

Andrew Dillon (2007): Measuring the Programme Mali Nord's Impact: An Analysis of Poverty and Food Security in Northern Mali.

Executive Summary

1. This report uses a household economic survey to evaluate the impact of the Programme Mali-Nord's interventions on poverty reduction and agricultural production. The „Etude sur la Pauvreté et la Sécurité Alimentaire au Nord Mali 2006“ interviewed men and women from households across northern Mali in 151 villages from February 2006 to October 2006 in seven cercles (Niafunké, Goundam, Diré, Tombouctou, Rharous, Bourem, and Kidal). The communes in the full sample include Kidal city in the cercle of Kidal ; Bourem, Bamba and Temera in the cercle of Bourem; Séréré, Rharous, Hamzakona, and Banikane in the cercle of Gourma Rharous; Lafia, Bourem-Inaly, Ber, Tombouctou city and Alafia in the cercle of Tombouctou; Tonka, Hangabera, M'Bouna, Essakane, Douékiré, Bintagoungou and Goundam city in the cercle of Goundam ; Arham, Binga, Bourem Sidi Amar, Dangha, Diré city, Garbakoïra, Haïbongo, Kondi, Sareyamou, and Tienkour in the cercle of Diré; and Soboundou, Léré, Banikane Narhawa, Dianké, Fittouga, Koumaïra, N'Gorkou, and Soumpi in the cercle of Niafunké. Of the 2 658 households in the sample, 245 households in the commune of Soboundou, Niafunké that were originally surveyed in a similar study conducted in 1997-98, were resurveyed twice in 2006.

2. The objective of the 1997-98 survey was to understand and develop food security indicators for the International Fund for Agricultural Development (IFAD) by implementing a four round household survey in 10 villages of the commune of Soboundou in the Niafunké district (*cercle*). This 1997-98 survey was collaboration among the International Food Policy Research Institute (IFPRI), IFAD, and the United States Agency for International Development (USAID) and Cornell University to develop food security indicators.

3. The Programme initially became interested in this study after the survey began and preliminary results from the initial stage of data collection were presented at a March 2006 meeting. Capitalizing on the ongoing study, the Programme Mali-Nord and the study explored together the possibility of expanding the survey area to the full Programme Mali-Nord intervention zone and undertaking a thorough evaluation of irrigation interventions on agricultural production and poverty reduction. The number of Programme Mali-Nord households in the survey is 243, which compose about 11% of the full sample.

4. The specific research objectives of the study responded to the funders' interest in a study that could inform them on the impact of their investments. These included the study objectives to:

◇ Measure changes in household welfare with poverty and food security indicators that are attributable to household participation in the Programme Mali-Nord's development interventions using the evaluation technique of propensity score matching.

◇ Measure the direct effects of irrigation investments (PIVs) and lake barrage systems in increasing mean agricultural production and reducing the variance of agricultural returns.

◇ Analyze the dynamics of poverty and food security over the past nine years in the Zone Lacustre regions using comparisons from the 1997 data with the newly collected 2006 data. Why have some households improved and others declined or remained in poverty?

5. To implement this economic survey in the entire survey area described in the first paragraph, coordination of all data collection activities were assured by the Coordinator, a Research Assistant and a Field Supervisor/Trainer. 28 survey enumerators administered the survey throughout the different cercles by working in two person teams. Field work to collect this data was conducted from February to October 2006.

6. Descriptive statistics from the survey indicate that the mean number of people in the households surveyed was 6.24 persons. Rural households have .5 more persons than urban households. 31% of the households in the sample come from urban areas while 69% of the households are from rural areas. Men composed 50.55% of those surveyed, while women made up the other 49.45%. Mean weekly food expenditures were 18 671 FCFA with more than a 5 000 FCFA increase in food expenditures among urban than rural households. These figures roughly correspond to a daily expenditure of a little less than 3 000 FCFA per day. Mean values of durable assets between men and women differ by almost 85 000 FCFA with men owning more durable assets than women.

7. The mean consumption per capita per year for households in the survey is 340 318 FCFA. In the urban sector, the mean consumption per capita per year is 443 141 FCFA. In the rural sector, mean consumption per capita per year is 272 937 FCFA. Mean consumption per capita per year statistics differ between rural and urban sectors with a difference of 170 204 FCFA per capita per year. Poverty measures for the full sample indicate about 39% of the population are considered poor using a one Euro per person per day poverty line. However, using this same standard, almost 53 % of the rural population is considered poor. These statistics reflect the stark underdevelopment of rural populations in northern Mali.

8. Agriculture remains a dominant livelihood system in northern Mali. The composition of crops planted remains predominantly cereals when compared with the 1997-98 period. However, the number of farmers planting irrigated rice has greatly increased with smaller reductions in the number of households planting millet and sorghum. The composition of crops planted by farmers has changed when compared to the 1997-98 agricultural season. This is primarily caused by agricultural investment which has increased the availability of irrigation. 29.6% of households have switched to irrigation since 1997 in the commune of Soboundou, Niafunké. Overall, the percentage of households who have access to irrigation is 21.7% in the full sample of data from 2006. Households with access to Programme Mali-Nord irrigation compose 17% of the population in the cercle of Niafunké, 7% in cercle of Goundam, 21% in the cercle of Diré, 1% in the cercle of Tombouctou, and 11% in the cercle of Rharous.

9. Production per hectare has increased by 3.8 tons in the past 8 years. Households continue to hold multiple plots farming multiple types of crops. The mean household area cultivated is 1.55 hectares. Estimates of production per hectare across the districts (*cercles*) for 2006 range from the highest estimates of 2.5 tons per hectare in

Diré and Niafunké to 1.3 tons per hectare in Rharous and Bourem. In addition to finding significant returns to irrigation investment overall, we find an approximately four-fold difference between small and large irrigation projects with smaller irrigation projects contributing 2.8 additional tons to production per hectare, while larger irrigation projects contribute 0.7 additional tons of production per hectare.

10. After analysis of the data, we find that the significant program evaluation results include:

◇ Households that have access to the Programme Mali-Nord's irrigation investments (PIVs) add 2.4 additional tons of agricultural production per hectare than households that do not have access to these interventions.

◇ Per capita consumption per year is higher in households that participate in the Programme Mali-Nord's programs by 47 778 FCFA than households who do not.

◇ There is a reduction of poverty of 14% linked to the Programme Mali-Nord's interventions after controlling for other factors that also reduce or increase poverty.

11. In summary, this report details the economic survey and methodology through which we have come to the above program evaluation conclusions. The Programme Mali-Nord has had a significant impact on rural farmers in their intervention zone. Our study clearly illustrates the stark differences between rural and urban residents. Hence, efforts to increase access to irrigation for rural farmers using strategies developed by the Programme Mali-Nord are likely to have impacts such as those measured in this report.

The complete study can be downloaded at:

<http://www.mali-nord.de/download/downloads.html>

Carte des Aménagements du Programme Mali-Nord (PMN)

