Fertilizer & Food Security:
IFDC Voucher Program for Farm Inputs[1]

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According to the United Nations, the world's population growth rate has slowed, but it is still growing by about 80 million a year. To feed this expanding population adequately will require gains in output that are only possible with supply of modern inputs (improved seed, mineral fertilizers, and crop protection products (CPPs) to sustain the needed increases in crop yields and, thus, contribute toward global food security. Access to these inputs on a timely basis and at a competitive price is vital to meeting the food needs of a burgeoning population. IFDC programs are geared toward developing competitive markets for inputs.

Input voucher programs for fertilizer and improved seed provide a market-friendly means of providing (1) direct subsidies or crop production credit to subsistence farmers, or (2) income transfer that creates linkages between these farmers and private sector input dealers. Vouchers represent a sustainable market development tool or an emergency marketing tool. An integral part of the voucher programs is the provision of technical assistance to both the recipient farmers and the input dealers.

In Afghanistan IFDC used vouchers as a post-conflict emergency marketing tool for almost 200,000 small farmers. Urea, DAP, and wheat seed (via the International Center for Agriculture Research in Dry Areas [ICARDA]) were provided as a crop production credit with voluntary post-harvest repayments to local (village) administrations for infrastructure investment. This intervention was funded by USAID.

In collaboration with an NGO consortium, IFDC is providing vouchers to 100,000 subsistence farmers in Malawi in return for NGO-supervised work on village feeder roads by voucher recipients. This program is funded by the Department for International Development (DFID) and the World Bank. It represents an alternative to the starter pack programs formerly administered by the Ministry of Agriculture, Food Security and Irrigation and contributes to food security.

In conjunction with the FAO-funded Special Program for Food Security (SPFS) and the Federal Government of Nigeria Project Coordinating Unit (PCU), IFDC is conducting a pilot voucher scheme aimed at demonstrating a targeted fertilizer subsidy mechanism operated through private sector in Nigeria.

These voucher systems illustrate the flexibility of this practical policy tool and demonstrate how food security and market development can be linked with benefits for all participants. For donors they provide a means of supporting both poverty alleviation and sustainable market development with an exit strategy. Some details of these programs are discussed in this paper and future developments and refinements are considered.

Afghanistan - IFDC—Emergency Fertilizer Development Project (EFDP)

Afghanistan is one of the poorest countries in the world and the poorest in Asia. More than a quarter of the children die before reaching the age of five, and adult life expectancy is only 44 years. Even before the Soviet invasion, it lacked development. After nearly a generation of wars, the infrastructure is in ruins. Only 2% of the population has access to health care and 12% to safe drinking water. More than 70% of the population is illiterate, and this rises to nearly 90% among women. Decades of conflict, years of severe drought, governmental mismanagement, and loss of livelihoods and educational opportunities for the Afghan people, especially women and girls, created a social and economic crisis in Afghanistan.

Afghanistan is a mountainous country with a total area of 65.2 million hectares (ha). Agriculture is only possible in the narrow river valleys and plains, and irrigation is dependent on snowmelt and occasional rain. The area that can be cultivated is 7.6 million ha or 11.6% of the total. The area devoted to annual crops is approximately 3.7 million ha, or 5.6% of the total land area. Perhaps as much as 70% of that area is irrigated, but only a small portion is irrigated well. Only one crop is grown annually in most of the area classified as irrigated. The principal food crop in Afghanistan is wheat grown by all farmers. "Naan," a large oval flat bread made from wheat flour, is the most popularly consumed food. Afghans consume an estimated average of 180 kg per capita of wheat annually. In the 1970s, Afghanistan was largely self-sufficient in its food requirements. In the years of conflicts and wars starting in the late seventies, the area and production of wheat declined considerably as farmers abandoned their farms and took refuge in neighboring countries. The average yields of wheat are low—only 1.2 to 1.5 mt/ha in good years. Afghanistan in the past was a primary regional supplier of fresh and dried fruit, nuts, and livestock products.

Several problems hindered the resurgence of agriculture in Afghanistan—insecurity in the rural areas, abandoned farms, lack of field extension, absence of credit, inadequate supply of inputs, un-informed input dealers, breakdown of communications, irrigation systems in disrepair, etc. Although some of the problems could only be resolved in the medium or long term, a few challenges such as the emergency supply of agricultural inputs and development of the agri-input markets could be tackled on a short-term basis with quick results. The programs undertaken to provide immediate impact were designed accordingly.

The EFDP, funded by USAID, was implemented during March 21, 2002-September 30, 2003, to attain the goal of increased food production, food security and stability in the rural areas through two main objectives:

- Arrange emergency supply of fertilizers for needy farmers.
- Develop agricultural input markets.

Several strategies were developed after an initial assessment of the situation, such as employing the services of established NGOs with field organizations, coordinating field activities with local "shura" (town committees), using vouchers to make the intervention with fertilizers to the farmers market friendly, using money changers in the absence of banks, training dealers for developing the agri-input markets, judiciously using media for communicating with several "publics," and employing short-term consultants.

Project Activities

Emergency Fertilizer Distribution—Emergency distribution of fertilizer, one of the main project activities, was undertaken immediately after the project started. During the project period, 16,600 tons of fertilizer was distributed to about 200,000 farming households in Afghanistan. This distribution was carried out using the voucher system to attain the twin objectives of making an intervention in the market with fertilizers for the needy farmers, involving the private sector dealers, and helping the market to grow. Under this system, instead of receiving fertilizer in kind, a farmer received a voucher entitling him to a specific quantity of fertilizer obtained from local dealers and paid for with a voucher. The dealers were reimbursed by the project for the value of the vouchers collected. Farmers were asked to pay the local shura for the fertilizer in cash or kind at harvest time. The shuras used the funds thus generated for local development projects. As an illustration a flowchart of fall fertilizer distribution using vouchers is shown in Figure 1.

The vouchers were distributed to the farmers through NGO partners. The voucher system used in Afghanistan proved to be very useful in making market-friendly interventions. It was a win-win situation for all—the farmers, the dealers, and the local shura. Vouchers were used in several distributions undertaken by the project for these cropping periods:

- Spring Seeded Wheat 2002.
- Fall Seeded Wheat 2002.
- Second Topdressing of Fall Seeded Wheat.
- Spring Seeded Wheat 2003 *(NP Fertilizer Trials)*.
- Summer Crops 2003 *(Including Potash Trials in Vineyards)*.

In addition, improved wheat seed was distributed to the same farmers by ICARDA through the same NGOs as used by IFDC for voucher distribution.

Dealer Training and Development--Although there was a network of approximately 1,400 agri-input dealers, mainly dealing in fertilizers, they had limited knowledge of fertilizers and their proper use and of modern crop production technology and business management. To develop the agri-input markets on a sustainable basis, it was necessary to develop the dealer network. During March 2002-August 2003, 32 dealer-training workshops were held in 22 (out of 32) provinces. More than 800 dealers and 400 NGOs and the Ministry of Agriculture and Animal Husbandry (MAAH) extension department staff were trained in the basics of fertilizer and crop production technology and marketing of fertilizers.

Baseline Surveys and Monitoring and Evaluation (M&E)--In the absence of any reliable data about agriculture or agri-inputs, the project carried out several baseline surveys. In addition, surveys for monitoring and evaluation of project activities and the impact of the project on the farmer's agricultural production were also undertaken. The surveys were designed by IFDC, and actual fieldwork was carried out by the staff of the NGO partners, the MAAH extension department, and IFDC.

Two surveys of the dealer network were carried out; the first was a comprehensive nationwide baseline survey and the second was a limited survey in a few provinces. These surveys provided valuable information about the dealer network and its capacity.

For the purpose of monitoring and evaluation, a post-fertilizer distribution survey was carried out to characterize the farmers that benefited from the programs, success of the distribution in reaching the target farmers, and use of the inputs and impact on farmers' production. This survey was conducted in 12 provinces and covered a sample of 2,210 farming households. The survey indicated that 98% of the farmers had received the inputs, and the farmers felt that when comparing yields from the IFDC/ICARDA package with their own package, the yields were either about the same or 2.08 times higher. When compared with not using any fertilizer, the yields were 1.8-4.5 times higher.

Surveys were also carried out to determine production and productivity. The potential wheat yield was estimated on the basis of detailed crop cut data obtained from the field. Plot demonstrations and trials were also laid out to determine response to the use of proper inputs.

An initial survey was developed to establish the baseline information for implementation of a price monitoring system.

Use of Media and Publications--The media—press, radio, and television—was used judiciously to communicate with the "publics" about the project activities and also impart information about fertilizer use and agricultural technology. A number of charts, leaflets and posters, containing information about the recommended input use and crop production technology, were produced.

Results

- About 16,600 mt of fertilizer, mainly urea and DAP, was provided to about 200,000 needy farmers, including the returning refugees, on an emergency basis in the spring and fall 2002 seasons and in the spring and summer 2003 seasons in 13 agriculturally important provinces of the country.
- Of the total, 900 tons of fertilizer was distributed for crops other than wheat and 15,700 tons was for wheat. The estimated benefits were:
  - 15,700 tons of fertilizers used on wheat is estimated to provide an incremental yield of 78,500 tons of wheat grain (1 kg fertilizer = 5 kg additional grain); this is enough to provide food for about 460,000 Afghans for 1 year.

- 900 tons of fertilizer used on crops other than wheat is estimated to provide an incremental 4,500 tons of these high-value crops; this is a net increase in the gross revenue of the farmers equivalent to about $2.25 million, assuming the average crop price at $500/ton.

- About 800 agri-input dealers were trained in basic product knowledge, crop technology, and marketing and business principles in 32 training workshops held in 22 of 32 provinces.
- Through the distribution of crop technology leaflets, brochures, and charts and the conduct of field days at several demonstration plots, modern agricultural crop production technology has been transferred to a large number of farmers.
- Wheat yields of the recipient farmers (seed and fertilizers) assisted by extremely favorable weather conditions, averaged 4 tons/ha although there was considerable variability.
- Village and town committees (shura) used the generated funds for repairs of local roads, irrigation channels, and other urgent needs.
- Project spending of about $0.9 million for local staff salaries, transportation, etc., contributed to the local economy and produced a multiplier effect.
- The energizing and training of the dealer network and a number of other factors led to a 50% increase in fertilizer consumption from 170,000 mt in 2001/2002 to 255,000 mt in 2002/2003.

Malawi - The Sustaining Productive Livelihoods through Inputs For Assets (SPLIFA)

The SPLIFA project is funded by DFID and the World Bank and jointly implemented by IFDC, Africare, CARE, Emmanuel International (EI), and Save the Children US (SCF US). It aims to improve the food security status of 100,000 smallholder farming families in Malawi through the provision of fertilizer and improved seed, greater access to services and entitlements, improvement of rural feeder roads, and new methods of welfare transfers, particularly via the private sector.

The 2002 food crisis demonstrated that Malawi has not achieved sustainable food security. The challenge of food security is compounded by environmental degradation that results from nutrient mining (Figure 2) of the soils and a high incidence of poverty. More than 60% of the population is estimated to live below the poverty line. The prevalence of poverty is a significant constraint for small farmers to invest in technologies that enhance crop productivity. Such technologies embody the use of improved seed, fertilizers, CPPs, and adequate water. To assist farmers in acquiring these technologies, the Government of Malawi (GOM), in collaboration with donors, has tried several instruments including the Starter Pack (SPS) and the Targeted Input Program (TIP). However, due to a lack of longer-term secured funding, these programs have not been consistent and sustainable and have introduced uncertainty in the market environment. Moreover, these programs have relied on public sector-managed *ad hoc*

distribution systems that retard the development of input markets in rural areas. Hence there was a need to introduce a new mechanism that can simultaneously develop input markets and address poverty alleviation in rural areas.

Poverty is manifested through the lack of purchasing power in the hands of the poor. If the poor farmers are endowed with purchasing power, they can easily participate in the marketplace. Otherwise they remain *excluded*. One way to overcome this problem is to develop a system that parallels the food stamp program in the United States. The food stamps have the same purchasing power as currency and are easily exchanged for food. Similarly, if the input vouchers are prepared and given to the poor, then they can use such vouchers for purchasing inputs (Figure 3). Each voucher has a face value of a specific quantity of inputs for which a farmer can exchange it. Thus, rather than receiving inputs in kind, poor farmers are given vouchers in return for a specified amount of work on rural feeder roads. This work is organized and supervised by the NGO consortium, and the vouchers are exchanged for inputs. The dealers who accept these vouchers are reimbursed in cash by the authorized bank or the project entity. The advantage of the voucher system is that it strengthens the development of dealers in rural areas because once the dealers know that poor farmers have purchasing power, they can stock their stores with the necessary inputs required by farmers.

IFDC and the NGO consortium implemented the voucher system in 8 districts for 30,000 smallholder farmers in 2003 and extended this distribution to 70,000 in 2004. The farmers were selected from the existing TIP list, in consultation with the Village Task Force (VTF), NGO, and the Extension Department of the Ministry of Agriculture, Irrigation and Food Security (MoAIFS). The village headmen had the final approval in selection of individual farmers. Each farmer received a voucher entitling him or her to a 50-kg bag of urea and 10 kg of hybrid maize seed. Originally it was intended to also provide a 25-kg bag of DAP, but this was eliminated as donor funds were unavailable. To ensure the efficient operation of the voucher system, training programs were organized for farmers, dealers, NGOs, VTF, and MoAI staff involved in the program. Each group was fully trained to handle vouchers and related transactions in a successful manner. Training sessions dealt with both technical and administrative aspects of the voucher system.

IFDC procured the required inputs through a tender to private sector importers and distributors, and products were delivered to specified dealers. Upon cashing in the vouchers, the dealers received a handling commission of 5% of the market value of the inputs exchanged for vouchers.

The value of the SPLIFA inputs package was 2,800 Malawi Kwacha (MK) for 24 work-days on the feeder roads, equivalent to 116 MK per day. This compares to the minimum average family requirement of 83 MK and was equivalent to the highest daily wage rate paid for public works in 2003 in Malawi.

A baseline survey and semi-annual follow up surveys of participating dealers are conducted to measure the impact on this group of beneficiaries.

Farmer monitoring is carried out on a quarterly basis to provide detailed insights into the following areas:

- The suitability and effectiveness of agricultural inputs as welfare transfers compared to cash or food in ensuring household food security and helping households to stabilize their livelihoods.
- The effectiveness of "self targeting" and improvements that can be made to targeting methods to minimize inclusion/exclusion error.
- The impact that improved roads have on the livelihood of people living in villages served by the roads.
- The effectiveness of small-scale private retailers as a medium of inputs distribution and information transfer.

Results

- Seventy-one dealers were trained on the voucher system in 2003, and there was an almost zero incidence of fraud on all vouchers. One dealer sold inputs and has been prosecuted and blacklisted.
- There was 100% accuracy in input distribution to dealers.
- Sixty-eight participating dealers received a commission, and 70% re-invested this in their business.
- Dealers discovered that when all vouchers were distributed in a district at one time, there was a strain on the dealers to verify beneficiaries. It was recommended that voucher distribution be staggered over time.
- A coping strategy index was used to measure food insecurity.
- The targeting system to identify beneficiaries was deemed to be fair by the beneficiaries, and one-half of the beneficiary households had access to food aid compared with 11.3% for non-beneficiary households surveyed.
- Forty-five percent of beneficiary households were headed by women, and these were consistently worse off than male-headed households.
- The impact of the work programs was more severe on women than on men because the women had no voice regarding work hours and other norms required.
- Although women mainly said that they could cope, they requested either cash or food in addition to inputs.
- Only 4.3 % of all beneficiaries reported any fraud; 100% of women and 91% of men found inputs readily available.
- The average distance from farm to dealers was 8.03 km vis-à-vis the target distance of no more than 10 km.

- The surveys found that there could have been improvements in timeliness and in the technical information supplied. Requests were also made for a starter fertilizer to be included in the inputs package.

Nigeria

The Federal Government of Nigeria (FGN) supports subsidizing of fertilizer for smallholder farmers. In 2003 approximately 120,000 tons of fertilizer was procured from private sector importers and distributed to all states for sale at 25% below the prevailing market prices. At the state level allocations were made to Agricultural Development Projects (ADPs) and state-owned blending plants for sale to farmers. There was little transparency in the distribution, and there is anecdotal evidence that the FGN was often not recompensed by the ADPs or state blending firms. In 2004 the FGN announced that 240,000 tons of fertilizer would be subsidized at a rate of 25%. This would represent about 30% of the total forecast demand in 2004. Continuation of this subsidy system is disruptive to the development of the private-sector market network in Nigeria and does not ensure that the beneficiaries are smallholder farmers.

IFDC completed a USAID-funded agri-input market development project in Nigeria. The Developing Agri-Input Markets in Nigeria (DAIMINA) Project operated in Kano, Oyo, Bauchi, and the Federal Capital Territory. The Food and Agricultural Organization of the United Nations (FAO) is funding a Special Program for Food Security (SPFS) in all states. In each state there are three farmer groups that receive subsidized fertilizer and are provided with technical assistance to improve food crop production. This program is supervised by FAO and implemented by the FGN Project Coordinating Unit of the Ministry of Agriculture.

The IFDC DAIMINA Project signed an MOU with the PCU to implement a pilot voucher scheme in 2004 on ten of the SPFS sites in the four states covered by the IFDC project.

Voucher Scheme

The objectives of this pilot scheme were to:

- Ensure that the government subsidy reached the targeted beneficiaries at the right time.
- Demonstrate that the subsidy was successfully administered through the private sector.
- Strengthen linkages between farmers and the agri-input dealers in rural areas.
- Demonstrate the capability of the private sector in the timely delivery of fertilizers at competitive prices.

- Facilitate the government's withdrawal from direct procurement and distribution of fertilizers.

The fertilizer allocated to the PCU/SPFS for supply to SPFS farmers is delivered free on truck (FoT) to the selected dealers, trained by the IFDC project. Approximately 65 tons per dealer is being delivered.

A list of SPFS farmers eligible for subsidized fertilizer is provided by SPFS to the dealers. IFDC and SPFS staff conducts training meetings for the farmers and dealers at each site. The farmers are assigned to the dealers for provision of fertilizer and other inputs and provided with vouchers. Farmers take their vouchers to their nominated dealers, sign or mark their voucher in the presence of the dealer, and purchase their fertilizer allocation at 25% below the market price plus a service charge of 5%, which is retained by the dealer. All sales are on a cash basis with receipts issued by dealers. Dealers receive technical advisory materials for handout to farmers at the time of purchase.

The dealers are required to make 50% payment to the PCU at the time of delivery and 50% 60 days after delivery. Commercial interest rates are applied for overdue accounts, and the PCU/SPSF can take possession of unsold fertilizer and charge for transport and handling costs.

Dealers are required to maintain full records of stocks and sales of subsidized fertilizers on a daily basis and allow IFDC/SPFS staff to check vouchers against these records. Monitoring and evaluation will consist of surveys to compare all input sales of participating dealers with their sales in the previous year and against non-participating dealers in the same districts. SPFS will monitor yield data from participating and non-participating farmers.

Results

Early indications are there has been 100% repayment by dealers to the PCU.

Costs of Voucher Programs

The implementation costs for the project in Afghanistan were approximately $8/farmer. In Malawi the average cost was $11/farmer, excluding the costs of supervision and materials for road construction and maintenance in year one. However, the cost is expected to be only $5/farmer in year two with a larger number of farmers. The improved production in Afghanistan provided a four-fold return on investment and a lower cost compared to supplying food aid. Large-scale implementation of voucher systems can probably reduce the cost to $3-$4/farmer.

Exit Strategies

The voucher schemes improve access to inputs and linkages between farmers and input dealers. The dealer business and technical skills are improved through training, and the technology packages made available to farmers assist in improving farm production and food security.

Depending on the circumstances, the improvements in farm production must be matched by improvements in output marketing. This can be achieved through the introduction of collective marketing of surplus production and crop diversification.

As farm incomes increase, the value of vouchers can be gradually reduced to zero or used for crop production credit or revolving funds.

Early indications are that vouchers provide flexible interventions that reduce risk in developing markets for the most food insecure and nascent input dealers. They can provide a flexible means of providing crop production credit by donors with benefits for both food insecure farmers and agri-input dealer networks.

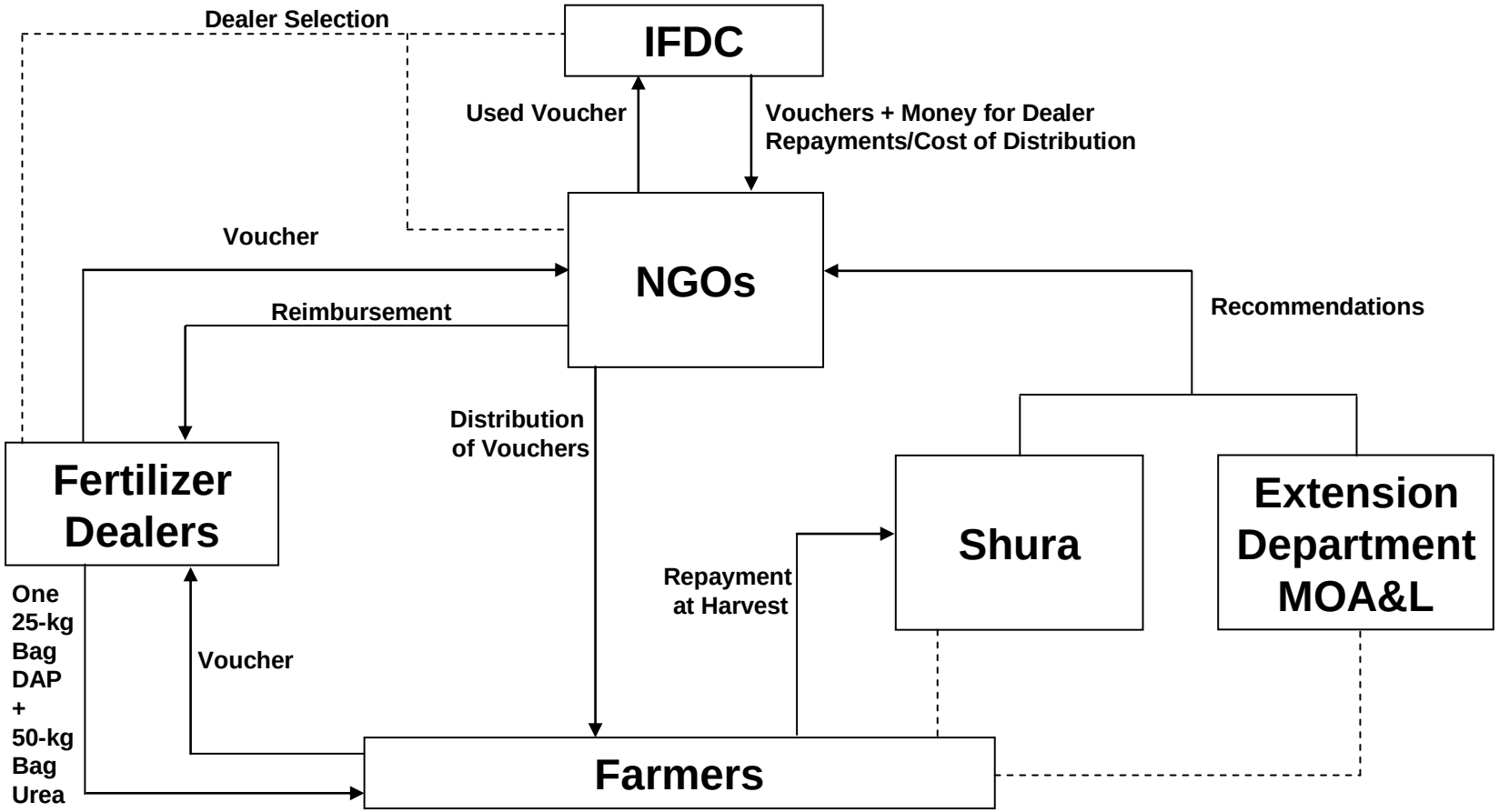

Figure 1. IFDC Afghanistan – 2002 Fall Wheat Fertilizer Distribution Plan (3,900 mt DAP and 7,800 mt Urea)

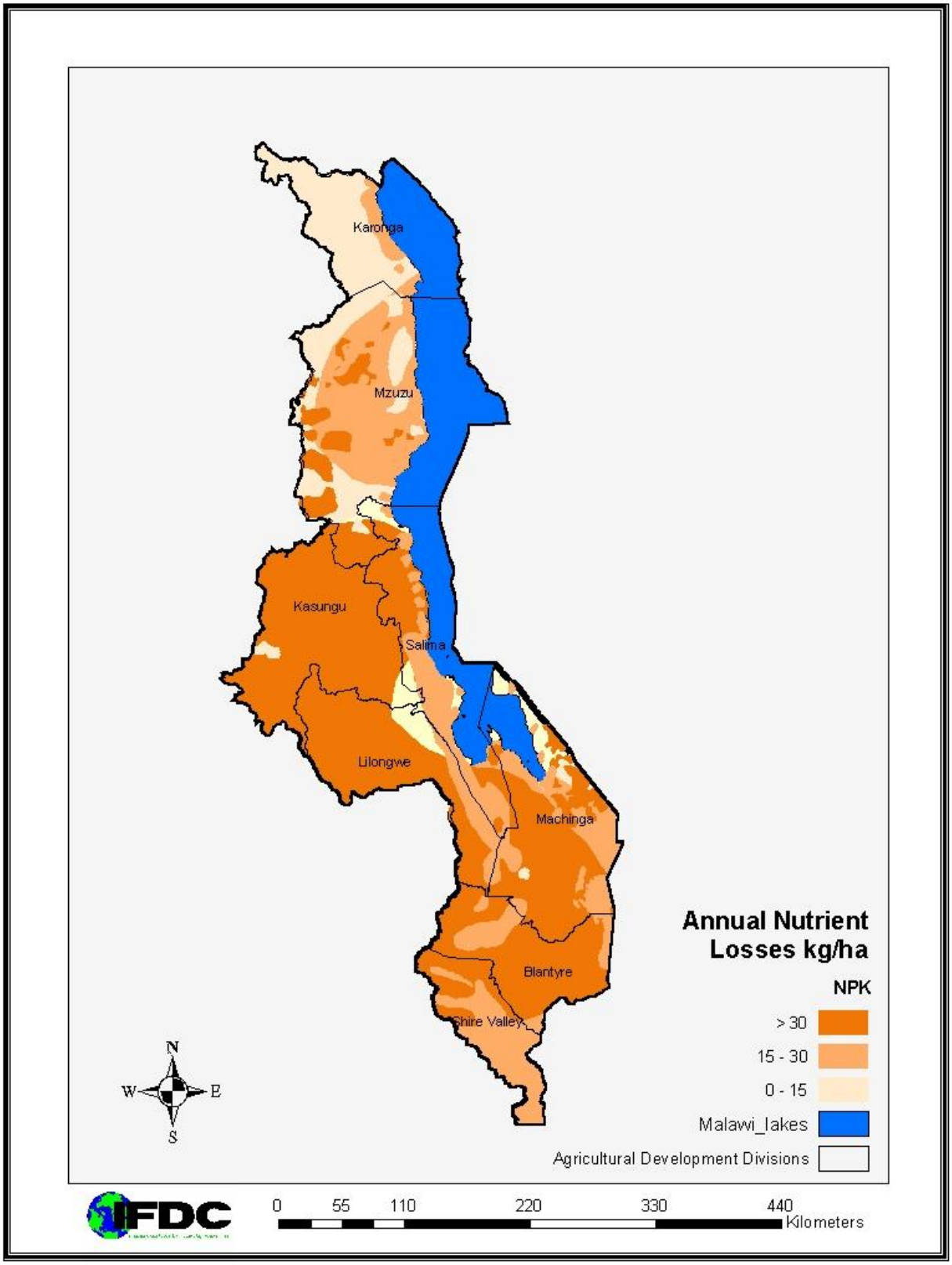

Figure 2. Average Annual Nutrient Depletion (NPK) in Malawi (Year 2000)

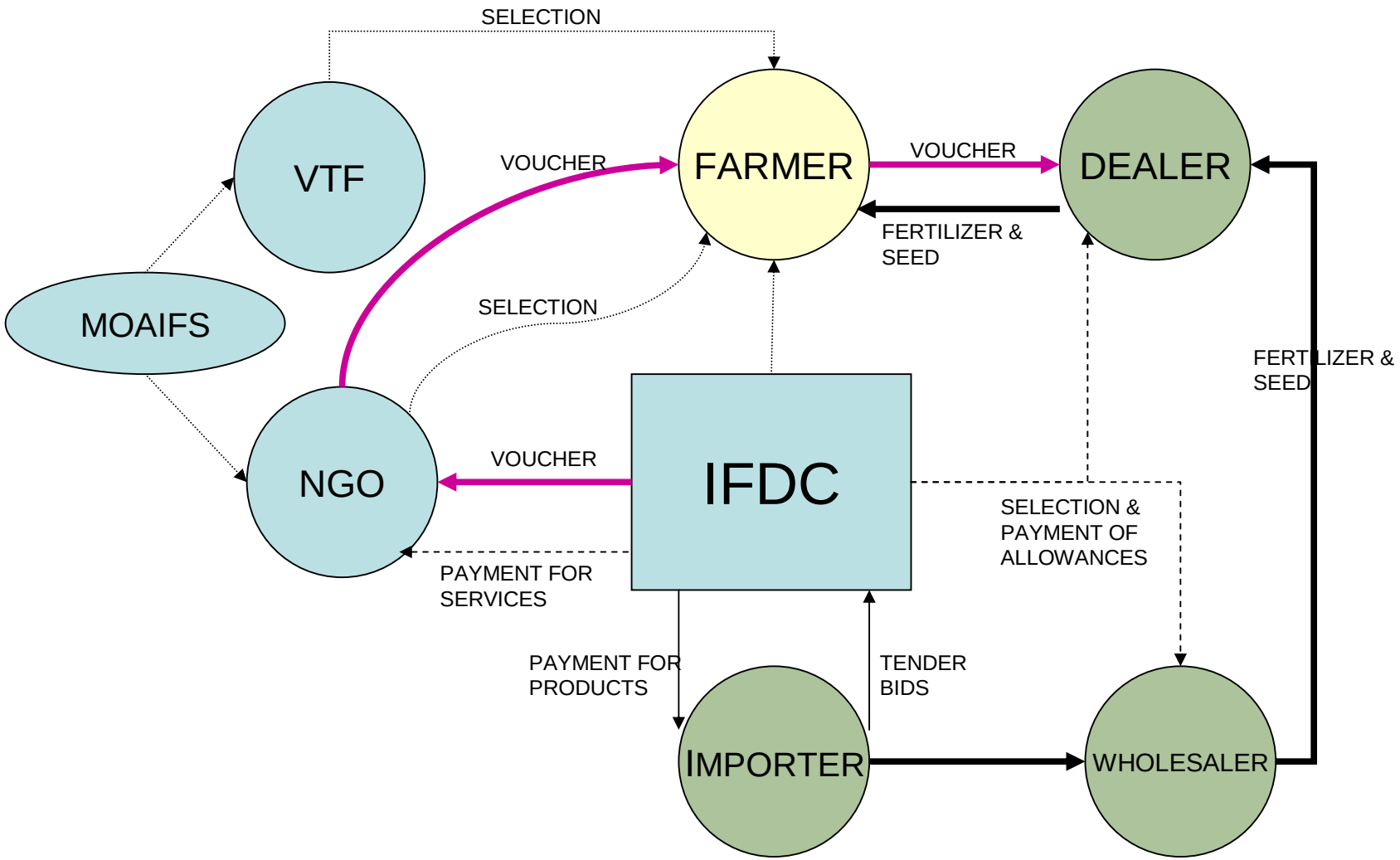

Figure 3. The SPLIFA Voucher System in Malawi