperatives’ Unions of Rice Producers)</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>GoN</td>
<td>Government of Niger</td>
</tr>
<tr>
<td>ha</td>
<td>Hectare</td>
</tr>
<tr>
<td>INRAN</td>
<td>Institut National de Recherches Agronomiques du Niger (Niger’s National Institute for Agronomic Research)</td>
</tr>
<tr>
<td>INS</td>
<td>Institut National de la Statistique (National Institute for Statistics)</td>
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<tr>
<td>kg</td>
<td>Kilogram</td>
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<tr>
<td>mm</td>
<td>Millimeter</td>
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<tr>
<td>MT</td>
<td>Metric tons</td>
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<tr>
<td>NGN</td>
<td>Nigerian naira</td>
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<tr>
<td>NGO</td>
<td>Nongovernmental organization</td>
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<tr>
<td>ONASA</td>
<td>Office Nationale d’Appui à la Sécurité Alimentaire (National Office in Support of Food Security)</td>
</tr>
<tr>
<td>OPVN</td>
<td>L’Office des Produits Vivriers du Niger (Office of Agricultural Products of Niger)</td>
</tr>
<tr>
<td>PDES</td>
<td>Le Plan de Développement Economique et Social (Economic and Social Development Plan)</td>
</tr>
<tr>
<td>ReSAKSS</td>
<td>Regional Strategic Analysis and Knowledge Support System (for West Africa)</td>
</tr>
<tr>
<td>SAP</td>
<td>Système d’alerte précoce (National Early Warning System)</td>
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<tr>
<td>SIM</td>
<td>Market Information System (MIS in English)</td>
</tr>
<tr>
<td>SIMA</td>
<td>Système d’Information sur les Marchés Agricoles (Agricultural Market Information System)</td>
</tr>
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<td>SIM-Bétail</td>
<td>Système d’Informations sur les marchés à bétail (Livestock Markets Information System)</td>
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<tr>
<td>SNS</td>
<td>Stock Nationale de Sécurité (National Food Security Stocks)</td>
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<tr>
<td>SONAGESS</td>
<td>Société Nationale de Gestion du Stock de Sécurité Alimentaire (National Food Security Stock Management Company)</td>
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<tr>
<td>US$</td>
<td>United States dollar</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>USGS</td>
<td>United States Geological Survey</td>
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<tr>
<td>WAEMU</td>
<td>West African Economic and Monetary Union</td>
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<tr>
<td>WFP</td>
<td>World Food Programme</td>
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<tr>
<td>XOF</td>
<td>West African CFA (African Financial Community) franc</td>
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Executive Summary

This FEWS NET Market Fundamentals report presents findings to inform regular market monitoring and analysis in Niger. This report was prepared concurrently with an Enhanced Market Analysis (EMA) report, focusing on Maradi and Zinder Regions of Niger (Figure 1), as well as the Centre-Nord and Est Regions of Burkina Faso. Among other uses, the information presented jointly in these two reports can be used to support the design of food security programs, including but not limited to informing a U.S. Agency for International Development (USAID) Bellmon determination in advance of an FY 2018 USAID-funded development food assistance programs in Niger.

- This study is based primarily on desk research carried out during the months of January to May 2017. Stakeholder groups, such as members of the Agricultural Market Information System (SIMA, System d’Information du Marché Agricole) and the National Early Warning System (SAP, System d’Alerte Precoce), were also consulted.

- Overall, food availability in Niger depends heavily on local rainfed production, imports from regional markets, and, to a lesser extent, international imports. Only a fraction of land is suitable for crop production. Coupled with Niger’s very young and growing population (among other factors), this means that domestic production is not sufficient to meet market demand. Between 10–20 percent of total staple food requirements are sourced through imports—especially rice, maize, and edible oil.

- Niger is a landlocked, import-dependent, Sahelian country with very strong commercial ties to neighboring Nigeria, Benin, and Burkina Faso (among others). Niger relies on the port of Cotonou (Benin) for the majority of international imports. Niger shares a common currency (the West African franc, XOF) with each of its southern neighbors except Nigeria. Nigeria is Niger’s largest trade partner, so Niger relies heavily on the performance and status of agricultural markets there to help fill cereal gaps during years of poor production and as a market outlet for livestock and cash crops. The recent poor performance of Nigeria’s economy has had both direct and indirect effects in Niger, especially in border areas where exchanges and trade between the two countries are most intense.

- Sorghum and millet are by far the main staple foods consumed in Niger – per capita consumption is estimated between 100–200 kg per year, depending on the source. These grains constitute the main source of calories in the Nigerien diet. Self-sufficiency in sorghum and millet production depends on the progression and outcome of the main rainfed agricultural season, which extends from June to September. Approximately one in every two years results in surplus production, but deficit years are often much more severe. Furthermore, limited household and trader stocking are such that supplies are not easily retained during years of surplus production for local consumption during years of deficit.

- Maize consumption has been increasing, but it is largely a substitute among rural populations, and consumed most intensely when issues arise with availability and prices of preferred millet and sorghum. Local maize production hardly enters the national marketing systems, and most household purchases come from neighboring Benin, Burkina Faso, or Nigeria, depending on the locality and the competitiveness of markets in neighboring countries. Rice consumption has also increased, but is consumed mostly by urban populations rather than the rural poor, except on specific holidays and events. Cowpeas and groundnuts are the main leguminous crop. While groundnuts are consumed locally either as a nut, as groundnut paste, or in the form of oil, cowpeas are largely destined for regional export markets (Nigeria in particular). Imported palm oil, sourced from regional and international markets, is the most important edible oil consumed. However, edible oil consumption in Niger is among the lowest in the region and below international dietary recommendations.

- Livestock meat and products are jointly the largest source of animal protein in the Nigerien diet. Livestock rearing (of cattle, sheep, and goats) is practices by over 80 percent of the population. Livestock export earnings are also essential.
for the national economy, contributing to 21 percent of total export earnings. Over 95 percent of livestock exports are destined for Nigeria.

● Agricultural production can vary considerably from one year to the next, driven largely by variations in rainfall patterns. Recent gains in agricultural production were driven primarily by expansion of cultivated area. Production is largely carried out by smallholder farmers who implement traditional cropping techniques with very little if any use of improved inputs, animal traction, or mechanization. Hence, yield levels remain low. In some cases, official data even suggest some degree of retrogression for some crops.

● Niger’s economy is heavily integrated with the broader region, including but not limited to both agricultural crops and livestock trade. As a consumer, Niger imports coarse grains (millet, sorghum, maize) and oil from neighboring countries. As a producer, Niger can also export millet and sorghum, as well as cowpeas and livestock to the wider region (but Nigeria in particular). Seasonality in production and harvesting, as well as the relative strength of regional currencies (as indicators of effective demand), are key factors influencing the direction and extent of the trade flows (imports or exports) with neighboring countries.

● The capital city of Niamey as well as Maradi and Zinder Regions are among the most important domestic markets. Other markets such as Gaya, Birni N’Konni, Diffa, and Ouallam are also key for internal and regional trade flows. Niger also functions as a transit area for internationally imported commodities such as cereals, sugar, dairy produce, and edible fruits and nuts, making their way into Nigeria (from the port of Cotonou, especially). Bilateral agreements with Benin and Nigeria ease transit and promote the free movement of goods between the three countries.

● Overall, a large number of actors participate in the staple foods marketing system. Agricultural production is in the hands of a large number of small-scale producers who typically sell their produce to local traders (or agents of wholesalers) or retailers. Some commodities (rice and palm oil) undergo processing before reaching final consumers on retail markets. Food processing is small-scale and localized, using cottage techniques, since the local agroindustrial processing sector has not yet developed.

● Market monitoring is currently carried out by several organizations, most notably SiMA, SIM-Bétail (Livestock Markets Information System), and the SAP. These independent technical services support the national disaster preparedness framework, attached to the Office of the Prime Minister.
Preface

Markets and trade information and analysis are key inputs in FEWS NET’s integrated food security analysis. FEWS NET relies on a common understanding of a given population’s livelihoods (food and income sources and typical coping strategies used to handle shocks) as well as an understanding of typical market conditions and outcomes. Together, these are used to identify and quantify the magnitude of market-based anomalies and their potential impacts on food security outcomes of the poor and very poor (Figure 2).

Figure 2. FEWS NET’s approach to market monitoring and analysis

Several types of information help inform the understanding of typical market conditions that affect the food and income sources of the poor and very poor. These include: the geography of supply and demand for a particular commodity (for example, maize) or category of commodities (for example, staple foods); the role of different actors in the marketing system (from small-scale producers to industrial food processors); the seasonality of specific events or activities; aggregate import-dependence, particularly in the case of staple foods; and key programs and policies. These factors affect the stability of food availability and access (food prices and income levels) and therefore three of the four pillars of food security (food availability, access, utilization, and stability). Collectively, an understanding of these key elements constitutes the FEWS NET Markets and Trade Knowledge base.

Under FEWS NET III (FY 2012–2016), Markets and Trade Knowledge base information is compiled into “Market Fundamentals” reports that seek to provide readers with a general understanding of market dynamics during a typical year. These consolidated documents are elaborated for both presence and remote monitoring (RM) countries, with references to relevant external documents and resources when they are available. Two pilots were carried out in FY 2014, one in Sudan and one in Burkina Faso, to test the appropriateness of the approach, the usefulness of the products, and the level of effort required.

During the first year of rollout (FY 2015), the Market Fundamentals reports focused largely on staple food market structure and behavior. Such reports can be prepared for cash crop, livestock, and labor markets following a similar approach. Of particular interest to the FEWS NET project are markets identified as important sources of food and income for the poor and very poor based on an understanding of the livelihoods of those populations. The Markets and Trade Knowledge team’s vision is to eventually have a staple food Market Fundamentals report for each FEWS NET country and region. Other reports (focusing on cash crop, livestock, and labor markets) will be added in a modular fashion as time and resources permit.

FEWS NET monitors markets in presence as well as RM countries (Figure 3). A presence country is monitored by FEWS NET staff working in a local country office. RM countries are typically covered by analysts in a nearby country using a lighter analytical approach to identify anomalies and deteriorating conditions. FEWS NET also monitors staple food markets in other countries or regions that are relevant to understanding food availability and access for the poor and very poor in FEWS NET countries (for example, Benin, Pakistan, Kazakhstan, South Africa, and Mexico, among others).

The Market Fundamentals reports will continue to inform the project’s regular market monitoring in terms of the commodities covered in the project’s Markets and Trade database, Price Bulletins, Price Watch, and special reports (Figure 2). The specific markets and commodities covered in country-specific reports will depend on a number of factors. The reports focusing on staple food markets touch on the following:

- Cross-cutting issues that affect all markets in a given country or region: The political and macroeconomic environment and key national-level programs and policies that influence food and income sources.
- For each commodity market
  - Market structure, including the relative importance of local production versus imports in aggregate food availability and access, including the geographic distribution of production and consumption, and key actors in the marketing chain.
- Market behavior/conduct, including purchase or selling behavior of key actors present in the marketing chain.
- Market performance outcomes, including production trends, inter- and intra-annual price variability, and regional or international competitiveness.
- Key indicators that analysts need to monitor over the course of the marketing year that could affect food availability and access of the poor and very poor.

FEWS NET’s widely recognized production and trade flow maps are incorporated into the report for commodities produced and consumed both locally and regionally as a means of illustrating the relative importance of certain markets and trade flow patterns in assuring food availability and access throughout the country. However, when a commodity is grown almost entirely as an exported cash crop or imported almost exclusively from international markets, other relevant diagrams and illustrations are used.

**Figure 3. FEWS NET presence and remote monitoring countries**

Source: FEWS NET.
Key concepts

The following provides the definitions of several key terms used throughout the report. For more detail on these definitions and other useful terms, consult the FEWS NET Markets and Trade Glossary.

Marketing system: This includes the entire commodity distribution system from production to consumption. A marketing system describes the key actors and the linkages between different stages of the distribution process of a given commodity. The marketing system also describes the spatial and functional relationships between market actors.

Marketing year: This refers to the period during which agricultural production from a given year’s harvest is sold. This period typically extends from one harvest of a particular commodity to the next, and is very similar to the consumption year used in FEWS NET’s livelihoods work in many cases.

Price: The cost or value of a good or service expressed in monetary terms. It is the financial cost paid when one buys a unit of a specific product or service. Prices, in the purest sense, indicate value that has been added to a particular commodity. This value added can be changes in the form (e.g., production or milling), place (e.g., transportation), or time (e.g., storage) of a commodity. Price signals can carry information about cost of production, transportation, storage, perceptions and desires as well as, in some instances, distortions.

Incentive: Something that incites an action or provides a motive (e.g., potential profits, benefits or gain from performing a particular economic activity).

Food balance sheet: This presents a comprehensive picture of the pattern of a country’s food supply during a specified reference period. A food balance sheet shows for each food item - i.e., each primary commodity and a number of processed commodities potentially available for human consumption—the sources of supply and its utilization.

Commodity balance sheet: This shows balances of food and agricultural commodities in a standardized form. The scope of standardization is to present these data in a less detailed form for a selected number of commodities without causing any significant loss of the basic variables monitoring the agriculture sector. The selected commodities include the equivalents of their derived products falling in the same commodity group, but exclude the equivalents of byproducts and derived commodities, which through processing, change their nature and become part of different commodity groups.

Unimodal areas: Unimodal areas are agro-ecological zones with one distinct rainy season with one rainfall peak and typically a single harvest.

Bimodal areas: Bimodal areas are agro-ecological zones with either a single prolonged rainy season with two rainfall peaks or two or more distinct rainy seasons (which could each be unimodal or bimodal), resulting in two or more harvests. The amount of rainfall can be equivalent between rainy seasons or one may be dominant (for all commodities or for a single crop), resulting in differing yields between seasons.

Commodity classifications

Commodity-specific classifications of surplus and deficit areas are established based on historical production figures and on FEWS NET staff and key informants’ knowledge of the consumption patterns of particular areas of a given country. When surplus and deficit areas are identified in aggregate, the determination is typically based on total local production, expressed in kilocalorie terms, compared to total local needs (also expressed in kilocalorie terms). Estimated staple food needs are typically established by local governments and updated as consumption patterns change.

Surplus-producing area: A geographic area that produces sufficient quantity of a given commodity (or set of commodities, like cereals) to cover local demand and to supply other areas. An area can likewise be defined either as having a minor surplus, meaning that in a normal year slightly more of a commodity is produced than required to meet local needs, or as having a major surplus, meaning that production in a given area largely surpasses local needs.

Deficit area: A geographic area that does not produce enough of a given commodity to meet local demand.

Self-sufficient area: A geographic area that produces sufficient quantity of a commodity to cover local demand. This area rarely produces: either (1) enough to supply other areas, or (2) too little to meet local needs.
Market types

Reference market: A market that provides information about supply, demand, and price conditions in other nearby markets or key markets that influence the performance of others.

Collection market: A rural market where relatively smaller-scale traders (or trader agents) purchase directly from producers.

Assembly market: A market where relatively smaller quantities of a commodity are accumulated or aggregated, usually from different farmers and small-scale traders.

Wholesale market: A market where traders generally sell to traders. The volumes traded in each transaction tend to be relatively larger (for example, multiple 50-kg bags and even metric tons).

Retail market: A market where commodities are sold directly to consumers. The volumes traded during each transaction tend to be relatively small (for example, per kg or locally used bowl or other unit of measure).

Formal versus informal trade flows

Formal trade flows: Formal trade flows typically involve the exchange of large quantities of a given commodity, transported by road, rail, or sea. These trade flows are inspected, taxed, and reported in official government statistics, and abide by the requirements of the local legal system (including national-level laws and regional trade agreements). For example, in some countries, an importer or exporter is required to obtain a license from the local government or regional trade body that gives authority to engage in import or export activities. Formal trade can often also be thought of as legal trade.

Informal trade flows: Informal trade flows typically occur outside of the formal trade system (described above). These exchanges are typically not recorded in official government import and export statistics and are not inspected and taxed through official channels. These trade flows are typically undocumented, unlicensed, and unregistered. Informal trade flows can vary from very small quantities carried by bicycle across small border crossing areas or via barge in large volumes exchanged over long distances.

Trade flow magnitude and frequency

Large trade flows: The volumes traded (through either formal or informal channels) are estimated to be more important than other trade flow volumes in aggregate terms over the period of analysis. In unimodal FEWS NET countries, this represents the relative importance of trade flows between different geographic areas over a given marketing year. In bimodal areas, these may be season-specific. Because it is not possible to estimate actual trade flow volumes between markets in most FEWS NET countries, these are estimated based on discussions with key informants familiar with the staple food market system of a given country or region.

Medium trade flows: The volumes traded (through either formal or informal channels) are estimated to be somewhere in between large and small flows in terms of the aggregate volumes traded over the period of analysis. These are estimated through the same process as large trade flows (above).

Small trade flows: The volumes traded (through either formal or informal channels) are estimated to be less important than other trade flow volumes in aggregate terms over the period of analysis. These are estimated through the same process as large trade flows (above).

Occasional trade flows: These trade flows either take place during very specific times of year (for example, in the lean season only) or when certain specific conditions present themselves. These are typically not as important (in aggregate quantity) as other more regular types of trade flows.

Price analysis

Coefficient of variation: One of many measures of price variability, this is computed by dividing the standard deviation of a given price series by the mean.

Average seasonal index: This is calculated to demonstrate the extent to which prices during a given month in a given place differ, on average, compared to prices during other months of the year.

Price differential: This refers to a spatial or temporal difference in prices (also see spatial and temporal/seasonal arbitrage).
**Correlation coefficient**: Measures the association between two variables. A value of 0 indicates no association and a value of 1 perfect positive association.

**Freight on board (FOB)**: This term is the market value of goods at the point of uniform valuation (the customs frontier of the economy from which they are exported).

**Cost insurance freight (CIF)**: This is the price of a good delivered at the frontier of the importing country, including any insurance and freight charges incurred to that point, and before the payment of any import duties or taxes.

**Export parity price (XPP)**: The monetary value of a product sold at a specific location in a foreign country, but valued from a specific location in the exporting country.

**Import parity price (IPP)**: The monetary value of a unit of product bought from a foreign country, valued at a geographic location of interest in the importing country.
1. Niger Staple Food and Livestock Market Fundamentals

1.1. Introduction

The agriculture sector is the backbone of Niger’s economy, accounting for nearly one-half of gross domestic product (GDP) and employing a large portion of the population, especially via the informal sector. Niger is landlocked, with only a small part of total land considered arable and suitable for agricultural production. Extractive industries (with minerals destined especially for international markets) are increasingly important. Together, these dynamics make Niger heavily dependent on regional and international trade as a source of both food and income (Table 1). This deep level of integration and dependence can be a strength during years of adequate regional supply and strong and stable international market trends. However, the converse is also true, making exogenous market-related shocks a relatively common phenomenon in Niger.

While advances in production practices led to gains in yields and harvest volumes elsewhere in the region, such advances are limited in Niger. Domestic coarse grain and edible oil production are not adequate to satisfy local demand and Niger maintains a structural food deficit, although the national and subnational commodity balances vary considerably intra- as well as interannually. Any increases in production were mainly driven by increases in area planted rather than improved production practices (intensification). In aggregate terms, Niger is nearly self-sufficient in terms of millet and sorghum, relies on imports of maize from regional markets and rice and edible oil from international markets, and has an excess supply of cowpeas and ruminant livestock, exporting both to neighboring Nigeria as well as other coastal West African countries. This report covers the basic market fundamentals for millet, sorghum, maize, rice, cowpeas, edible oil, and livestock, and gives an overview of overall market conditions and several cross-cutting issues that affect the markets.

Table 1. Average Niger commodity balance sheet (MT), 2011/12–2015/16

<table>
<thead>
<tr>
<th>Element</th>
<th>Total Cereals</th>
<th>Millet + Sorghum</th>
<th>Maize</th>
<th>Rice*</th>
<th>Cowpeas</th>
<th>Edible oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening stock</td>
<td>127,198</td>
<td>82,025</td>
<td>15,380</td>
<td>29,794</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Production</td>
<td>4,688,638</td>
<td>4,623,324</td>
<td>7,231</td>
<td>58,083</td>
<td>1,588,518</td>
<td>36,093</td>
</tr>
<tr>
<td>Total domestic</td>
<td>4,815,836</td>
<td>4,705,349</td>
<td>22,610</td>
<td>87,876</td>
<td>1,588,518</td>
<td>36,093</td>
</tr>
<tr>
<td>availability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Losses and seeds</td>
<td>864,734</td>
<td>787,343</td>
<td>18,680</td>
<td>58,710</td>
<td>317,704</td>
<td>0</td>
</tr>
<tr>
<td>Total utilization</td>
<td>5,172,604</td>
<td>4,616,263</td>
<td>152,699</td>
<td>403,642</td>
<td>1,571,019</td>
<td>88,321</td>
</tr>
<tr>
<td>Exports</td>
<td>58</td>
<td>21</td>
<td>7</td>
<td>331</td>
<td>889,570</td>
<td>257</td>
</tr>
<tr>
<td>Imports</td>
<td>444,650</td>
<td>92,957</td>
<td>44,864</td>
<td>306,829</td>
<td>0</td>
<td>43,073</td>
</tr>
<tr>
<td>Self-sufficiency</td>
<td>92%</td>
<td>102%</td>
<td>3%</td>
<td>8%</td>
<td>349%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Note: Rice data are expressed in milled equivalent. Imports include food aid.

Source: Authors’ calculations based on Ministère du Développement Agricole (2016); World Bank (2017); DESA/UNSD (2017); FAO (2017); Jannot (2014); Danguioua (2016); Ramatou (2014); Beekhuis (2005); CILSS (2016).

1.2. National food supply

Millet is by far the most commonly produced food crop in Niger, followed by sorghum, rice, tubers, and maize (MDA 2016). Other crops grown include cowpeas and oilseeds, such as groundnuts and sesame, especially for the regional export market. The most prevalent types of livestock are ruminants (cattle, sheep, and goats) and poultry (mostly chicken).

Agricultural production is rainfed and yields and harvest volumes vary considerably based on annual climatic conditions (Figure 4 and Figure 5). Due to the generally unfavorable agroclimatic conditions that prevail across much of the country, crop yields in Niger are among the lowest and most variable in the region (Figure 6). Yields are highest for maize, but as discussed in Chapter 5, maize production is not competitive in Niger, resulting in large volumes of regionally imported maize.

Crop production is largely concentrated in the agricultural and agropastoral areas of southern Maradi and Zinder Regions. This area bordering Nigeria is considered the “breadbasket” of Niger. Agricultural production is driven by smallholders using
rainfed production systems. Irrigation and other types of controlled growing are limited to rice and not practiced on a large scale in Niger, so growing seasons and harvests are completely reliant on the agroclimatology context, resulting in strong seasonal variations in domestic production and availability. Domestic and regional staple food supply is generally inelastic and international imports can only partially offset gaps during years of poor production. Agroindustrial processing is limited.

1.3. National food demand

Cereals (composed mainly of millet and sorghum) are the most widely consumed foods in Niger (Figure 7). Cereal consumption is estimated between 125–225 kg per person per year (Table 2), among the highest in the region. Between 50–90 percent of daily calories for Nigeriens come from cereals (Figure 7). Edible oil accounts for less than 5 percent of daily calories, and consumption is among the lowest in the region.

Consumption norms are estimated and used to produce the national and regional annual cereal balance sheet, an essential tool used for assistance planning. Large variations in estimated per capita consumption across sources (Table 2) suggest that an effort to verify and harmonize these estimates may be worthwhile, especially given the dynamic nature of consumption trends observed elsewhere in the region. Furthermore, little is known about cereal consumption by the livestock sector (discussed in Chapters 5 and 8), an element that should be accounted for in the national grain balance.

Households depend on market purchases to meet their staple food needs throughout Niger. However, market reliance is most intensive among poor and very poor households in pastoral and urban areas (Figure 8). Market purchases also vary seasonally, peaking during the lean season. Niger is not a surplus producer. However, exports do happen and are driven by relative prices and purchasing power in neighboring countries. This is especially the case during the post-harvest period, when Nigerian traders often buy from Niger, only to sell back during the lean season (Beekhuis 2005).

1.4. National food trade

On aggregate, Niger is roughly 90 percent self-sufficient in terms of grain production (Table 1). However important interannual and subnational variations occur (Figure 10 to Figure 12). Niger is located in the Eastern Basin of West Africa, which also includes Nigeria, Benin, and Chad (Figure 9). These countries are together among the most variable in terms of their average annual self-sufficiency, resulting in potentially large variations in supply and demand. However, market disruptions in Nigeria (by far Niger’s most important regional trade partner) have led to increasing trade.
linkages between southwestern Niger and the Central Basin (particularly Burkina Faso). Recent FEWS NET reporting indicated that these new linkages helped to offset the effects of below average production in Nigeria in 2012 (FEWS NET 2013) and the 2016/17 macroeconomic situation.

Within Niger, the markets of Maradi and Zinder play an important role in the distribution of locally produced cereals. Goods are marketed in Niamey, Tahoua, Agadez, and neighboring deficit regions. Niger’s national food system depends heavily on markets in neighboring Nigeria, including Dan Issa, Mai Adua, Illela, Dammassack, and Jibia. However, those are generally served by the markets in Kano (Nigeria). Key markets elsewhere in the region include Malanville (Benin), Pouytenga (Burkina Faso), and as far as Segou and Gao in Mali. Trade bans (whether official or ad hoc) among Niger’s key trading partners due to insecurity or supply shortages typically prompt price shocks in Niger, particularly in border markets.

Table 2. Human consumption requirement variations across sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Consumption requirement</th>
<th>Millet and sorghum</th>
<th>Maize</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>INS (2013)</td>
<td>Annual (kg/pp/year)</td>
<td>123.3</td>
<td>28.4</td>
<td>19.9</td>
</tr>
<tr>
<td></td>
<td>Percent of total kcal</td>
<td>56.5%</td>
<td>13.0%</td>
<td>9.1%</td>
</tr>
<tr>
<td>CILSS (2016)</td>
<td>Annual (kg/pp/year)</td>
<td>200.0</td>
<td>7.0</td>
<td>18.0</td>
</tr>
<tr>
<td></td>
<td>Percent of total kcal</td>
<td>82.2%</td>
<td>2.9%</td>
<td>7.4%</td>
</tr>
<tr>
<td>ReSAKSS (2011)</td>
<td>Annual (kg/pp/year)</td>
<td>111.3</td>
<td>1.5</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>Percent of total kcal</td>
<td>51.0%</td>
<td>0.8%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on INS (2013), CILSS (2016), and ReSAKSS (2011).

Figure 7. Percent of calories across food groups in the Niger consumption basket

Source: Authors’ calculations based INS and World Bank (2013).

Figure 8. Months of market purchases by livelihood zone

Note: Considers purchases by poor and very poor households. Purchases in urban centers (such as Niamey) are close to year-round.

Source: Authors’ calculations based on HEA Sahel (2014).

Figure 9. Marketing basins in West Africa


Figure 10. Interannual variation in cereal self-sufficiency in West Africa, 2012/13–2016/17

Source: Authors’ estimates based on CILSS (2016) data.
Figure 11. Subnational cereal balance (MT)

Source: Authors’ estimates based on Direction des Statistiques and Ministère de l’Agriculture (2016) and Ministère de l’Agriculture (2015) data.

Figure 12. Interannual cereal balance (‘000 MT), 2012/13–2016/17

Source: Authors’ estimates based on CILSS (2016) data.
2. Cross-cutting Issues

A number of ongoing and cross-cutting issues affect nearly all aspects of staple food, cash crop, and livestock markets in Niger.

2.1. Geography and climate

Niger is divided into seven administrative regions and one capital district (Niamey). The regions are subdivided into 63 departments. Prior to the administrative boundary modifications of 2011–2012, 36 departments were contained in the seven regions.

Approximately three-quarters of the national territory is desert with minimal and erratic rainfall (Figure 13). In the more humid areas located in the southern part of the country, average annual rainfall ranges between 300–850 mm (Figure 14). Approximately 98 percent of the arable land is located in this area (USGS, n.d.). Grasslands and shrub lands are present in the transition area between the cropped land and the desert.

Four ecological zones (Saharan, Sahel-Saharan, Sahel, and Sahel-Sudan) are distinguished based on rainfall levels. The main waterbodies in the country include the Niger River in the southwest, the Komadougou Yobé River, which extends along part of the southeastern border with Nigeria, and the Nigerien part of Lake Chad.

For the most part, Niger is characterized by a flat or lightly undulated terrain at an average of 300 meters above sea level (masl) (Geesing and Djibo 2006). Higher elevation areas (above 1,000 masl) are concentrated in the northern part of Agadez Region; Air Massif, the Plateau du Manguéni, and the Plateau du Djado are the highest points.

2.2. Agricultural potential and challenges

By 2013, the agricultural and pastoral area reached 24.5 percent of the total area (USGS n.d.). Due to the higher rainfall levels in the Sahel and Sahel-Sudan zones, agropastoral activities are possible there, or in areas receiving more than 300 mm of rain per year, as Niger’s agriculture is predominantly rainfed.

Figure 15. Seasonal calendar, Niger

Agricultural activities are limited by the occurrence of one rainy season, which takes place between June and September (Figure 15). In addition to the low level of rainfall, rainfall variability (expressed by the coefficient of variation) in the crop production areas is large, ranging from 5–30 percent. Between 2000 and 2009, an 8 percent decrease in rainfall was registered, relative to rainfall totals between 1920–1969 (FEWS NET 2012a). Recurrent droughts, overall low soil fertility, and erosion limit agricultural prospects in Niger.

During the hottest period from March to June, temperatures exceed 40 degrees Celsius. Since 1960, temperatures across Niger have increased by more than 0.7 degrees Celsius and this warming trend is expected to continue (FEWS NET 2012a). Warm temperatures coupled with erratic and insufficient rainfall will further constrain agricultural production.

2.3. **Vulnerability to natural hazards**

Niger stands among the 34 countries with very high risk to natural disasters, the most relevant of which are droughts, floods, and locust invasions. Epidemics, cattle diseases, and wildfires also affect the country. The occurrence, sometimes combined, of these events poses severe challenges for the human, physical, natural, and economic capital and development of the country (IMF 2017). According to the International Disaster Database, Niger experienced 78 disasters in the period 1990–2016, of which 86 percent were of natural origin. These disasters affected about 23.7 million persons (Centre for Research on the Epidemiology of Disasters 2017).

Niger scores higher than most of its neighbors on the risk index (INFORM 2017b), a measure that combines hazards and exposure, vulnerability, and coping capacity into one single measure. The index identifies countries at risk from humanitarian crises and disasters (Figure 16) (INFORM 2017a).

2.4. **Macroeconomic and political environment**

The primary sector, including agriculture (primarily millet and sorghum) and livestock, is the backbone of the Nigerien economy, contributing 45 percent to GDP between 2011 and 2013 (Figure 17). The secondary sector, including mining, manufacturing, electricity, gas, water, and construction, is important and plays a large role in the country’s export earnings. Between 2011 and 2013, mining alone contributed to over 80 percent of export earnings, with over 60 percent from uranium. The contribution of agriculture and livestock to export earnings is variable, depending on agroclimatic conditions; it has declined over
time in favor of uranium and petroleum. The tertiary sector includes the transportation and warehousing industries. The contribution of the secondary sector to GDP is increasing, unlike the primary sector, whose contribution is subject to climatic changes.

Given the structure of Niger’s economy, its performance is constrained by climatic conditions (such as low rainfall) and factors affecting the mining and export of uranium. Niger’s economic growth and performance fluctuated over the last seven years (Figure 18). With a poverty rate of 48.9 percent and an annual per capita income of US$420 (less than US$1.50 per day), Niger is one of the world’s poorest nations, ranked last of 188 countries in 2015 on the United Nations Human Development Index (World Bank 2016).

Uranium continues to play a large role in the national economy, accounting for 54.8 percent of total export earnings, although mineral production, and uranium in particular, is decreasing. The value of the mining industry declined from XOF 410 million in 2013 to XOF 318 million in 2015 (African Development Bank Group 2016). In spite of the high inflation in 2008 and 2011 fueled by high regional prices (FEWS NET 2012b), the average inflation rate between 2008 and 2015 was 2.3 percent, below the West African Economic and Monetary Union’s (WAEMU) convergence criteria of 3.0 percent. Fiscal revenues underperformed in 2016, putting downward pressure on GDP growth. This was primarily due to weaknesses in tax and customs administrations, problems in the mining and oil sectors, and lower trade flows with Nigeria, a key importer of Nigerien agricultural products (IMF 2017).

2.5. Regional integration and trade

Niger is fully integrated into the regional economy as a member of both the Economic Community Of West African States (ECOWAS) and the WAEMU. The government’s trade policy is strictly in line with regional texts with respect to the free movement of goods in ECOWAS and WAEMU areas (Figure 19). Membership in a single currency area (that of the CFA Franc, a freely convertible currency with a fixed exchange rate vis-à-vis the Euro) helps promote trade within the WAEMU. Niger’s imports and exports within the region are growing and its main regional partners are Nigeria, Ghana, and Côte d’Ivoire.

Niger also functions as a transit area for internationally imported commodities making their way into Nigeria (especially from the port of Cotonou). From Cotonou, the most imported commodities (by weight and value) to Gaya and Birni N’Konni, which are key border posts in Niger that process the flows to Nigeria, are cement, cereals (rice, maize, and wheat), milled products (malt, starches, wheat gluten, flour), sugar, dairy produce, and edible fruits and nuts (Walther,
Tenikue, and Kuepie 2012). The scale of trade is large and growing with about 200,000 MT imported through Gaya and Birni N’Konni in 2010, up from 65,500 MT in 2003 (Walther, Tenikue, and Kuepie 2012).

The motivating factors for trade from Cotonou beyond geography and the nature of being a landlocked country, are the bilateral agreements between Niger and Benin, and the proximity and strength of the Nigerian economy. Niger has signed bilateral agreements with Benin and Nigeria to ease transit and promote the free movement of goods (Bureau National d’Études Techniques et de Développement 2015).

2.6. Economic linkages with Nigeria

Niger shares a long border with Nigeria, facilitating substantial formal and informal trade flows. The informal sector accounts for around 75 percent of Niger’s GDP (ILO and GoN 2012). Within the region, Nigeria absorbs more than 50 percent of Niger’s products sold to ECOWAS countries (Figure 20). Niger exports onions, cowpeas, and livestock to Nigeria, and imports mainly grains, helping to stabilize stocks and markets. Grains from Niger are also bought by Nigerians at harvest time and later exported back to Niger at higher prices (Apaa-Okello et al. 2015). Niger’s trade with Nigeria was estimated at 3 percent of GDP in 2015, excluding re-exports and transit merchandises, and informal trade in agriculture products, livestock, and fuel products (IMF 2017). Since early 2016, Nigeria’s economy has suffered greatly from low global fuel prices, on which it depends heavily for export earnings and government reserves. The decline in Nigeria’s purchasing power has resulted in reduced demand and prices for Nigerien goods, thereby reducing Niger’s export earnings (FEWS NET 2016, 2017). Furthermore, this has led to lower incomes for poor households in Niger that rely on Nigeria’s demand for their agricultural goods and livestock.

In value terms, Niger’s conventional exports to Nigeria fell by 45.4 percent in 2016, leading to a large decline in customs revenue. Livestock trade flows reversed, with Niger occasionally importing from Nigeria, and total imports from Nigeria increasing by 36.6 percent in 2016 (IMF 2017).

Nigeria is not a member of WAEMU; therefore the relationship between the naira (NGN) and the CFA franc (XOF) plays an important role in trade between the two countries. International crude oil prices fell by 25 percent over 2015 (Figure 21), leading to a 40 percent drop in Nigerian exports and doubling the government deficit. This led to a large exchange rate depreciation, coupled with a shortage of foreign exchange. These fluctuations fueled activities on the informal parallel market and a drastic decline in exports and re-exports to Nigeria (FEWS NET 2017a, 2016). The depreciation of the naira also prompted a diversion to the domestic parallel market of refined petroleum products. As a result, value added tax collections dropped by XOF 30 billion, the special tax on petroleum products by XOF 5.4 billion, and customs taxes by XOF 26.2 billion (IMF 2017).

2.7. Social context

Niger hosts one of the world’s fastest growing populations, which has nearly doubled in the last 25 years. Currently, Niger has about 20 million inhabitants, of whom 60 percent are under the age of 17 (Institut National de la Statistique 2016a). Eighty percent of the population is rural, but the urban population is growing rapidly, at a rate of 6 percent per year (Ministère du Plan de l’Aménagement du Territoire et du Développement Communautaire 2012). Due to the more favorable characteristics of the natural environment in the western and southern parts of the country, the population is concentrated...
in this area, resulting in high population density and increased pressure over the natural resource base.

2.8. Livelihoods

Generally, three main categories of livelihoods are present in Niger: pastoral, agropastoral, and agricultural (Figure 22). A combination of agricultural production and livestock ownership represents a key source of income and food for more than 75 percent of the population. Most farmers cultivate millet (95 percent), cowpeas (88 percent), and sorghum (84 percent), as well as beans, peanuts, and sesame. About two-thirds of farmers (63 percent) raise livestock; the most common animals are goats (49 percent), poultry (31 percent), and sheep (30 percent) (ICF International 2014).

Seasonal rainfall patterns and the quality and availability of land for crop and pasture production are the major determinants of household livelihoods. They dictate foundational livelihood activities, creating natural boundaries that set the limits of crop cultivation and the transition to pastures and to desert. In the agricultural area, they determine the relative emphasis on different types of crops. Other factors such as the functionality of and access to market systems, trade pathways (including cross-border), and the availability of other natural resources (salt, minerals) also influence livelihood systems, household wealth, and access to food (FEWS NET 2011).

Besides agriculture, other income-generating activities include petty trade, sales of natural products (firewood, plants, herbs, etc.), and labor migration. During the lean/dry season, labor migration (either permanent/long-term, or short-term/temporary) offers additional income-earning opportunities in urban centers or across borders in areas where demand for unskilled labor is high. Table 3 provides an example of key income sources and livelihood strategies typically adopted by poorer households in chronically food-insecure agropastoral zones.

Unemployment and underemployment are frequent problems faced by Nigeriens. They are linked to a poorly articulated job market, with little professional training available, and a general lack of support for entrepreneurial activities (Ministère du Plan de l’Aménagement du Territoire et du Développement Communautaire 2012). Unemployment is higher in urban areas than in rural areas (20 percent and 15 percent, respectively) (World Bank and IMF 2013). Strong population growth and inadequacy of the labor supply contribute to an imbalance between labor supply and demand (OECD and African Development Bank 2008).

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Transfers, either in the form of remittances or food, are another important element in the household economy. About 52 percent of remittances are used to support basic household consumption (BCEAO 2013). Food transfers occurring between and among family and relatives can represent up to 85 percent of total transfers, especially in pastoral areas of Diffa, Agadez, and Dosso Regions (ONAPAD 2009).

2.9. Poverty and food security

Niger remains one of the most impoverished and least developed countries in the world, rating 188/188 on the 2016 Human Development Index. Literacy levels are low and wide gaps between men and women are observed with respect to education. Approximately 28 percent of men between the ages of 15 and 49 are literate, compared to 11 percent of women in the same age group (Ministère du Plan de l’Aménagement du Territoire et du Développement Communautaire 2012).

By 2014, the poverty incidence reached 45.4 percent. While poverty decreased in the past years at the national level, poverty increased between 2008 and 2014 in Dosso, Maradi, and Zinder Regions (Institut National de la Statistique 2016a). Structural poverty at the regional level is associated with dependence on rainfed agriculture, pastoralism, and subsistence strategies that are highly vulnerable to interannual variations in seasonal rainfall and crop production (Ministère du Plan de l’Aménagement du Territoire et du Développement Communautaire 2012).

Poverty remains a pervasive constraint to food security. Over 2 million persons are classified as chronically food-insecure and another 4.5 million are at risk of food insecurity. Food-insecure populations increase by additional millions during the lean season (WFP 2016). Most Nigeriens rely on markets for sourcing their food needs. In a normal year, poorer households typically meet about 35–50 percent of their food needs through purchases. Better-off agricultural households, as well as pastoral groups, rely on markets for over 60 percent of their food needs (Fintrac 2011).

Over 60 percent of households in Niger keep food reserves to use in the event of shocks. From those households who keep stocks, food-secure households are able to hold reserves for about eight months on average. At the other end of the spectrum, food-insecure households hold reserves sufficient for less than one month. Regional differences on stocking capacity are present (Institut National de la Statistique 2016b).
Malnutrition is a longstanding problem in Niger. In 2012, 43 percent of children under five were chronically malnourished (stunted) and close to 50 percent of women in reproductive age were anemic. Micronutrient deficiencies, particularly of iron, iodine, and vitamin A, are widespread (IFPRI 2015). High levels of malnutrition are associated with a number of factors, including: insufficient caloric intake, large household size, poor dietary diversity and quality of consumption, poor child care and feeding practices, high prevalence of disease (especially malaria and respiratory illness), and substandard hygienic and sanitation practices (FEWS NET 2014).

Several initiatives exist for supporting food-insecure populations. These are implemented by the Government of Niger (GoN), international organizations, and nongovernmental organizations (NGOs), and include a combination of cash, food, or food-for-work transfers, seed distribution, cattle feed, prevention and treatment of malnutrition, and subsidized grain sales (Ballo and Bauer 2013). However, needs surpass available resources, limiting progress in the reduction of vulnerability to and experience of food insecurity.

2.10. Transportation and storage

As a landlocked country, Niger is dependent on its coastal neighbors, especially Benin and Togo, to access international import and export markets. Approximately 81 percent of Niger’s cargo traffic passes through the port of Cotonou (Benin), with the ports of Lomé, Abidjan, and Tema handling most of the rest (Ohlsen 2017) (Figure 23).

Though the vast majority of Niger’s cargo traffic passes through the port of Cotonou, no railway currently extends from the port to Niamey (Hammer 2014). In November 2013, Niger and Benin signed a memorandum of understanding committing to the construction of a railway between Parakou and Niamey (thereby connecting Niamey to the port of Cotonou). However, construction halted in November 2015 due to a legal challenge by the owner of the petroleum corporation Petrolin.

In the absence of a complete rail link running from the coast to the capital, transportation is instead assured through tractor trailers. The GoN estimates the number of transporters in the country to be 3,000, with a total vehicle availability of 10,000, most of which are based in Niamey and Maradi. An aging truck fleet (the average truck is estimated to be 15 years old) in combination with poor road conditions at some stretches (roughly half of the roadway in Benin leading from the port of Cotonou remains unpaved) results in common breakdowns—and delays—along transportation routes.

Table 4. Niger’s storage capacity (MT) by region and type of storage

<table>
<thead>
<tr>
<th>Region</th>
<th>Commercial</th>
<th>Humanitarian</th>
<th>Public Sector</th>
<th>All Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agadez</td>
<td>0</td>
<td>1,000</td>
<td>4,500</td>
<td>5,500</td>
</tr>
<tr>
<td>Diffa</td>
<td>2,000</td>
<td>3,350</td>
<td>6,000</td>
<td>11,350</td>
</tr>
<tr>
<td>Dosso</td>
<td>2,000</td>
<td>0</td>
<td>13,500</td>
<td>15,500</td>
</tr>
<tr>
<td>Maradi</td>
<td>36,500</td>
<td>4,900</td>
<td>21,800</td>
<td>63,200</td>
</tr>
<tr>
<td>Niamey</td>
<td>7,600</td>
<td>10,500</td>
<td>26,000</td>
<td>44,100</td>
</tr>
<tr>
<td>Tahoua</td>
<td>8,000</td>
<td>6,400</td>
<td>12,000</td>
<td>26,400</td>
</tr>
<tr>
<td>Tillabéry</td>
<td>0</td>
<td>500</td>
<td>2,500</td>
<td>3,000</td>
</tr>
<tr>
<td>Zinder</td>
<td>12,700</td>
<td>6,500</td>
<td>10,000</td>
<td>29,200</td>
</tr>
<tr>
<td>Niger</td>
<td>68,800</td>
<td>33,150</td>
<td>96,300</td>
<td>198,250</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations based on Niger DLCA (2014).
Currently, goods arriving in Niamey from Cotonou largely travel over RNIE2, passing through the Benin customs checkpoint at Malanville, then the checkpoint in Gaya just across the Niger River, and are then cleared again upon arrival in the capital. Goods cleared in Niamey are distributed throughout the national territory, but road conditions present a major risk for bottlenecks.

About 21 percent of the 18,950 kilometers of road in Niger are classified as primary, paved roads and are mainly located in the southern Niamey-Maradi-Diffa corridor and the central Agadez-Zinder-Tahoua triangle. Secondary, gravel-covered roads comprise around 13.5 percent of the road network; the remaining 65.5 percent is composed of dirt roads and rural trails. Unpaved roads in Niger frequently flood and become practically impassable during the wet seasons.

The government agency CAFER (Caisse Autonome de Financement de l’Entretien Routier), tasked with the maintenance of around 10,000 kilometers of Niger’s road network, estimates that of Niger’s primary, paved roads, around 50 percent are in “good” condition, 40 percent are in “fair” condition, and the rest are in “poor” condition (Figure 24). The portion of the road network not under the responsibility of CAFER, mostly unpaved, falls under the domain of the Direction Générale de Pistes Rurales, a government body that to date has shown little sign of activity.

Dedicated food storage facilities constructed of concrete are available at all major population centers in Niger, whereas villages and other less populous areas rely on self-built, thatch-roofed, mudbrick, traditional storage facilities (Mester de Parajd and Mester de Parajd 1988). The government agency OPVN (L’Office des Produits Vivriers du Niger), charged with maintaining the national security stock of food and distributing or subsidizing food during times of crisis, owns and operates most of the government-owned warehouses. The OPVN’s warehouses normally conform to the World Food Programme’s (WFP) standards and have a total capacity of around 90,000 MT, of which about 65,000 MT are designated for the national security stock. The remaining 25,000 MT are made available for food storage by NGOs and United Nations (UN) agencies, with WFP having priority in times of crisis. WFP also manages its own facilities, with a current capacity of around 43,350 MT. Much of WFP’s storage capacity comprises Rubb halls, the mobility of which allows the organization to be flexible in its response to shifting storage demand (Table 4).

Several commercial warehouses are also available, located mostly in the economic and transportation hubs of Niamey and Maradi. However, these facilities largely do not meet WFP’s standards for food storage and can only be relied upon in times of crisis. During crises, in addition to allowing the use of substandard commercial warehouses, storage capacity in Niger can be increased through the repurposing of other types of facilities such as school buildings.

2.11. Agriculture sector governance and disaster risk preparedness

Institutional Framework for Agriculture and Food Security

The Department of Agriculture and the National System for the Prevention and Management of Food Crises (DNPGCA) preside directly over political aspects of agricultural development, particularly relating to the promotion of food security at a national level. The Department of Agriculture is broadly responsible for overall direction, coordination, and formulation of agricultural policy, as well as the assessment of policy needs and associated impact. Through these various channels of engagement, the Department of Agriculture provides both technical support and advisory services to producers at large.

Given the structural nature of food insecurity and looming risk of acute food crises in Niger, the DNPGCA was enacted, and is supported by the National Committee for the Prevention and Management of Food Crises (CNPGCA), which is decentralized into committees at the regional (Comité Régional de Prévention et de Gestion des Crises Alimentaires-CRPGCA) and departmental (Comité Sous Régional de Prévention et de Gestion des Crises Alimentaires-CSRPGCA) levels. Niger is likewise a member of the Comité Permanent Inter-Etats de Lutte contre la Sècheresse dans le Sahel (CILSS), a regional network through which member states can work to harmonize food security and nutrition policies and surveillance as well as early warning/action efforts.

At the national level, the CNPGCA is supported by the Joint Committee of Cooperation of State Donors (CMC) and the Limited Consultation Committee, which ensures implementation of all decisions and recommendations made by the CMC. The CMC and CRC are largely active in the management of national reserve stocks as well as funding for emergencies. The primary strategic objective is to respond to national-level crises; the secondary objective is to mitigate local crises. The CMC is upheld by several other structures, of which the most strategic include:
● The Food Crisis Cell (Cellule Crises Alimentaires-CCA), which is directly attached to the Office of the Prime Minister. This office is responsible for the secretariat of the CMC and CRC, assures coordination of technical assistance and food aid, and the supervision, implementation, and monitoring of all actions or responses initiated by the CMC/CRC.

● The Cell for the Coordination of Early Warning Systems (Système d’Alerte Précoce-CC/SAP), also part of the Prime Minister’s office, which oversees and ensures effective information management for food security, and identifies and proposes response and contingency planning for potential food security scenarios. SAP is also responsible for food security analysis and managing data and archives for all data to assess food security including livestock, sanitation, and nutrition, and socioeconomic issues. Ultimately, SAP communicates food security alerts and early warning in a timely fashion to decision-making bodies within the national government.

2.12. Sector-based policies

Economic and Social Development Plan (Le Plan de Développement Economique et Social - PDES)
The PDES follows the Framework for Strategic Growth and Poverty Reduction. This policy is the overarching framework for development initiatives and the singular frame of reference for economic and social development planning. The PDES targets four priority areas: (i) food security; (ii) security and governance; (iii) the development of human capital; and (iv) infrastructure development.

The objective of the PDES is to promote the economic, social, and cultural well-being of the general population. The policy is divided into five major focus areas: (i) consolidation of the credibility and effectiveness of public institutions; (ii) sustainability of balanced and inclusive development; (iii) food security and development of sustainable agriculture; (iv) promotion of a competitive and diversified economy for accelerated and inclusive growth; and (v) promotion of social development.

Initiative les Nigériens Nourrissent les Nigériens (3N Initiative)
The framework of reference supporting interventions within the agriculture and food security sectors is governed by the 2012 GoN “Nigeriens Nourishing Nigeriens” (3N) Initiative for food security, nutrition, and sustainable agricultural development for 2013–2035. The 3N Initiative shares a set of core objectives with the Agricultural Policy adopted by the GoN in 2016. A strategy and priority investment plan underpin the 3N Initiative, which also plays a lead role in guiding implementation of the Global Alliance for Resilience Initiative (AGIR), with an overall objective of achieving zero hunger in Sahelian West African countries by 2032 (ECHO 2015). One of the stated goals of AGIR is to increase access to social transfers, including cash and vouchers. 1

The objective of the 3N Initiative is to permanently protect Nigeriens from the threat of food insecurity and malnutrition and to assure their full participation in domestic food production and increased incomes. The Initiative therefore aims to strengthen the national capacity for food production, supply, and resilience to food crises and natural disasters. Its strategy articulates five pillars: (i) increasing and diversifying agroforestry, pastoral, and fisheries production; (ii) ensuring a stable supply of agroforestry, pastoral, and fishery products in rural and urban markets; (iii) improving resilience to climate change, food crises, and natural disasters among vulnerable groups; (iv) improving nationwide nutritional status; and (v) maintaining momentum for policy reforms that direct food security and sustainable agricultural development.

In terms of market-related issues, the 3N Initiative specifically envisions research and advocacy as well as the development of related sector-specific policies such as those related to commerce and trade of agricultural products, agroindustry, and energy. These sector-based policies could have definitive impact in terms of attaining sustainable food self-sufficiency at a national level. Informational and advocacy activities are envisioned as necessary to create the conditions for fluid exchange within the country and to lift trade barriers, particularly those that hinder cross-border movement of commodities.

Agricultural Policy
The current national Agriculture Policy was adopted in July 2016. It addresses three key challenges:

● Feeding an increasingly large population and adapting to urban demand in a context of climate change and variability. Meeting this challenge will require strong adaptation measures that support sustainable development.

1 The Organisation for Economic Co-operation and Development (OECD) notes that AGIR is a long-term political partnership, rather than an initiative or discrete mechanism to channel funding. Under the political and technical leadership of ECOWAS, UEMOA (Union Economique et Monétaire Ouest-Africaine/West African Economic and Monetary Union), and CILSS, the Alliance builds on existing discussion forums and networks, in particular within the framework of the Food Crisis Prevention Network (RPCA).
● Developing appropriate communication and sensitization strategies to promote behavior change, and evolving the national perception of food security and appreciation for proper utilization of food and nutrition resources.
● Promoting cross-border and international trade through strategic development of industry and agribusiness.

The development objective of the Agriculture Policy is to contribute to national economic growth and to ensure sustainable self-sufficiency in food security and nutrition countrywide. This overarching goal is also defined in the 3N guidelines as the reduction in the proportion of those living in poverty from 45 percent in 2015 to 31 percent in 2021. The Agriculture Policy seeks “Zero Hunger in Niger by 2020.” The Agriculture Policy’s major objectives are:
● Growth and diversification of agricultural production.
● Conduct of agricultural research, by developing production techniques and higher-performing seeds through improved varieties that are more resistant to climate change.
● Stability of supply of rural and urban markets in both agricultural and staple food products.
● Development of four sectors: (i) staple foods (millet, sorghum, corn, wheat, rice, cassava); (ii) seeds (millet, sorghum, corn, wheat, rice); (iii) cash crops (onion, pepper, sesame, garlic, peanut, souchet, cowpeas, cassava); and (iv) horticulture (fruit trees and crops, market gardening, moringa).
● Improved preparation and packaging to create quality product labels for export.
● Advocacy for tax relief measures to decrease consumer prices and to promote exports.

2.13. Disaster response and national strategic grain reserves

The disaster-prone nature of Niger’s agriculture sector and the associated risks to national food supply have largely shaped the GoN’s approach to disaster response, particularly chronic food insecurity, which is often linked to drought and/or underperformance of the growing season. In this context, the GoN places great importance on the use of strategic grain reserves as a primary mechanism for responding to food shortages (World Bank 2013). In Niger, the OPVN, which falls under the larger institutional umbrella of the Dispositif National de Prévention et de Gestion des Crises Alimentaires au Niger (DNPGCCA), is responsible for managing the country’s grain reserves. The OPVN sources supply from strategic grain reserves, imported food aid, and local purchases; roughly 30 percent of food aid used for safety net programs from 2002–2007 was sourced through local purchase, although Aker et al. (2009) note that this proportion is likely underestimated. Dually managed OPVN stocks and funds include the national reserve stock, including grain reserves in the Stock National de Sécurité (SNS) and purchasing power through the Fonds de Sécurité Alimentaire (FSA). The GoN receives significant external assistance from the IMF (2017) in the form of in-kind assistance (Figure 25).}

<table>
<thead>
<tr>
<th>Table 5. Jointly managed OPVN stocks and funds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National Reserve Stock</strong></td>
</tr>
<tr>
<td>(major national food crises)</td>
</tr>
<tr>
<td>SNS (80,000 MT)</td>
</tr>
<tr>
<td>Food security fund (30,000 MT equivalent)</td>
</tr>
</tbody>
</table>


Figure 25. In-kind assistance (MT), 2011–2015


Figure 26. Households assisted, 2011–2015

assistance to maintain a level of responsive capacity in the event of a food shortage or other shock to the food supply. Table 5 notes the funding mechanisms for in-kind stocks and financial reserves. The National Food Reserve (SNR) should maintain a total capacity of 110,000 MT, including 50,000 MT of actual cereal stocks (most importantly, millet, sorghum, and corn) within the SNS (Aker et al. 2009) and a purchasing capacity of 60,000 MT through the FSA (IMF 2017). According to Aker et al. (2009), any decisions to use purchasing power for food assistance are supported by an agreement between the GoN and its partners, who entrust this responsibility to the OPVN, which receives a remuneration of XOF 10,000 per MT. The SNR is typically accessed as a rapid response measure at the regional or national level in the interim while the greater humanitarian community mobilizes a scaled response (Aker et al. 2009).

The volume and timing of purchases conducted by the GoN through the SNS vary from year to year, depending on the nature and degree of need. Figure 25 and Error! Reference source not found. provide some context for the scale and nature of grain purchases made in response to national food crises resulting from other natural disasters through the national Plan de Soutien. Data regarding interannual trends in government procurement of particular grains are not readily available, but these stocks are typically composed of millet, sorghum, maize, and rice for wide use under the Plan de Soutien and in response to localized food insecurity. In addition to dually managed stocks, the OPVN manages its own reserve, financed through the national budget. In 2010, the GoN procured 60,000 MT under this Strategic Reserve component (World Bank 2013). According to the 2017 GoN DNPGCCA Operations Plan, the SNS strategic reserve comprises roughly 100,000 MT of in-kind cereal stocks (Niger Office of the Prime Minister 2016).

Although cereal markets in Niger were not liberalized until the mid-1990s (Aker 2007), the establishment of OPVN in the 1970s and its gradual transition to a humanitarian response and food crisis intervention unit were in keeping with trends among Sahelian governments in the 1980s to liberalize grain markets and shift to a more integrated system for food security reserves largely focused on early warning, donor engagement, and safety net strategies (World Bank 2013). In the years following liberalization of cereal markets, the OPVN evolved from a state-owned monopoly responsible for the purchase and sale of cereals to a key institutional actor in food security monitoring, and especially the management of strategic grain resources. Though the OPVN plays a significant and increasingly effective role in mitigating food insecurity in Niger, the literature notes the potential for improved operations as well as coordination with a multitude of internal GoN and external stakeholders, including community-level interventions and market systems.

2.14. Conflict and markets

The conflict in the Lake Chad basin, as well as the security challenges in Mali, have consequences for market activities and humanitarian outcomes in Niger. Insecurity driven by Boko Haram in the Lake Chad region has disrupted the functioning of agricultural markets, particularly in Diffa Region of south-eastern Niger (Figure 27). These disruptions are protracted, and have persisted for over two years in many areas. According to a 2016 study conducted in Diffa by WFP, SIMA, IRC, Save the Children, ACF, and OXFAM, cereal prices have been able to stabilize in some places due to the presence of humanitarian assistance programs.

In the Mainé and Guigmi Communes, demand and grain prices have increased due to the presence of displaced persons and food distribution operations. However, in the south-west (Djajéri-Goundoumária-Kilakam-Bouti), cereal prices remained relatively stable. The presence of refugees has changed the status of certain markets. For example, approximately 70 percent of Yebi refugees have invested in trade activities as a source of income and livelihood. Trade flows into and out of the Lake Chad Basin have been heavily affected by high transportation and transaction costs, with some traders simply choosing not to frequent the area anymore (WFP, SIMA, IRC, Save the Children, ACF and OXFAM 2016).
3. Millet and Sorghum

Millet and sorghum jointly contribute to over 90 percent of cereal production in Niger. Millet alone contributes over 70 percent and is considered the dominant staple food across much of the country, playing a central role in national food availability and access. For this reason, the charts and maps presented in this chapter focus mainly on millet, and the corresponding figures for sorghum appear in Annex 2. Supplies are met largely through domestic production, although some imports do take place (Figure 28). Production has increased progressively since 2000, but years of good production are often followed closely by years of poor production (Figure 29).

As with other rainfed crops, millet and sorghum production is concentrated mainly in the southernmost regions and departments, including Maradi, Zinder, Dosso, and, to a lesser degree, Tillaberi and Tahoua. Domestic production meets or exceeds requirements during most years, although regional trade dynamics are driven by relative prices and purchasing power in neighboring countries. Given the central role of millet and sorghum in the national diet, they are considered key and essential crops and are targeted explicitly as part of the Agricultural Policy (Ministère de l’Agriculture et de l’Elevage 2016). Price trends in Niger track the national supply situation, but are also heavily influenced by regional market trends. For this reason, even during years of relatively good production (such as 2012), prices can be relatively high.

3.1. Consumption

Per capita annual millet and sorghum consumption is estimated at between 110–200 kg, comprising the lion’s share of total cereal consumption (Ministère du Developpment Agricole 2016). Millet and sorghum are consumed nationwide, although they are relatively less important in urban areas, where rice is increasingly popular. A common indicator of food access is cattle to millet or agricultural wage to millet terms of trade, which allows analysts to track how many bags or kilograms of millet (or sorghum) a household can purchase through revenues earned from the sale of one head of livestock or from one day of agricultural wages.

3.2. Production

Over 80 percent of millet and sorghum production is concentrated in Maradi, Zinder, Dosso, and Tillaberi Regions (Ministère du Developpment Agricole 2016). Nearly 50 percent of production takes place in Maradi and Zinder Regions alone (Figure 30). Area planted with millet and sorghum has increased by nearly 50 percent since 2000. Production is dominated by smallholder farmers.
operating under rainfed conditions. Marketing, as with production, is most intensive in the southernmost regions of the country. Despite the relatively more drought-resistant nature of these two crops, yields vary considerably from one year to the next, driven largely by agroclimatic conditions (Figure 5). Yields are relatively low compared to other countries of the Sahel (Figure 6).

Seeds predominantly come from previous harvests, with few improved varieties or additional inputs (such as fertilizers) used.

### 3.3. Structure and conduct of the marketing system

Local production in Niger enters the marketing system most actively during the post-harvest period, when households are eager to earn cash income. Producers are not well-organized and receive little support/technical assistance. Rather, as with other commodities, domestic wholesalers and regional traders play a more dominant role (Figure 31). Through well-established trade networks, domestic and regional wholesalers are able to supply from producers in Niger during the post-harvest period. As the marketing season progresses, those same traders take advantage of spatial and temporal price variation to earn a margin. The OPVN and WFP purchase millet and sorghum in local as well as regional markets as part of their interannual and emergency assistance programs. Prices are largely determined by regional price trends (import parity prices, plus a small markup). Very little processing takes place outside of the household and, unlike other countries in the region, the local brewing sector is not relevant in Niger. However, regional demand for sorghum and millet used for livestock feed and brewing can influence demand in Niger, depending on the annual regional supply situation.

### 3.4. Performance of the marketing system

Millet and sorghum prices vary considerably, both inter and intra annually (Figure 32 and Figure 33). Given the strong levels of market integration, prices are highly responsive to changes in supply and demand, at both the national and regional levels. Prices are highly correlated. However, the prices in western Niger (such as Niamey) are more strongly correlated with market prices in Burkina Faso, while prices in central and eastern Niger are more strongly correlated with prices in Nigeria (Table 6). The degree of correlation increases when one considers the parallel exchange rate, further reinforcing the importance of informal trade flows between the two countries. The margin between prices

![Figure 31. Marketing channel for millet and sorghum in Niger](source: Authors’ elaboration.)

![Figure 32. Average seasonal millet price index, Maradi, 2011–2016](source: Authors’ calculations based on SIMA (2017)).

<table>
<thead>
<tr>
<th>Market</th>
<th>Pouytenga</th>
<th>Kano</th>
<th>Kano+</th>
<th>Maradi</th>
<th>Niamey</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Burkina Faso</td>
<td>Nigeria</td>
<td>Nigeria</td>
<td>Niger</td>
<td>Niger</td>
</tr>
<tr>
<td>Pouytenga</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kano</td>
<td>0.3621</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kano+</td>
<td>0.5034*</td>
<td>0.7406*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maradi</td>
<td>0.5480*</td>
<td>0.6974*</td>
<td>0.8647*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Niamey</td>
<td>0.7711*</td>
<td>0.5719*</td>
<td>0.7579*</td>
<td>0.8280*</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: * Denotes 1 percent significance level. + Considers the parallel exchange rate.

in Niger and Nigeria varies from year to year (Figure 34), resulting in varying trade flows from one year to the next. Millet and sorghum are often traded from the surplus-producing areas near the border in Niger toward Nigeria during the post-harvest period only to reverse later on in the marketing year (Figure 34).

Millet and sorghum markets are heavily influenced by exogenous factors, such as the performance of the annual rainy season or the regional production and policy context. Poor road conditions during the rainy season isolate some communities, thereby limiting their access to these essential food stuffs. Improved access to information by market actors has improved the degree and speed price transmission, which can be considered positive or negative in the Nigerien context.

Figure 33. Retail prices for millet in selected markets in Niger and West Africa (XOF/kg), 2004–2016

Note: All prices are retail, except for Kano, Nigeria, which are wholesale prices. Price series denoted with * indicate that the parallel exchange rate was used, rather than the Interbank rate.

Figure 34. Millet production and trade flow map

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

Source: FEWS NET.
4. Rice

Rice production and consumption in Niger are lower relative to other major cereals such as millet and sorghum, and low relative to neighboring countries in the region. Rice contributes less than 5 percent to the daily calorie availability (Figure 35). Production is concentrated in irrigated areas in Dosso and Tillabéri Regions. Rice is mostly consumed by the urban population, who have incorporated this staple as part of their regular diet. In rural areas, rice is considered a luxury food consumed only on special occasions. Rice demand is covered mostly through imports, which represent 86 percent of total rice supply. Rice is also exported (and re-exported) to Nigeria. The rice marketing chain has a notable level of organization at the production level that is not observed in other commodities. Women have a predominant role in the marketing of parboiled rice.

4.1. Consumption

Per capita rice consumption in Niger is estimated at 18 kg per year, representing less than 10 percent of total cereal consumption in Niger (Table 2, Table 1) and less than 5 percent of total calories consumed (ReSAKSS, Michigan State University, and Syngenta 2011). At the aggregate level, average annual rice requirements for human consumption are 344,601 MT.

Rice consumption varies between urban and rural populations, with the urban population consuming up to six times more rice than the rural populations (Moussa 2004). Rice is now a regular component of the urban diet, but is still considered a luxury food in rural settings. At the national level, rice expenditures are the second largest after millet within total food expenditures (ReSAKSS, Michigan State University, and Syngenta 2011). Due to its relevance, particularly among urban populations, rice is considered a strategic commodity in the national food system.

4.2. Production

Rice is produced in the more humid areas of Niger, particularly in Tillabéri and Dosso Regions (Figure 36). In the period 2011–2015, an average of 89,358 MT were produced every year (Figure 37). Three cultivation systems exist (Gergely 2014):

- Cultivation in irrigated fields in the Niger River valley, with use of external inputs (fertilizer and improved varieties such as Gambica and Nerica), and two growing cycles per year (June to November and December to May/June). This system accounts for 85 percent of total production. A notable level of organization characterizes this system, as evidenced by the organization of producers in cooperatives and in the Fédération des Unions des Coopératives des Producteurs de Riz (FUCOPRI), which groups 9 unions, 37 cooperatives, and about 27,000 members (Gergely 2014). The GoN also participates in this system through the Office National des Aménagements Hydro Agricoles (ONAH), which provides technical assistance, and the Centrale d’Approvisionnement en Engrais et Matériel Agricole (CAIMA), which facilitates access to subsidized inputs.
● Cultivation in flooded soils near rivers or streams, supported by individual pumps to manage irrigation, with use of external inputs, and one growing cycle during the year (June–November).

● Traditional cultivation in shallow lands, using local varieties and little or no fertilizer, and one growing cycle (June–November) during the year.

The average production unit is 0.25 ha (Gergely 2014). Yields vary depending on the variety grown, the cultivation system, and other factors, and range from 0.7–2.0 MT/ha per season in the traditional system to 5.4 MT/ha in irrigated fields (Ministère du Développement Agricole 2009). The main constraints for rice production are: adverse climatic events such as extreme heat; heavy rains that lead to excessive flooding in the fields; poorly maintained irrigation infrastructure; outdated irrigation equipment; and insufficient availability of fertilizers and quality seeds (Gergely 2014; Danguioua 2016).

Generally, domestic rice production is insufficient to satisfy aggregate demand. Imports occur regularly over the year, with a tendency to increase during the dry season. The level of imports adjusts to the local production prospects and the expected supply gaps. Between 2011 and 2015 an average of 307,624 MT were imported every year, representing about 86 percent of the total rice supply (Danguioua 2016). The most preferred grades of rice are 5% broken or 25% broken grain. Thailand and India are Niger’s main trading partners for rice, supplying 49 percent and 37 percent of the total imported rice, respectively, according to COMTRADE data.

4.3. Structure and conduct of the marketing system

In the local rice marketing channel (Figure 38), producers sell the paddy rice either to FUCOPRI, to agents/collectors who mostly collect rice on behalf of large-scale traders and wholesalers, or to women who handle rice at the local level. These actors organize processing (milling, parboiling) and sell to wholesalers, institutional buyers, and retailers for resale to final consumers. Some wholesalers also engage in trade with Nigeria. At the wholesale level, rice is sold in 25- or 50-kg bags. No standard measures exist at the retail level, but typical units range between 1.0–2.8 kg.

The small-scale processing and trade of local parboiled rice is dominated by women. They operate locally (at the village level) and handle small amounts of product, though small amounts of parboiled rice are found in Niamey. Riz du Niger (RINI), the Société de Transformation des Produits Agricoles (SOTAGRI), and the Société Seyni Saley Lata (SSL) engage in industrial milling of local rice and offer products of varying qualities. Of the three, RINI is the largest, with an average processing of 10,000 MT per year. It is followed by SOTAGRI, with about 7,000 MT per year, and SSL, with up to 3,000 MT per year. These processors buy from FUCOPRI and further sell to wholesalers, smaller traders, retailers, and institutional buyers (Danguioua 2014). The low level of local production and its variability limit the operations and scale of these processors, which can close for months in periods of low supply. It is estimated that these processors operate at less than 20 percent of their installed capacity (Danguioua 2016). Local rice flows from production areas in Tillaberi and Dosso toward Niamey and wholesale markets in Maradi and Zinder, from where it is distributed to retail markets in larger towns (Figure 41).
Rice imports are dominated by a small number of importers based in Niamey that have sufficient transport units and storage capacity for handling large amounts of product. Imported rice arrives by boat to the ports of Cotonou in Benin, Téma in Ghana, and/or Lomé in Togo, from where it transits by land toward Niamey. Once in Niamey, importers sell the rice to large wholesalers who arrange transport to other regions in the country and sell to smaller/local wholesalers, institutions, and retailers. The main institutional buyers are hospitals, the military, university and school canteens, detention centers, and other social and humanitarian organizations supporting vulnerable populations. Several brands are available, with different qualities based on the level of broken grain (5% or 25%) and the origin of the product.

Exports of local rice toward northern Nigeria are estimated at 10,000 MT per year. Most exports are in the form of paddy rice, but parboiled and white rice are also exported (Gergely 2014). Re-exports of imported rice are also frequent. Maradi, Magaria, and Diffa are important markets in trade between the countries.

Most often business transactions take place between parties who have established a trust relationship over time. Traders/collectors provide credits to producers to secure production; importers provide credits or attractive prices to loyal wholesalers; and wholesalers/local wholesalers offer attractive prices and facilitate transport and/or credit to preferred retailers. The different actors tend to obtain market information from their business network.

4.4. Performance of the marketing system

Imported rice prices are relatively stable in all markets where data are available, as imported rice is readily available all over the country year-round. Prices increase at farther distances from Niamey. Rice prices in Nigeria are higher than in Niger, a situation that incentivizes exports of local rice (paddy and milled rice) and re-exports of imported rice (Figure 39). Actors handling imported rice rely on the frequency and volume of their operations, rather than on margins, for the viability of their business (Gergely 2014).

In Tillabéri, one of the main producing areas, local rice is cheaper than imported rice. However, its lower and irregular availability does not make it a reliable option for consumers who demand a regular supply. Consistent with the timing of the production seasons, local rice prices decrease toward the harvests in November–December and in May–June. The highest prices tend to occur in March and August (Figure 40).

Table 7. Rice price correlation across selected reference markets

<table>
<thead>
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</tr>
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<tr>
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<td>0.6**</td>
<td>0.04</td>
<td>0.2’</td>
<td>1</td>
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<tr>
<td>Maiduguri,</td>
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<td>-0.2</td>
<td>0.6**</td>
<td>-0.2</td>
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<td>Nigeria</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Authors’ calculations based on SIMA (2017) and World Bank (2017).
The price of imported rice in Niamey follows global price trends. This market shows strong correlation with the reference price in Thailand, Niger’s main source of imported rice (Table 7).

Several factors constrain the performance of the rice marketing system. The marketing of local rice is affected by: fragmentation of domestic rice supply in small production units, requiring major effort for the collection and handling of rice, often over multiple visits; limited financial capacity of FUCOPRI and other actors, which results in delays in production, distribution, and processing; varying product quality resulting from mixing grains of different qualities and varieties after the harvest; and the variable product quality resulting from the local transformation. Insufficient supply results in processors operating below their installed capacities. Millers’ limited storage capacity has an impact on the overall capacity for building stocks. Last, demand from Nigeria diverts rice toward that market.

More generally, the performance of the rice marketing system is also constrained by: the limited packaging possibilities; poor road infrastructure, which affects accessibility to supply and consumption areas alike; and irregularities experienced during transport, such as unplanned fees charged in transit and delays encountered due to the rainy season.
Figure 41. Production and trade flow map, rice, Niger

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

Source: FEWS NET
5. Maize

Maize is considered a marginal cereal in Niger. National aggregate supply includes local production, carryover stocks, and imports from regional markets (Benin, Burkina Faso, and Nigeria). Production is stagnant at around 7,000–8,000 MT per year (Figure 42), contrary to broader regional trends across West Africa. Maize is considered a substitute, particularly during the lean season crop and is only consumed more intensively once other preferred cereals are either too expensive or no longer available. Production is concentrated mainly in the southernmost regions and departments, with nearly one-half of production occurring in Dosso (neighboring Benin). Although domestic consumption exceeds production and large volumes are imported each year (Table 1), maize is not considered a strategic crop and little or no specific policies or programs are in place to support or reinforce production or marketing.

5.1. Consumption

Per capita annual maize consumption is estimated at 7 kg, corresponding to less than 3 percent of total cereal consumption (Ministère du Developpment Agricole 2016). Maize is rarely consumed in rural areas, except during the lean season and when stocks of preferred cereals are exhausted or when prices for substitutes are more expensive (Figure 43). Indeed, the longer the lean season during a given year, the more important maize becomes for meeting household grain requirements. Demand from the livestock sector (poultry in particular) has been observed, particularly in urban areas for end-of-year festivities. However, derived demand for that use has not been quantified and is not particularly well-understood.

5.2. Production

Over 85 percent of maize production is concentrated in Dosso, Maradi, and Tahoua Regions of Niger (Ministère du Developpment Agricole 2016). Nearly 50 percent of production takes place in Dosso Region alone (Figure 44). Maize area planted has declined substantially since the 1990s and early 2000s, when Diffa (along the Lake Chad Basin) played a substantial role in national supply (Afrique Verte 2011; Laouali and Ousmane 2010). Today, the majority of national production is for direct household consumption, with very limited quantities marketed given the competitiveness of regional maize on local markets in Niger. Limited quantities are produced on soil in a somewhat opportunistic manner, based on local soil quality and the hydrology context. In the southernmost regions of Niger, maize is produced once per year under largely rainfed conditions. However, Agadez Region often has two maize
harvests, with maize grown along the perimeters of tomato and spice fields. Seeds predominantly come from previous harvests, with few improved varieties or additional inputs (such as fertilizers) used.

5.3. Structure and conduct of the marketing system

Local production in Niger enters very little into the domestic marketing chain. Producers are not well-organized and receive little support/technical assistance. Rather, wholesalers and regional importers play a more dominant role (Figure 45). Through well-established trade networks, wholesalers are able to supply from neighboring Benin, Burkina Faso, Nigeria, and even Côte d’Ivoire. In recent years, given increasing aggregate demand and trade linkages (through regional trade and economic agreements), regional importers have even established themselves in markets in consumption centers (Niamey, Niger) or in supply areas (Korogho, Côte d’Ivoire) to better coordinate marketing and trade. The OPVN and WFP purchase maize in local as well as regional markets as part of their interannual and emergency assistance programs. Prices are largely determined by regional price trends (import parity prices, plus a small markup).

5.4. Performance of the marketing system

Maize prices vary over the course of the year and across markets (Figure 46 and Figure 47). Prices in Niger are generally higher than source markets in neighboring countries, allowing for grain trade to take place. Prices display clear seasonality, dropping noticeably during the regional maize harvest period (October–November), when the majority of sales occur, and reaching their highest levels in July during the lean season.

Maize prices in Niger show strong co-movement across markets and with prices in key regional source markets. Strong statistically significant correlations are found between key reference markets in Niger and regional source markets (Table 8). In the case of Nigeria, the degree of correlation increases by nearly 50 percent when one considers the parallel exchange rate rather than the official exchange rate. This is relevant because much cross-border trade occurs in the informal space and among traders who consider the parallel rate (set by the local Bureau de Change) for trade. While the degree of correlation is strong between regional markets, it does vary from year to year (Figure 48).

These price trends reflect the highly dynamic nature of maize trade in West Africa, accentuated by the increasing ease of substitution across potential source countries brought about by the regional trading networks described above. Furthermore, periods of government intervention into prices and marketing in neighboring countries (including, but not limited to, export bans) result in artificially high prices or restricted trade flows. However, given the structural dependence on imports, maize marketing performance in Niger, much like for the other commodities studied, is highly susceptible to regional dynamics. For
example, the food price spikes and shortages experienced in 2004/05 were driven in part by strong derived demand for maize for poultry feed in Nigeria (Diao 2010).

**Figure 47. Seasonal price index for maize retail price in Maradi, 2011–2016**

![Seasonal price index for maize retail price in Maradi, 2011–2016](image)

*Source: Authors’ calculations based on SIMA (2017).*

**Figure 48. Inter annual variation in maize price correlations across selected markets, 2011–2016**

![Inter annual variation in maize price correlations across selected markets, 2011–2016](image)

*Note: This only shows the statistically significant values at the 1 percent level. See Annex 2 for a complete table.
Source: Authors’ calculations based on SIMA (2017); FEWS NET (2017b); Central Bank of Nigeria (2017); SONAGESS (2017); ONASA (2017); Oanda.com.*

**Table 8. Maize price correlation across selected reference markets**

<table>
<thead>
<tr>
<th>Market</th>
<th>Malanville</th>
<th>Pouytenga</th>
<th>Maradi</th>
<th>Niamey</th>
<th>Kano</th>
<th>Kano*</th>
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<td>Malanville</td>
<td>1</td>
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<td></td>
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<td></td>
<td></td>
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<td>Pouytenga</td>
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<td>Kano</td>
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<td>0.7673*</td>
<td>0.7979*</td>
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</table>

*Note: * Denotes 1 percent significance level.

Figure 49. Maize production and trade flow map

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

Source: FEWS NET.
Oilseed production in Niger is mainly dependent on groundnuts, and, to a lesser extent, sesame (Figure 50). National oilseed production is concentrated in Maradi and Zinder Regions, reaching 400,000 MT per year (Ministère du Developpment Agricole 2016). At the household level, groundnuts are roasted and consumed whole or crushed into a paste for soups and sauces. A fraction of national production is marketed and crushed for edible oil production (using mainly artisanal methods, although one industrial oilseed crusher exists). Although edible oil is considered a strategic and “large consumption” foodstuff, domestic edible oil production satisfies less than half of national demand (Jannot 2014a). Palm oil imports from coastal West African countries (especially Côte d’Ivoire) and Southeast Asia (especially Malaysia) satisfy the remaining demand (Table 1). The bill for these imports is large and growing, jumping from XOF 8.6 billion to XOF 27.4 billion between 2011 and 2015 (INS 2016). Over that period, import volumes rose from 32,000 MT to 62,000 MT.

Government support to the edible oil industry is focused on the groundnut value chain, especially the development of interprofessional organizations. However, to date, no sizeable national investments have been made in groundnut oil production. A tax of roughly 15 percent is imposed on imported palm oil (Amadou 2011).

6.1. Consumption

Although aggregate consumption increased in recent years in line with population growth, per capita consumption remains well below the quantities recommended by the World Health Organization (Fintrac 2011). Indeed, per capita edible oil consumption (including both local production and imports) in Niger is among the lowest in West Africa (Figure 51), reaching less than 5 kg per year (ReSAKSS, Michigan State University, and Syngenta 2011; Jannot 2014). Given the role of imports to total supply, imported vegetable oil (especially palm oil) plays a strategically and politically important role.

Palm oil constitutes over two-thirds of aggregate edible oil consumption (Figure 52), but some important subnational and seasonal considerations exist. For example, locally produced groundnuts and oil contribute to a greater share of consumption in Niger’s agricultural and agropastoral production zones, while palm oil consumption is relatively more important in the urban centers and pastoral areas (HEA Sahel, 2014). Palm oil is consumed entirely from

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2 Assumes a rate of extraction of 30 percent.
market purchases. A 2011 INS and World Bank survey found that edible oil consumption was most prevalent among wealthier households, and that many poorer households consumed edible oil only two to three times per week (INS and World Bank 2013). In terms of seasonal consumption patterns, national edible oil consumption can surpass 6,000 MT during the month of Ramadan alone (COMMODAFRICA 2010).

### 6.2. Production

Two main production systems exist for edible oil in Niger. The dominant system is supplied with locally produced oilseeds (groundnuts and, to a lesser extent, sesame), processed using mainly artisanal methods. Domestic oilseed production is concentrated in Maradi and Zinder Regions (Figure 53) and produced by smallholders under mixed or intercropped systems (with millet, sorghum, and/or cowpeas). The second system is supplied mainly with crude palm oil (CPO) sourced from regional and international markets and processed by the only industrial edible oil processor, Société Omarou Laouali Gago (OLGA), based in Maradi Region (Fintrac 2011).

### 6.3. Structure and conduct of the marketing system

Niger’s three main edible oil marketing channels are: local edible oil production, edible oil imports from other West African countries, and edible oil imports from the international market (Figure 54). As discussed in detail in the previous section, most local edible oil production is from groundnuts, produced primarily in Maradi and Zinder Regions. The groundnuts are either consumed directly by producers or marketed by producers and producer groups to artisanal oil mills. OLGA buys mainly CPO from international and regional markets for further processing and marketing. Small-scale artisanal oil mills supply oil directly to artisanal or small-scale vendors for resale to final consumers. Refined edible oil importers are mainly concentrated in Niamey and buy on regional and international markets. Those importers are often diversified, trading in a number of imported and local agroindustrial products, and sell through their own national networks of wholesalers and retailers.

Trade flow patterns vary by market channel. For example, locally produced oilseeds and edible oil are consumed locally, typically within the department or region of origin. Imported CPO is processed in Maradi Region and sold in the central and eastern parts of the country. Imported refined palm oil transits mainly through Niamey and is then marketed throughout the country. There are likely trade linkages for refined palm oil with Nigeria (especially in southern border areas) and with Algeria and Libya (especially in the northern border areas, where crop production is limited and manufactured and processed foodstuffs are most prevalent).

The price discovery process varies between local oilseeds and imported refined edible oil. Local oilseed and edible oil prices vary seasonally based on local supply and demand dynamics and spot market transactions. On the other hand, imported prices are more stable and are more linked to international price trends than any seasonal considerations.
While no explicit policies influence imported edible oil prices, the government does encourage the private sector to ensure that refined edible oil, as a strategic good, is available at affordable prices to consumers. Internationally imported edible oils are subject to a 15 percent import tax (Amadou 2011).

6.4. Performance of the marketing system

As discussed previously, the shortfall in domestic edible oil supply forces the country to import sizeable amounts. The volumes imported have increased progressively since the early 2000s (Figure 56), from around 10,000 MT before 2000 to over 50,000 MT in 2014 (Jannot 2014; INS 2016). These imports consist mainly of refined palm oil, reflecting the limited ability of local supplies to keep pace with growing demand. Furthermore, these import figures are likely underestimated due to the inconsistency of official statistics and their failure to take into account informal imports, which are likely non-negligible, especially in border areas with Nigeria, Algeria, and Libya.

Aside from the monopolistic structure of the domestic CPO refining sector (composed solely of OLGA), no indication of major dysfunctions in the oilseed or refined edible oil marketing system is present. Refined edible oil is imported regularly and prices generally track global reference price trends. Refined edible oil prices within Niger do not vary excessively across markets (Error! Reference source not found.) and are highly correlated (Table 9).

Progress on implementing edible oil fortification requirements and regulations is limited, likely due to the dual highly import-dependent and artisanal nature of the sector. Vitamin A fortification is required for edible oil produced in Niger (Wirth et al. 2017). Presumably, this requirement applies only to industrially produced oil.

<table>
<thead>
<tr>
<th>Market</th>
<th>Agadez</th>
<th>Diffa</th>
<th>Maradi</th>
<th>Niamey</th>
<th>Malaysia</th>
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</table>

Note: Malaysia prices are FOB export prices. * Denotes 1 percent significance level.

Source: Ministère de Commerce, Niger (2017); World Bank (2017); SONAGESS (2017).
7. Cowpeas

Cowpeas are an important source of income and of affordable protein in the Nigerien diet. Their production is concentrated in the Maradi, Tahoua, and Zinder Regions. Leaves and grains (fresh and dry) are regularly consumed in a variety of dishes. Income earned through cowpea sales are often used to purchase cereals, particularly millet. Cowpeas are mostly consumed by the rural population, often as a substitute for meat. Domestic production significantly exceeds demand, and a large portion is exported to Nigeria and, to a lesser degree, Ghana.

7.1. Consumption

Per capita consumption of peas (cowpeas, voandzou [bambara groundnut], and doligue [catjang]) is 19 kg per year, contributing 3–4 percent to daily calorie consumption (Institute National de La Statistique and World Bank 2013). For rural populations, cowpeas represent the main source of protein (Idrissa 2013). Rural populations consume twice as much as those in urban areas in per capita terms (Republique du Niger 2006). In rural areas, cowpea expenditures represent 3 percent of all food expenditures (Blein 2013). In both urban and rural areas, consumption of cowpea has increased in recent years as households, particularly in rural areas, are mixing cowpea with other cereal products to manage reserves (Barhouni 2009). In general, cowpea is price elastic and considered an inferior good among almost all segments of the population. This varies slightly by location and income group. Among urban poor, cowpea is considered price inelastic (Ndjeunga et al. 2015). Sorghum and cowpea are substitutes (Yahoussa 2011).

All parts of the cowpea plant are consumed. The leaves are steamed and mixed with cereals such as millet. The peas are consumed green at or prior to maturation, alone or mixed with other vegetables. The dry grains are cooked and incorporated in a variety of dishes and sauces that are eaten with other staples such as rice, or are processed into flour or into a food supplement fed to young children. At the aggregate level, the average annual domestic requirement of cowpeas for food consumption is 363,745 MT. Other uses include industrial demand (634 MT per year; Ramatou 2014) and exports (889,570 MT per year; INS 2016), the largest source of demand (Table 1).

The rest of the plants left after harvest are used as animal feed (fane de niébé). About 80 percent of small holder farmers depend on mixed farming-livestock production systems. Lack of feed, particularly during the dry season, is one of the major constraints to livestock rearing, increasingly so in urban and peri-urban areas (Jarial et al. 2016). Fane de niébé is considered a superior forage resource because of its nutritional content. Results from a study in Maradi and Tillabéri reflect the appeal of cowpea forage, finding high demand and consistently higher prices as compared to groundnut forage. Cowpea forage can be found in both urban and rural markets, but fetches almost double the price in urban markets due to lack of available...
pasture land (Jarial et al. 2016). The value chain for cowpea forage starts with cowpea farmers who produce cowpea grains and keep crop residues to use as forage. Given the increasing demand of forage, some producers are prioritizing forage production (Jarial et al. 2016). Forage is dried and stored by producers and sold to traders who operate at different scales (handling bike loads up to carts with animal traction). Traders sell the forage in local and urban markets. By weight, revenue from fane de niébé is greater than from grains by a ratio of 5 to 3 (Dabat et al., 2012). Quality of the plant, drying, and storage conditions are key factors affecting forage output and quality (Jarial et al. 2016).

7.2. Production

Over 90 percent of cowpea cultivation occurs in association with cereals, particularly millet and sorghum (Strebelle and Boubacar 2011). Cowpeas are sown once the cereals are established in the fields. Therefore, any delays or factors influencing the timing and extent of cereal cultivation directly impact cowpea production. Most of the production (over 85 percent) uses local varieties (predominantly of white peas) and about one-third of all producers use fertilizer (Centre d’Etudes Economiques et Sociales de L’Afrique de l’Ouest 2009). Planting typically occurs between July and August and harvest is between October and November, in line with the cereal production cycle (Figure 15).

The total domestic production is estimated at 1,588,488 MT per year, on average (Figure 58). Cowpea production is concentrated in the Maradi, Tahoua, and Zinder Regions (Figure 60). These three regions account for approximately two-thirds of the total output. While producers consume some of the peas during harvesting season, most of the output is sold. Generally, total production exceeds domestic needs. Over half of the total output is exported (889,570 MT per year, on average).

Several factors affect cowpea production, most notably: climatic factors (late and/or erratic rains, drought), insufficient seed availability, high susceptibility to the incidence of pests and diseases, and factors influencing the timing and development of cereals grown in association with cowpeas (Centre d’Etudes Economiques et Sociales de L’Afrique de l’Ouest 2009; PRODEX 2010). During the 2011–2015 period, yields ranged between 283 kg/ha and 340 kg/ha (315 kg/ha annual average). This level is low compared to the potential yields of 1.3–2.0 MT/ha achievable in the West African context (Dugje et al. 2009).

Due to the role of cowpeas in household revenues, the GoN included this crop among the priority cash crops to be incentivized in the framework of the recent Agricultural Policy. Increased investment and strengthening of the chain structure (public institutions, rural organizations, producer base) are the mechanisms planned for development of this chain (Ministère de l’Agriculture et de l’Elevage 2016).

7.3. Structure and conduct of the marketing system

The main actors participating in the cowpea marketing chain are producers, producer organizations, traders/collectors, wholesalers (of varying sizes), institutional buyers, exporters, retailers, and consumers (Figure 59). In addition, the chain is supported by seed and input suppliers, service providers, transporters, and the GoN.

Fertilizers are usually procured from international sources and then commercialized through CAIMA (which sells at subsidized prices), small shops, producer organizations, and private businesses (formal and informal) (PRODEX 2010). Seed production is organized by INRAN (Institut National de Recherches Agronomiques du Niger) through different providers. Seeds are distributed to producers by means of traders, producer organizations, and those providing agricultural services.

Producers sell cowpeas gradually from the harvest to the dry period. The larger sales occur during harvest (October–November) due to difficulties with preservation (drying), pest management, and storage, but when possible, sales are delayed for several months in the expectation of better prices. Producers sell to local consumers, retailers, rural wholesalers, and collectors who purchase the cowpeas on behalf of wholesalers (rural and urban) and foreign traders. Producers frequently utilize cowpea revenues to purchase millet, the main staple in cowpea-producing areas. On average, one bag of peas can be used to purchase up to two bags of millet. The higher the prices producers can fetch for their product, the more cereal they can purchase.

Rural wholesalers and collectors are key actors in the chain as they serve as intermediaries between producers and the rest of the chain. They sell to larger wholesalers, institutional buyers, and retailers. Rural wholesalers may provide credits to producers as a way to secure the product and to fix the sale price in these exchanges. They also provide support to collectors.
to reinforce their business relationships. Institutional buyers such as WFP, Doctors without Borders, and Action Against Hunger also purchase cowpeas from wholesalers.

Large-scale wholesalers purchase from rural wholesalers and collectors. They are focused on the export market and sell their product to traders from Nigeria and Ghana. They offer commissions to their collectors, as well as presents to maintain their loyalty. The price of cowpeas in Kano, Nigeria is used as reference when setting the price in their transactions.

A small number of producers access credits and/or receive support for the sale of produce from producer organizations. These organizations practice warrantage, or crop credit certificate, a system by which producers deliver a share of their harvest in exchange for a credit (acquired from a microfinance institution) worth about 80 percent of the value of the product. After three to six months, producers repay the credit and receive back their stock. Alternatively, the organization sells the product (then valued at higher prices), pays the credit, and distributes the profits among participating members. Engaging in warrantage activities requires operational capacities that not all producer organizations possess. In addition, cowpeas’ high susceptibility to post-harvest infestations deters many financial institutions from participating in warrantage, given the high risk of loss associated with this commodity. The Confédération Nationale des Coopératives (CONACOOP), the Plateforme Paysanne du Niger (PFPN), and Mooriben are the largest producer organizations involved in cowpea marketing.

Cowpeas are transported by donkey from production to collection areas. From there, different actors use trucks with capacities ranging from 10–40 MT. At the national level, cowpeas flow from producing areas particularly toward Niamey, but smaller flows are also directed toward northern and eastern Niger (Figure 64). Large quantities of cowpeas are traded between nearly all surplus-producing areas of Niger toward Nigeria. Once in Nigeria, cowpeas are principally destined for Kano, Daoura, Maigatari, and Mai Adoua, which further supply other locations (Centre d’Etudes Economiques et Sociales de L’Afrique de l’Ouest 2009).

### 7.4. Performance of the marketing system

Prices for cowpeas vary across markets, showing lower average levels in Maradi, the main producing region. Prices in Maradi, Tahoua, and Zinder register similar average levels. Diffa, a more distant market with practically no production, has the highest average prices of all Nigerien markets considered. Prices in Kano have dropped notably since 2015, exerting downward pressure over Nigerien prices given their relevance as reference prices (Figure 60 and Figure 61).

The depreciation of the Nigerian naira over the past years led to reduced purchasing power of Nigerian households and reduced demand for imported commodities from Niger and other countries (Burkina Faso, Cameroon). The Central Bank of Nigeria’s decision in 2015 to allow the naira to float and depreciate made imports more expensive. The gap between the...
official and parallel exchange rates made imports even more expensive and contributed to the increase in domestic prices (Figure 62). Nigerian households adapted by shifting to other cheaper foods (FEWS NET 2016). For the export-oriented cowpea chain in Niger, lower demand from its main client affected marketing prospects and revenues.

In Maradi, the main producing region, prices vary seasonally, dropping noticeably with the harvests in October–November, when the majority of sales occur, and reaching their higher levels in June–July, the lean season (Figure 63).

Cowpea prices in Niger show strong co-movement across markets, as well as with prices in Kano, Nigeria. Strong statistically significant correlations are found across markets (Table 10), particularly for Maradi and Tahoua. As well, these two markets have the strongest correlations with the market in Kano.

Several factors affect the cowpea marketing system. For instance, fragmentation of the domestic supply requires traders to collect the product over multiple visits. Difficulties in preserving the product over longer periods of time force many producers to sell the product at harvest, when prices are at their lowest point. The use of reference prices in Kano, Nigeria results in a lack of negotiation power for producers, rural wholesalers, and retailers, as well as a sense of lack of transparency in the determination of prices. Poor road infrastructure limits access to supply areas and contributes to increased transport costs. Other factors affecting cowpea supply and demand from Nigeria, such as own production, fluctuation of the naira, and the social and political context, as well as lower demand, reduced prices, and high transport costs, also impact the performance of the cowpea marketing system in Niger.

| Table 10. Cowpea price correlations across selected reference markets |
|---------------------|-----|-----|-----|-----|-----|
| Market              | Diffa | Maradi | Tahoua | Zinder | Kano, Nigeria |
| Diffa               | 1     |       |       |       |               |
| Maradi             0.700** | 1     | 0.938** | 1     |       |               |
| Tahoua            0.697** | 0.761** | 0.681** | 1     |       |               |
| Zinder           0.610** | 0.724** | 0.695** | 0.671* | 1     |
| Kano, Nigeria 0.524** | 0.724** | 0.695** | 0.671* | 1     |

Note: Tahoua refers to prices in Tounfafi, Tahoua. Correlation results for Kano are for white cowpeas prices using the parallel exchange rate.

Source: Authors’ calculations based on SIMA (2017), Central Bank of Nigeria (2016), and OANDA (2017).
Figure 64. Production and trade flow map, cowpeas, Niger

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

Source: FEWS NET.
8. Livestock

Livestock are raised by more than 87 percent of the population, either as a main or a secondary activity (Ministère de l’Elevage 2013). Recent accounts estimate the national herd inventory to be above 30 million head for all species, representing a total value of more than XOF 2 trillion (US$3.3 billion; Rhissa 2010). Livestock are the main asset and factor determining food security and poverty reduction in agropastoral and pastoral livelihood zones in Niger. They contribute to 15 percent of rural households’ income and 25 percent of their food consumption requirements at the national level. Within the broader economy, livestock account for approximately 13 percent of GDP, 40 percent of agricultural GDP, and 21 percent of total export earnings, making them the second most important source of export earnings in the country after mining (Ministère de l’Elevage 2013).

Nevertheless, the livestock subsector is constrained by several challenges, most notably animal diseases, lower productivity, poor processing and marketing of derived products, and the strong dependence on limited public and private investments. The GoN recently released its 2013–2035 Livestock Sustainable Development Strategy in response to the various challenges in diversifying and sustaining the subsector.

8.1. Consumption

Livestock consumption in Niger predominantly includes live cattle, small ruminants, and camels for in-house slaughtering, in addition to derived meats and milk and dairy products. Little evidence exists of substantial variation in livestock consumption, except during the Tabaski holiday, when sheep are widely purchased, as well as during New Year’s season in Nigeria (the main export market). Exported Nigerien livestock predominantly consist of fattened live animals, while the majority of animals sold domestically are of only an average quality due to the comparatively lower purchasing power in Niger. On average from 2011 to 2015, over 17,000 MT of cattle and close to 10,000 small ruminants (sheep and goats) were exported each year, almost exclusively to neighboring Nigeria (Figure 65).

According to FAO statistics citing past consumption surveys, Nigeriens’ annual per capita consumption of meat was 6 kg, or close to 115,000 MT annually on average from 2011 to 2015. Urban meat consumption is higher than rural meat consumption, suggesting upward consumption figures given Niger’s increasing urbanization. Consumption of local sheep is more important than consumption of cattle and goats (Institute National de La Statistique and World Bank 2013). In addition to domestic products, customs records estimate around 5,400 MT of imported meats and edible offal over the past five years.

Last, milk consumed by Nigeriens comes mainly from cattle (46.3 percent) and goats (30.8 percent). The 2004 household consumption budget survey cited by FAO estimates annual per capita consumption of 30 liters, while another Ministry of Livestock source cited by Rhissa (2010) provides a norm of 45 liters. These suggest average consumption of around 574,000 MT to 861,000 MT of milk on average over the past five years. Niger’s imports of milk and dairy products, including powdered milk, averaged 16,796 MT over the past five years according to customs records.

8.2. Production

The average national livestock herd size in Niger between 2010–2014 included 10.3 million cattle, 10.6 million sheep, and 13.9 million goats (Table 11). Almost all regions in Niger have substantial stocks, except the urban capital district and the desert Agadez Region. Tillabéri, Zinder, Tahoua, and Maradi Regions are the livestock powerhouses, accounting for close to

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3 Personal communications with Ministry of Livestock.
80 percent of the cattle and small ruminant population, while Diffa and Dosso Regions have a lower but still significant share (Table 11, Figure 66, and Figure 82). Niger’s livestock subsector is diverse, with many specialized and highly appreciated breeds. The Ministry of Livestock counts five cattle breeds (Azawak, Bororo, Kouri, Djelli, and Goudali) and many crossbreeds offering interesting variants. Small ruminants consist mainly of sheep with hair (Oudah, Balibali, Araara), wool sheep (Koundoum, Hadine), Sahelian goat, and Rousse goat (Ministère de l’Elevage 2014).

Up to six livestock production systems are present in Niger: (i) large landowners with thousands of heads of cattle, sheep, goats, and camels, owned by large traders as safety assets for other trade activities; (ii) the agropastoral system, which combines livestock with farming, mainly adopted by ethnic Fulani pastoralists; (iii) semi-modern dairy farms or semi-intensive farms on which livestock are associated with farming; (iv) small producers, characterized by a large number of farmers and even civil servants who use livestock as a source of savings (“live bank”); (v) a “reorganized” traditional system of ethnic Tuareg, Arab, and Toubous pastoralists who abandoned cattle breeding for camels and goats due to changes in the local agroecological setting; and (vi) an “enhanced” traditional system of ethnic Fulani Bororo pastoralists who maintained their specific bovine breeding as well as mobility by nomadism and transhumance (Rhissa 2010).

According to the Niger Food Security Brief (2014), Niger has three main production zones, with slight variations: the transhumance nomadic pastoral zone, which has the majority of livestock – herds there are adapted to its specific climatic and environmental conditions; the agropastoral zone, defined by higher levels of rainfall (annual average of 300–400 mm), which accounts for 60 percent of cattle; and the agricultural zone, which is characterized by livestock ownership by wealthy farmers. New trends are emerging in livestock raising, with more and more sedentary practice as pastoralists move southward for better pasture areas and crop production expands to traditionally pastoral areas. Furthermore, livestock ownership is shifting from poorer to wealthier households and family herd sizes are reducing (FEWS NET 2014).

Average meat production was estimated at about 161,000 MT for cattle and 78,000 MT for small ruminants over 2010–2013. Although these figures constitute a large increase compared to their levels 10 years prior, meat supply remains irregular and depends on market opportunities and pastoralists’ needs. National statistics of the Ministry of Livestock estimate that only 14 percent of cattle, 22 percent of sheep, and 32 percent of goats are exploited for meat production.

Milk production potential in Niger is above a billion liters according to statistics of the Ministry of Livestock, estimated from female lactating rates of 15 percent for cattle, 30 percent for sheep, and 35 percent for goats. However, this potential has yet to be fully exploited since all production quantities are not collected and processed, and only a small proportion of urban and semi-urban production (around 300,000–500,000 MT) is collected for sale either directly to consumers or to mini-dairies (AIDD 2016).

### Table 11. Livestock inventory, 2010–2014 average (# of head)

<table>
<thead>
<tr>
<th>Region</th>
<th>Sheep</th>
<th>Goat</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agadez</td>
<td>480,794</td>
<td>744,100</td>
<td>36,782</td>
</tr>
<tr>
<td>Diffa</td>
<td>785,817</td>
<td>1,187,198</td>
<td>1,010,634</td>
</tr>
<tr>
<td>Dosso</td>
<td>813,929</td>
<td>1,081,879</td>
<td>1,051,312</td>
</tr>
<tr>
<td>Maradi</td>
<td>1,876,799</td>
<td>2,581,716</td>
<td>1,690,428</td>
</tr>
<tr>
<td>Niasme</td>
<td>176,753</td>
<td>99,242</td>
<td>55,184</td>
</tr>
<tr>
<td>Tahoua</td>
<td>2,299,941</td>
<td>2,586,886</td>
<td>2,053,529</td>
</tr>
<tr>
<td>Tillabéri</td>
<td>1,494,073</td>
<td>1,812,382</td>
<td>2,241,315</td>
</tr>
<tr>
<td>Zinder</td>
<td>2,702,702</td>
<td>3,878,570</td>
<td>2,182,085</td>
</tr>
<tr>
<td>Grand Total</td>
<td>10,630,809</td>
<td>13,971,973</td>
<td>10,321,269</td>
</tr>
</tbody>
</table>


### Figure 66. Average cattle production (# of head) and prices (XOF/head), 2011–2016

Source: Authors’ calculations based on national statistics of Ministry of Livestock (2015) and SIM-Bétail (2017.)
Livestock fattening is carried out by a majority of pastoral households to boost the production quality of meat and milk that is destined primarily for market selling (national and export markets) rather than household consumption (PRODEX 2012). Commercial intensive fattening of both cattle and sheep uses coarse fodder (e.g., natural grass, cereal residues and straw, green forage, peanut/cowpea toppings), cottonseed meal and peanut cake, and other nutritional products and veterinary inputs. The main difficulties lie in the absence of a genuine network of producers specialized in finishing cattle beef for external market demand and supplying livestock inputs on time and at competitive prices (Ministère de l’Agriculture et de l’Élevage, PRODEX, and INRAN 2011).

8.3. Structure and conduct of the marketing system

As in other countries in the Sahel, the first actors to intervene in livestock and meat marketing channels in Niger are feed producers and service providers, followed by pastoralists, who are at the heart of the system as they breed and sell their animals to the different marketing and value-chain actors, followed ultimately by final consumers (Figure 67). Important foreign actors also participate, especially Nigerian livestock traders on the circuit linking southern Nigerien livestock zones to key markets in northern Nigeria, and also to a lesser extent, traders toward Benin (Guibert et al. 2009).

Veterinary activities, both public and private, are some of the most important initial inputs and services to the production process. However, access to them remains limited, especially in remote areas of the country. Producers are heterogeneous in terms of production size and system, activity scope, and financial capacity. Nevertheless, they are increasingly structured and organized in professional organizations and cooperatives (Ministère de l’Élevage 2013). Following the production stage, the major actors in livestock trading are collectors and wholesalers (medium- and large-sized). Collectors assemble animals from cattle markets or their derived products for wholesalers, who actually commission them in most cases. In general, there are no contractual arrangements between livestock producers and traders (Kamuanga et al. 2008). Wholesalers sell to the domestic market (either live animals to households or slaughterhouses (abattoirs) or to retailers/caterers) or supply the major export markets in coastal countries.

The major assembly, wholesale, and retail cattle markets in Niger are Diffa, Gotheye, Maradi, Matamey, Tahoua, Tanout, Tera, Tounfafi, Zinder, and Niamey. Though there are flows from different regions, the principal export flows originate in Fabirji and Gotheye, and flows destined for Niamey primarily originate in Balleyara (Figure 72). A large percentage of livestock present in Tillabéri Region (40—60 percent) are actually animals transiting through Niger from Burkina Faso (through Téra) and Mali (through Ayorou and Mangaize), on their way to major regional consumption centers, like those in Southern Nigeria. are Nigeria (CILSS 2016).

Livestock prices are based on fluctuating supply and demand (e.g., traders’ presence, number and quality of animals, information from other markets). The primary determining actor of the negotiated price between sellers (breeders) and

![Figure 67. Livestock/meat marketing channel](image)

**Source:** Authors’ elaboration.

![Figure 68. Cattle (male) prices (XOF/head), 2011–2016](image)

**Source:** Authors’ calculations based on SIM-Bétail Niger (2016) data.
buyers (traders) is the broker, who holds consultations before transactions to agree on traded volumes and prices. In several markets such as Maradi, the seller has less influence on prices and is entirely subject to the broker. In addition, price determination can be more complex and may not always follow supply and demand factors. Prices usually increase gradually after the rainy season, depending on the level of fattening, the accessibility of markets, and the reluctance of breeders to sell. Prices then drop dramatically during the lean season, despite the presence of many buyers, depending on the quantities in the market, the level of fattening of animals, and the increasing inaccessibility of markets at the onset of the rainy season. In those cases, too, breeders have weaker positions vis-à-vis traders, as they have urgent need of cash (Guibert et al. 2009).

8.4. Performance of the marketing system

Niger enjoys a livestock-friendly, large pastoral area of 620,000 square kilometers and a diversity of vegetation. Niger possesses a clear comparative advantage in livestock and meat production, and represents one quarter of the regional cattle trade and two-thirds of the regional small ruminant trade (Diagne and Pelon 2014). The GoN and the private sector have made several efforts to capitalize on this advantage through legal support to pastoralists (e.g., rural code), livestock feed banks as part of non-food emergency programs, and hydro-pastoral development programs (Diagne and Pelon 2014).

However, the livestock subsector faces several constraints. The country’s forage supply is limited, increasingly experiencing significant grazing deficits due to poor spatial and temporal distribution of rains. Other constraints include the scarcity of fodder resources, land tenure, ownership rights, livestock diseases, and, most importantly, the persistence of subsistence activity by pastoralists (Kamuanga et al. 2008). Weaknesses in general marketing profitability and regional trade include high transport costs and poor roads, inadequate access to credit and financial services, inefficient market information, lack of defined trade norms, and the various barriers and harassments along trade routes (Williams et al. 2003).

Prices fluctuated annually and interannually for the past five years for both cattle and small ruminants in key markets (Figure 68 and Figure 69). This suggests recurrent changing market conditions and price determinants, although less so for cattle than for small ruminants. Looking at the price indices for the past five years (Figure 83 and Figure 84), prices are in line with the agroclimatic conditions for both

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**Figure 69. Sheep prices (XOF/head), 2011–2016**

Source: Authors’ calculations based on SIM-Bétail Niger (2016) data.

**Figure 70. Cattle price trends in Maradi, 2011–2016**

Source: Authors’ calculations based on SIM-Bétail, Niger (2017), Oanda (2016), and Central Bank of Nigeria (2016) data.

**Figure 71. Small ruminant price trends in Maradi, 2011–2016**

Source: Authors’ calculations based on SIM-Bétail, Niger (2017), Oanda (2016), and Central Bank of Nigeria (2016) data.
cattle and sheep—trending upward during harvest period, and then reaching their lowest levels at the start of the lean season (although sheep prices decrease earlier and remain lower than average longer during the marketing year).

Cattle prices are largely correlated between the key markets of Maradi, Matameye, Mayahi, Sabon Machi, and Bakin Birji, whereas sheep prices in the same markets (Table 16 and Table 17) are not. This suggests more integration, fluidity in information, and competition across the country in cattle marketing than in small ruminant marketing.

Moreover, Nigeria’s activity in export markets strongly influences livestock prices in Niger and the rest of the Sahel, especially following the 2015–2016 macroeconomic shock in Nigeria and the resulting depreciation of the naira (Figure 21). Nigerian demand for live cattle and small ruminants declined sharply in 2016, resulting in a reduction in prices (in XOF terms) for both cattle and small ruminants in Niger (Figure 70 and Figure 71), compared to the previous five years.
Figure 72. Livestock production and trade flow map

Note: Livestock herd expressed in tropical livestock units (TLU), which assume a weight of .7 for cattle and .1 for sheep and goats (HarvestChoice 2015)

Source: Authors’ elaboration based on INS (2015) and HarvestChoice (2015).
9. Market Monitoring Plan

FEWS NET regularly monitors staple food market dynamics in both presence and remote monitoring countries. It is neither necessary nor possible for FEWS NET to effectively monitor all commodities markets at all times. Rather, the Markets and Trade Knowledge team focuses on monitoring the status of a select group of indicators over a given marketing year. Those key indicators include the status of key activities and events that are likely to influence market supply and demand dynamics and the resulting price levels and variability in key reference markets. FEWS NET also regularly monitors incentives for trade flows out of areas of relative abundance into those of relative scarcity. Some of these indicators have threshold values that are used in practice, in combination with other information, to suggest when one might have reason to be concerned about food availability and/or access at a national or subnational level. The results of such monitoring are regularly reported in FEWS NET’s Price Watch and Price Watch Annex and also serve as essential inputs into the FEWS NET project’s integrated food security analysis.

Figure 73. FEWS NET’s approach to market monitoring and analysis

![FEWS NET’s approach to market monitoring and analysis](image)

A variety of commodity market monitoring systems are currently carried out in Niger as summarized in Table 12. The main indicators monitored include commodity and livestock prices, production, and trade flows and volumes collected at market, department and border post levels on weekly, monthly, and annual basis. These efforts are primarily done by the GoN through its specific departments and related services of agriculture, livestock, or commerce; several private sector and nongovernmental organizations are also actively involved.

Table 12. Overview of existing commodity market monitoring systems in Niger

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Level</th>
<th>Frequency</th>
<th>Coverage</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Market</td>
<td>Weekly</td>
<td>National</td>
<td>SIMA, SIM-Bétail</td>
</tr>
<tr>
<td>Production volume</td>
<td>Department</td>
<td>Annually</td>
<td>National</td>
<td>Ministry of Agriculture’s Statistics Directorate, Livestock Directorate</td>
</tr>
<tr>
<td>Trade volume</td>
<td>Department</td>
<td>Monthly</td>
<td>National</td>
<td>Ministry of Commerce</td>
</tr>
<tr>
<td>Imports/Exports</td>
<td>Selected border posts</td>
<td>Monthly</td>
<td>National</td>
<td>Customs, National Plant Protection Directorate</td>
</tr>
<tr>
<td>Trade flows</td>
<td>Department</td>
<td>Annually</td>
<td>National</td>
<td>Ministry of Agriculture, Agricultural Statistics Directorate, Livestock Directorate</td>
</tr>
</tbody>
</table>

Source: Personal communication with Niger’s food security and market monitoring stakeholders (2017).

The Niger Agricultural Market Information System (SIMA) is the primary and specialized government-funded market information system, housed within the Ministry of Commerce. SIMA was created in 1989 following agricultural commodity trade liberalization. It currently monitors over 70 staple food markets in the country, including 48 regular markets, 18 “sentinel markets,” and 8 cross-border markets (RESIMAO 2011, refer to Annex 3 for a full list of markets monitored). In addition, the Ministry of Livestock set up SIM-Bétail, a livestock-specific market information system, that monitors livestock sales and prices in over 70 markets in the country, including 7 cross-border markets (PRAPS 2016). SIMA, SIM-Bétail, and other national statistical services are part of the DNPGCA, which aims at contributing to sustainable improvement in and efficient policy making for food security through more transparent commodity markets and better knowledge of agropastoral
products trade (Touré et al. 2012). Several publications and report sources are made available by a variety public and private of actors, through their respective survey, data collection, processing, and/or synthesis mechanisms (Table 13).

Table 13. Key commodity market monitoring and analysis actors in Niger

<table>
<thead>
<tr>
<th>Actors</th>
<th>Publications/reports</th>
<th>Monitoring mechanisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMA</td>
<td>Weekly and monthly bulletins</td>
<td>Local and cross-border markets monitoring</td>
</tr>
<tr>
<td>Services of Ministry of Agriculture</td>
<td>Annual report</td>
<td>Crop surveys</td>
</tr>
<tr>
<td>National System for the Prevention and Management of Food Crises</td>
<td>Annual report, monthly bulletin</td>
<td>Synthesis of bulletins and reports</td>
</tr>
<tr>
<td>National Institute of Statistics (INS)</td>
<td>Statistical bulletin, statistical directory</td>
<td>Data collection, processing, and diffusion</td>
</tr>
<tr>
<td>SIM-Bétail</td>
<td>Monthly bulletins, reports</td>
<td>Data collection by services of Ministry of Livestock at district level, syntheses at departmental level (monthly), and centralization at regional level (monthly)</td>
</tr>
<tr>
<td>Afrique Verte</td>
<td>Monthly food security updates (newsletters)</td>
<td>Market prices monitoring and trends analysis</td>
</tr>
<tr>
<td>FEWS NET</td>
<td>Food Security updates, Price Bulletin, Price Watch</td>
<td>Market prices monitoring and trends analysis, food security outlook</td>
</tr>
<tr>
<td>WFP</td>
<td>Monthly prices</td>
<td>Price data collection</td>
</tr>
</tbody>
</table>

Source: Personal communication with Niger’s food security and market monitoring stakeholders (2017).

As in most countries in the region, market information monitoring systems in Niger are constrained by limited or unstable funding, due to unclear institutional status or end of projects’ phases, on one hand; and by limited technical capacity and updated equipment and materials in data collection and analysis on the other hand. Based on existing systems and the present market fundamentals assessment, Table 14 provides a summary of the key areas that could be monitored by actors.
Table 14. Key staple food market areas to monitor in Niger

<table>
<thead>
<tr>
<th>Topic</th>
<th>Areas to consider</th>
</tr>
</thead>
</table>
| Domestic production of cereals, cash crops, and key vegetables | Growing conditions at key growing stages for all commodities  
Area planted, harvests, yields  
Production estimates, nationally and by regions and departments |
| Stocks                                          | Opening and closing stocks of key commodities (separately)  
Estimated shares of traded production figures versus own consumption  
Farmers’ stocks at different periods of the marketing year  
Traders’ stocks at different periods of the marketing year  
Institutional stocks and procurement |
| Non-food uses of cereals and cash crops         | Demand of maize from the poultry sector  
Agroindustrial demand of cereals, cash crops |
| Price monitoring                                | Production prices for all key commodities  
Wholesale prices for all key commodities  
Retail prices for all key commodities  
Price relationships (for complement and substitute commodities)  
International prices for imported staple foods |
| Livestock                                       | Livestock sales by heads and weights  
Livestock processing products figures (milk, meat) |
| Food balance sheet                              | Updated consumption norms for all key consumption products  
Updated figures for losses and seeds in cereals and cash crops |
| Trade flows                                     | Import and export figures for key commodities  
 Estimates of informal cross-border trade figures for key commodities  
Seasonality of trade flows with neighboring countries  
Transport and other trade costs  
Trade impediments (e.g., border closures, harassments) |
| Government policies                             | Policies or programs (e.g., tariffs, subsidies, taxes, levies, etc.) that impact supply, demand, and prices of key commodities |
| Regional context                                | Social and political situation in neighboring countries and main regional trading partners  
Food supply in in neighboring countries and main regional trading partners |
| Food assistance                                 | Level and modality of food assistance/food aid received  
Market-related impacts of food assistance |
| Macroeconomic context                           | Key international and regional exchange rates  
Inflation  
Consumer price index  
Performance of uranium (as first contributor to Niger’s GDP) |

Source: Authors’ elaboration.
Annex 1. Production and price maps

Figure 74. Millet production (MT) and price (XOF/kg) map

Source: Authors’ calculations based on Ministère du Développement Agricole (2016) and SIMA (2017).

Figure 75. Sorghum production (MT) and price (XOF/kg) map

Source: Authors’ calculations based on Ministère du Développement Agricole (2016) and SIMA (2017).
Figure 76. Maize production (MT) and price (XOF/kg) map

Source: Authors’ calculations based on Ministère du Developpment Agricole (2016) and SIMA (2017).

Figure 77. Cowpea production (MT) and price (XOF/kg) map

Source: Authors’ calculations based on Ministère du Developpment Agricole (2016) and SIMA (2017).
Annex 2. Sorghum Production and Price figures and charts

Figure 78. Average sorghum production (kg/capita) and prices (XOF/kg), 2011–2016

Figure 79. Average seasonal sorghum price index, Maradi, 2011–2016

Figure 80. Retail prices for sorghum in selected markets in Niger and West Africa (XOF/kg), 2004–2016

Table 15. Sorghum price correlation across selected reference markets

Note: All prices are retail, except for Kano, Nigeria, which are wholesale prices. Price series denoted with * indicate that the parallel exchange rate was used, rather than the Interbank rate.

Note: * Denotes 1 percent significance level. + Considers the parallel exchange rate.

Source: Authors’ estimates based on SIMA (2017) and Ministère du Développment Agricole (2016) data.

Source: Authors’ calculations based on SIMA (2017).


Figure 81. Sorghum production and trade flow map

Note: FEWS NET Production and Trade Flow Maps provide a summary of the geography of marketing systems that are relevant to food security outcomes during an average marketing year or season. The maps are produced by FEWS NET in collaboration with stakeholders from local government ministries, market information systems, NGOs, and private sector partners, using a mix of qualitative and quantitative data.

Source: FEWS NET.
### Annex 3. SIMA Market List

<table>
<thead>
<tr>
<th>Market</th>
<th>Region</th>
<th>Department</th>
<th>Commune</th>
<th>Market day</th>
<th>Longitude</th>
<th>Latitude</th>
<th>Type of market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birnin Gaouré</td>
<td>Dosso</td>
<td>Birnin Gaouré</td>
<td>Birnin Gaouré</td>
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Note: Market types codes W = Wholesale; R = Retail; C = Collection; A = Assembly

Annex 4. Small ruminant production and prices

Figure 82. Average small ruminant production (head) and prices (XOF/head), 2011–2016

Note: Prices are for sheep. Small ruminant head count is based on sheep and goats.

Source: Authors’ calculations based on national statistics of Ministry of Livestock (2015) and SIM-Bétail (2017.)

Figure 83. Cattle seasonal price indices in Maradi, 2011–2016

Source: Authors’ calculations based on SIM-Bétail Niger (2016) data.

Figure 84. Sheep seasonal price indices in Maradi, 2011–2016

Source: Authors’ calculations based on SIM-Bétail Niger (2016) data.
Table 16. Cattle price correlation across selected reference markets

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Note: * Denotes 1 percent significance level.

Source: Authors’ calculations based on SIM-Bétail Niger (2016) data.

Table 17. Sheep price correlation across selected reference markets

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Note: * Denotes 1 percent significance level.

Source: Authors’ calculations based on SIM-Bétail Niger (2016) data.
References


WFP, SIMA, IRC, Save the Children, ACF, and OXFAM. 2016. “Lake Chad Basin Crisis Regional Market Assessment Preliminary Observations.” Dakar, Senegal: WFP, SIMA, IRC, Save the Children, ACF and OXFAM.


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