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Diminished use of farm inputs and delayed seasonal rains predict reduction in cereal production

A glimpse at cash-crop and surplus producing areas in Western Ethiopia

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1 Introduction and background

Following a hike in market prices as a consequence of the 1999 drought, since December 2000 cereal wholesale prices have experienced a depression well below the average or even the previous registered minimum prices for the last eight years (EC-LFSU & WFP, 2002). Although prices have experienced an upward trend during the last 3 months, the situation remains very worrying, particularly for maize, since production costs remain above market prices.

The main reasons that led to the cereal price depression are various. First, the local market was oversupplied following the increase in national grain production resulting from the success in implementing the agricultural extension programs through which the use of fertilizer and improved seeds was advocated and supported (Asfaw, 2001). However, this national production increase was not accompanied by sufficient mechanisms¹ to support and stabilize cereal market prices. Immediately after the harvesting season of the better than average 2000 and 2001 crop production, farmers flooded the local markets with their cereal unable to keep stocks for sale at a later date. This pressure to sell was generated by the urge to liquidate various financial and social obligations, such as land-income revenue, repayments of debts incurred to obtain the extension packages, or to escape from ever increasing interests on unpaid loans.

While this boost in domestic food production has enabled the country to substantially reduce its food gap at national level, abated purchasing power of both traders, in surplus producing areas, and the population at large² has also contributed to this substantial cereal price depression from which 18 months later markets have barely rebounded. Also, good

¹ Government and donors have responded with actions that could have helped the stabilization of cereal prices, including grain purchase from surplus producing areas implemented by EGTE, grain purchase by cooperatives, donor funded procurement of cereals as food aid on the local markets and a reduction in food aid imports. As such, 787,515 Mt of cereals were purchased by various International-, Governmental-, and Non-governmental institutions in the last 6 years in Ethiopia, with a notable increase in 2000 and 2001 with 197,950 Mt and 234,370 Mt purchased respectively. For 2002, the joint EC/LFSU-WFP Cereal Availability Study assessed that 493,697 Mt of maize, wheat, and Sorghum were available for local purchase in 20 of the cereal surplus producing zones (EC/LFSU-WFP, 2002). Furthermore, the Oromiya Regional Government has contracted a 47 million ETB loan to purchase cereals at an inflated price to support cereal market prices. Although this initiative can only be praised it comes too late to support prices for the 2001 harvests, since farmers have already sold their surplus stocks.

² The simultaneous decline in national cereal, global coffee prices, and consequently livestock prices has reduced the population's income and purchasing power. The financial means of the traders has diminished since they also provide loans to farmers in exchange of part of the harvest. With the market price depression, traders have not recuperated their speculative investments.

national grain productions in Sudan and Kenya and the closure of the Ethiopian-Eritrean border³ have limited export possibilities to neighbouring countries.

1.1 Objectives and methodology

The present field mission report is part of a broader forthcoming analysis the UN-EUE is undertaking to study the impact of the reduction of wholesale cereal market prices on the national food production and on livelihoods of farmers. Also, reports of reduced use of farm inputs with potential negative consequences on the future national cereal production induced the UN-EUE to field a mission to maize surplus producing areas of western Ethiopia, maize prices being the most affected by this depression.

The mission consulted primary and secondary sources to collect data related to the set objectives. During the field visit, members of the Bureau of Agriculture (BoA) of the zones visited (Jimma, Illubabor, East Wellega, and West Shewa) and farmers whom are most affected by the low maize price situation were interviewed. The mission also reviewed existing documents related to the drop in cereal prices.

2 Present situation in Western Ethiopia anticipates substantial reduction in cereal production

2.1 Maize prices remain low and do not cover costs of farm inputs

Maize, together with teff, remains the preferred crop in the zones of the West (Jimma, West & East Wellega, West Shewa) as well as the central parts of the country. However, maize is also the crop requiring the most inputs and thus financial investment. To plant 1 hectare of maize a farmer will have to invest approximately 600 ETB for the purchase of 25kg of maize improved seed at 130 ETB, 100 kg of each Di-Amonium Phosphate (DAP) and UREA⁴ fertilizers at 280 ETB and 218 ETB respectively. Such investment combined with adequate rainfall, land preparation and seed variety should provide for a yield of over 5,000kg/ha. In comparison, a farmer can also use either 2nd generation hybrid seed or indigenous seed without inputs which will yield between 1,300kg/ha and 2,000kg/ha, i.e. only 1/3 of the yield expected when using improved farm inputs, assuming adequate rainfall and land preparation.

However, with the revenue price for farmers having fetched as low as between 15 to 20 ETB per 100kg from November to March 2002, period during which all farmers sold their harvested stocks, the costs of inputs was higher than the price obtained for the sold production. Farmers have struggled to repay the loans they contracted for the purchase of the inputs and are not willing any longer to risk and commit to a dangerous financial venture. Although lately market prices have increased to upwards of 40 ETB per 100kg, this has not convinced farmers to invest again in farm inputs, even though they fully recognize the increased production such inputs result in. Furthermore, even with the limited price rise market prices remain below production costs.

³ Humera, in West Tigray, is a cereal surplus producing area that has been unable to adequately market its production since the closure of the Ethio-Eritrean border, Eritrea being the areas main outlet, and that transportation each to observe of the ethio-eritrean production since the closure of the Ethio-Eritrean border, Eritrea being the areas main outlet, and that

transportation costs to chronic food insecure areas remains uncompetitive.

⁴ Urea is a fertilizer that contains Nitrogen.

The figure below, "real retail prices of white maize in Nekempt: 13 months trend and long term monthly average", shows the variations maize wholesale prices applied by traders⁵ in Nekempt have experienced during the last 13 months. These prices indicate a drop of at least 50% below their historical averages⁶.



Real Retail Prices of White Maize in Nakempt: 13 Month Trend and Long Term Monthly Average

(Source: FEWSNET Ethiopia)

2.2 Pressure to repay credits impacts on farm input use and induces asset depletion

For the past 7 years the agriculture extension program, implemented through the Ministry of Agriculture until 2000 and pursued at regional level afterwards, has obtained great

Year	Plots ($\frac{1}{2}$ Hectare)	Yield (Mt)
1995	600	879
1996	23,258	28,024
1997	28,258	34,262
1998	98,929	94,690
1999	137,252	126,428
2000	157,830	149,317
2001	133,017	123,772
2002	94,964 (planned)	

success in carrying Ethiopia to improved food selfsufficiency. The participation of farmers into the scheme has increased steadily through the years. The chart to the left demonstrates the augmenting participation by farmers of East-Wellega zone between 1995 and 2001. For this year however, the BoA of East-Wellega zone had already reduced the number of planned plots ($=^{1}/_{2}$ a hectare) to be served through their packages for all crops combined from 133,017 plots in 2001, to 94,964 plots for this year,

out of which 32,021 plots are planned for maize. This target will not be reached. The participation for maize plots has already dropped by 88% to about 4,000 plots, and packages for other crops also lack interest with farmers unable and unwilling to undertake farm input investments.

⁵ Maize wholesale prices applied by traders are of course higher than the prices per 100kg received by farmers during the same period. This explains the discrepancies from 15 to 20 ETB/100kg to farmers compared to 30 to 40 ETB/100kg for traders for the same month.

⁶ One should highlight that although it is the favoured crop in western Ethiopia, maize also carries the most volatile market prices.

For as long as debt from previous years had been paid off, farmers were able to obtain adequate improved seeds and fertilizer with flexible payment modalities depending on the financial capacity of each farmer. Either 100% cash payment on package delivery, or 50% down payment and 50% payment after harvesting, or 100% payment after harvesting. An annual interest of 10.5% was included upon repayment.

Whereas the loan repayment performances in previous years were upwards of 95%, this percentage has substantially diminished following the last harvest season. The BoA of Jimma zone reported a repayment performance of only 80%, as for East-Wellega the repayment performance was between 60 and 70%. For Bako woreda in West-Shewa, the repayment performance was as low as 20% at the time of the visit, clearly demonstrating the stress and pressure farmers have had to endure to ensure, or fail, to repay their loans. This asset depletion further exacerbates the level of poverty many parts of the rural population already find themselves in, and could further lead to localized conflicts in the most affected or more recalcitrant areas.

The struggle farmers have encountered in repaying their credits and loans has compelled them to sell part of their assets, household items, livestock or even oxen. The increase in number of cows and oxen offered for sale on the local markets combined with a reduction in income and purchasing power results in substantial price drops for those animals over the last two years. Whereas an average size oxen fetched around 1,300 to 1,400 ETB two to three years ago, a farmer will only get about 700 ETB for a similar animal. An equal 50% price reduction can be noted with cows from 600/700 ETB to 250/350 ETB. However, prices for goats and sheep have remained stable since their prevalence on markets is less.

2.3 Delay in rains and lack of availability of traction animals reduce planted surface

Approximately a month delay in the seasonal precipitation combined with the reduction of available oxen for ploughing seriously hampered the land preparation process undertaken by farmers at the onset of the rains. This will warrant for a reduction in planted area. For example, whereas the BoA of Jimma zone indicated that the planting surface for maize last year was of 29,500ha, this year it would drop by about 30% to around 20,000ha. Although part of this reduction in maize planted surface is accounted for through farmers substituting maize with other crops such as teff, sorghum or haricot beans, the overall production surface will remain lower than last year. Various farmers, with larger than average land holdings, confirmed their incapacity to plough all of their land due to the lack of availability of traction animals. Farmers who had to sell their oxen are now left with difficulties to prepare their landholdings. Consequently, some farmers are now forced to share and combine oxen for ploughing. Though other animals such as horses or donkeys could be considered for land preparation, this is not viable for both cultural and animal strength reasons, only oxen being strong enough to plough through the heavy soil. In an attempt to increase the planted surface, some farmers even resorted to ploughing by hand.

2.4 Reduction of use of improved hybrid maize seed

With the increased use of scientifically generated hybrid seeds over the last 7 years, maize mono-croppers have nearly "lost" their own indigenous local seed varieties and its availability on local markets and stores has nearly disappeared. Therefore, the cereal market price depression, and the resulting inability to purchase or unwillingness to contract loans to obtain the necessary inputs, has led the majority of maize producers to plant 2rd

generation⁷ hybrid seeds with limited quantities of fertilizers. However, with the delays in seasonal rainfall and the resulting shortening of the crop-maturing period, a minority of farmers otherwise running the risk of their crops not reaching maturity were prompted to purchase new 1st generation hybrid seed, not necessarily with the recommended amounts of fertilizers. The Nekempt Seed Enterprise, the main hybrid maize seed supplier of the region, indicated that it had sold 1,150 MT in 2002 down from 2,417.4 and 2,898.4 MT in 2001 and 2000 respectively to Jimma, Illubabor, West & East Wellega, West Shewa and Benishangul zones. Also the use of fertilizer, that is not only applied to improve maize production but also for other crops such as teff, sorghum, barley and wheat, substantially diminished. The visited BoA in Nekempt reported an expected reduction of 50 to 70% in total quantity of fertilizer used this year compared to last year. Interviewed farmers also indicated they had purchased small quantities of improved seeds and fertilizers, mainly from the market stating: "...whatever quantity they could afford without indebting themselves".

2.5 Substituting maize for other crops and other coping mechanisms

Although maize remains the preferred crop, farmers are reducing the surface planted with maize seed and increase the surface of land holding planted with other crops. This crop substitution is both motivated by the seasonal delay in rainfall as well as to reduce the farmer's dependency on a crop with high input costs and uncertain or volatile market prices. Two options are offered: farmers either plant other cereals such as wheat, sorghum, or barley requiring less or no input investment, or they plant other cash crops such as teff, haricot beans, pepper, or nug (oilseeds) that require little fertilizer application.

However, crop substitution carries limiting factors. Maize is usually planted between 1,500 m and 2,100 m. This altitude is still considered low to midland areas in Western Ethiopia, and may not be a suitable altitude to grow other crops successfully. Farmers may also lack either access to other types of seed or knowledge to plant other crops. Third, maize being a major part of the staple food, producing a different crop might induce people into changing their diets or eating habits. Fourth, farmers wishing to plant sorghum (a deep rooted crop drawing its nutritious elements from deeper below ground) instead of maize will experience increased soil mineral depletion. If the farmer wishes to return to maize production at a latter stage, the soil will require more than normal fertilizer inputs to compensate for the depletion caused by the seasons of sorghum growing. Other crops such as haricot beans fix nitrogen and draw less nutritious elements from the soil, and are thus more propitious to be substituted with. Fifth, the limited number of farmers having decided to purchase improved seed still had to find the correct hybrid seed variety. The seed variety BH 660, most commonly used in the area with a maturing period of 160 days, was no longer adequate for the needs of the farmers. The hybrid variety BH 140, carrying a 20 days shorter maturing period, was now necessary and had to be found on the market place or with the suppliers. Sixth, in order to draw the government's attention to their precarious situation, some farmers have refused to plant maize or substitute maize for another crop to protest for the low market prices.

In rural areas where livelihoods usually are exclusively depending on agricultural production and performance, farmers have also started different and more innovative ways of generating income. In some areas around Bedele town in Illubabor zone the amount of

⁷ Hybrid seeds are supposed to be used only once, new seed being required each year. 2rd generation hybrid seed is expected to lose 30% of its production capacity compared to the 1st generation seed, and will continue to lose 30% of its production capacity every year.

charcoal and firewood for sale has increased. Some farmers have attempted to build a beehive structure to produce honey. Although also an on-farm activity, the production of chat for local consumption has also increased during the last few years. But all this has not proven enough to ensure sufficient income to avoid farmers having to resort to the sale of livestock or household items to ensure the repayment of their credits and loans.

3 Conclusions and Recommendations

Considering the delay of rains at the onset of the planting season, the strong reduction of agricultural inputs for this year, and the reduction in planted surface in western Ethiopia, one can conclude that the cereal production in the western zones of the country will substantially diminish compared to the previous two years, this assuming average climatic conditions for the remaining crop maturing cycle. Since those zones are surplus producing areas their local food requirements should nevertheless be easily covered. But the surpluses these areas will no longer produce will affect the quantities cereal traders will be able to supply to towns and cities or to tenders put out for local cereal food aid purchases.

Such reduction of produced quantities will also lead to a cereal price increase and might very well also once more increase the countries' dependency on imported food aid. Whereas near national food availability had been achieved, the reduced purchasing power of the population at large and internal transport remained the main obstacles to ensure food accessibility. Now both availability and accessibility will become problems again, leading to possible important food insecurity problems in the country.

Farmers clearly indicated that their preferred form of support would be the subsidization of farm inputs or extension packages, and ensure stable market prices that would in turn reduce their loan and credit repayment burden in years to come. However, **t** is now too late in the season to support cereal market prices, since this would not benefit farmers who have already parted with their excess stocks of the 2001 harvest. Also, the opportunity to establish any mechanism to reassert farmers confidence in contracting new loans or credits enabling the use of extension packages, and thus ensure better national food availability for the coming year, has passed. Therefore, existing but insufficient mechanisms that have attempted to stabilize cereal market prices should be further strengthened. Improve the capacity of structures that are identifying surplus productions and ensure the availability of funds enabling rapid interference to maintain market prices remains paramount to ensure price stability combined with national food self-sufficiency for the 2002 and latter harvests.

DISCLAIMER

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4 Annex

Abbreviations

BoA	Bureau of Agriculture	
DAP	Di-Amonium Phosphate	
DoA	Department of Agriculture	
DPPC	Disaster Prevention and Preparedness Commission (Federal Government level)	
DPPB	Disaster Prevention and Preparedness Bureau (Regional level)	
DPPD	Disaster Prevention and Preparedness Department (Zonal level)	
EC/LFSU	European Commission/Local Food Security Unit	
EFSR	Emergency Food Security Reserve	
EGTE	Ethiopian Grain Trade Enterprise	
ETB	Ethiopian Birr (National Currency)	
FEWS	Famine Early Warning System Network	
UN	United Nations	
UNCT	United Nations Country Team	
UNDP	United Nations Development Programme	
UN-EUE	United Nations Emergencies Unit for Ethiopia	
UNOCHA	United Nations Office for Coordination of Humanitarian Operations	
WFP	World Food Programme	

Glossary

Meteorological Drought Defined

Drought is a period of insufficient water initiated by reduced precipitation. The impacts of drought on crops and society are critical but not easily quantified. The result is that "drought" does not have a universal definition. "Meteorological drought" is defined as a sustained period of deficient precipitation with a low frequency of occurrence. While crops may be damaged by lack of precipitation and high temperatures in just a few days, such short periods are not considered to be meteorological droughts. A three-month period is defined by the American Meteorological Society to be the shortest period that can be defined as a drought. (Source: *The American Meteorological Society*)

Ethiopia's Kiremt or Meher Rains Defined

Since Ethiopia is in the tropics, physical conditions and variations in altitude have resulted in a great diversity of climate, soil, and vegetation. Rainfall is seasonal, varying in amount, space, and time. There is a long and heavy summer rain, normally called the big rain or *kiremt*, which falls from June-September. It is followed by the baga hot, dry period from October through February. In some areas there are short and moderate spring rains in March and April known as the little rains or belg. These rainy periods correspond to Ethiopia's primary and secondary agricultural seasons, known as the *meher* and *belg*. (Source: *FEWS*)

Ethiopia's Belg Rains Defined

In spring, a strong cyclonic centre develops over Ethiopia and Sudan. Winds from the Gulf of Aden and the Indian Ocean highs are drawn towards this centre and blow across central and southern Ethiopia. These moist, easterly and southeasterly winds produce the main rain in southeastern Ethiopia and the little spring rains to the east central part of the northwestern highlands. The little rains of the highlands are known as *belg* rains, referring to the second most important sowing season of the region. (Source: *FEWS*)

List of related reports and papers

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