

**IMPROVING THE EFFICIENCY OF TARGETED FOOD PROGRAMS  
IN BANGLADESH  
AN INVESTIGATION OF THE VGD AND RD PROGRAMS**

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## **ABSTRACT**

In this article, we report the results of an investigation aimed at analyzing the efficiency of two large targeted food programs in Bangladesh, (the VGD and the RD programs, of the World Food Program) in increasing the income and the consumption of grain of the intended beneficiaries. We found that these programs are not efficient in delivering food transfers, since the difference between the amount of resources allocated (in cash and kind) and the amount of resources (in cash or kind) actually received, referred here as leakage, is positive and sizable. In the VGD program approximately 94 percent of the food is received by poor women, even though they are not all intended beneficiaries. In the RD program, instead, leakages are more sizable. They are between 16 and 26 percent and they are allocated among officials, administrators and local contractors. Possible measures to reduce leakages and increase the efficiency in these programs are outlined.

## **INTRODUCTION**

Since the early 1990's, Bangladesh has channeled a large amount of resources, financed by food aid provided mainly in the form of wheat by various donor agencies, into a variety of distribution programs. In the early 90's Bangladesh moved from a distribution system largely based on a rural ration program to a system based on targeted programs to the poor (Ahmed, 2000).

Targeted programs are generally considered to be effective in transferring benefits to the needy and reducing leakage of benefits to the non-needy, provided that the costs associated with targeting are not very high. They are also thought to be more cost-effective in transferring income to the needy than untargeted programs (Ahmed et. al., 1998). In Bangladesh many progress have been made in this respect, but unfortunately not all resources reach the intended beneficiaries.

In this article, we report the results of an investigation aimed at analyzing the effectiveness of two large targeted food programs, (the Vulnerable Group Development (VGD) and the Rural Development (RD) program, of the World Food Program (WFP) in increasing the income and the consumption of grain of the intended beneficiaries. We believe this analysis will provide meaningful insight and methodological support into the problems related to the delivery system of similar programs and it will help in improving program design to minimize leakages and improve the efficiency in order to maximize the amount of resources transferred to the poor.

### ***The VGD program***

The VGD is a national targeted food aid program aimed at improving the lives of the poorest and most disadvantaged women in rural Bangladesh. It started in 1975 as a relief

program and it has evolved into a program that provides training and saving opportunities that can have a lasting impact on the lives of program participants.

VGD beneficiaries are poor women who are selected directly by program administrators. Every beneficiary is on the program for 18 months and receives 30 kg of wheat (or a combination of wheat and rice) each month<sup>1</sup>, plus some cash savings (deposits are made in a bank, which beneficiaries can access at the end of the program) and some training. The actual training components vary as different contractors implement specific training projects.

### ***The RD program***

The RD is a self-targeting public works program in Bangladesh which provides employment remunerated with grain and cash for the poor in rural areas<sup>2</sup>. Between 1996 and 1998, the RD program provided approximately 200,000 MT of wheat per year for projects for building public infrastructure and developing other natural resources to benefit the rural poor (WPF, 1998). Distinct project activities were promoted in the water sector, for the rehabilitation of embankments and canals; the road sector, for the improvement of rural roads; the forestry sector, for planting trees and for creating assets for the poor; and the fishery sector, for the development of water bodies to expand the fishery programs (WFP, 1998).

In this paper we concentrated on the analysis of earth moving projects in the water and the road sectors. These projects were implemented and supervised with the help of the Bangladesh Water Development Board (BWDB) under the Ministry of Water and the Local Government Engineering Department (LGED) under the Ministry of Local Government<sup>3</sup>. In

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<sup>1</sup> This was equivalent to less than \$5 in 1998 at the exchange rate of 48 Tk/\$.

<sup>2</sup> This is a self-targeting program because the beneficiaries select themselves into the programs.

<sup>3</sup> Both WBDB and LGED also implement other similar projects in the water and the road sector that are sponsored by other government agencies and CARE

1997/98, approximately 157,000 MT of wheat were allocated to these project, which accounted for more than 50 percent of all the projects carried out by LGED and BWDB and for almost 30 percent of all food aid for development projects allocated to the country.

These are programs aimed at supporting the income and consumption of the most vulnerable groups in society and reduce poverty in two immediate ways -- by providing paid work to poor people and by generating infrastructure which can increase access of poor people to employment opportunities (Ravallion, 1998, Subbarao, et. al., 1997). They can also help stabilize seasonal fluctuations in income generation and employment in rural areas dependent on agriculture (Deolalikar 1995; von Braun, et al., 1992), since they are implemented during seasons of low labor demand. If theses programs are effective, they can play an important role in reducing hunger and discouraging the sale of productive assets for mitigating basic needs (Adato et. al., 1999).

### ***Objectives of the investigation***

The main purpose of this study is threefold. First, we would like to generate an estimate of the extent of the inefficiencies existing in these two types of targeted programs. Second, we want to test a methodology that can be used to analyze them. Third, we would like to define possible monitoring mechanisms that could be implemented for improving the effectiveness of these targeted food programs.

In the analysis of program inefficiencies we looked at three specific issues. First, we examined the *efficiency of food delivery*, defined as the difference between the amount of resources (in cash and kind) allocated for and reportedly paid to program participants and the amount of resources (in cash or kind) that they had actually received, referred here as

*leakage*<sup>4</sup>. Second, we calculate the *food transfer ratio*, defined as the value of grain received in kind as a share of grain allocated for payment to program participants. Finally, we tried to find out whether the households who receive grain sell it instead of consuming it. To look at this issue we calculate the *food consumption ratio* as the share of food actually consumed out of the total value of grain received by program participants (for the VGD program).

The analysis for this investigation included a series of activities including analyses of current documents, evaluations and reports; structured interviews with government officials, members of the selection committees, government officials and other implementing agents; group interviews with beneficiaries; and finally structured interviews of beneficiaries using short questionnaires<sup>5</sup>.

The fieldwork was carried out in March-April, 1998. The analysis of the VGD was carried out in 10 Union Parishads (UPs) of 5 Thanas in 4 districts. The analysis of the RD program was done at five sites of different Thanas. Therefore, we need to be careful in the interpretation of the results. In other words, we cannot supply statistically significant estimates of the efficiencies of the system. Nevertheless, the findings can be regarded as being indicative and the methodology can be used for pursuing further, more in-depth investigations in the future<sup>6</sup>.

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<sup>4</sup> The leakages covered in this paper do not include system losses. These are defined as the losses that occur during the transport, storage, handling of the food from the port to Local Storage Deposit where they are made available for a particular program. Identifying leakage in the form of these delivery costs is an important objective in its own right. However, we are presently interested only in quantifying the resources diverted from the targeted beneficiaries of a particular project from the project site.

<sup>5</sup> A total of 80 questionnaires were administered to women participating in the VGD program covering the VGD selection process, their participation in the program and a detailed allocation of the grain they received. The questionnaire for workers and Sardars (the leader of a work group) participating in the RD projects included questions on the type of work performed, the wage rate received and the allocation of the grain received as form of payment.

<sup>6</sup> It was clear from the beginning of this exercise that collecting the information necessary to carry out this investigation was not going to be easy. The field investigator had to gain the confidence of the people interviewed and had to make sure that they were not being influenced by local officials. Detailed results of the interviews and the group discussions can be found in del Ninno (2000)

Because the two programs are very different from each other, the analyses have been conducted separately. First, we report the analysis of the VDG program, along with the methodological details, then we report the results of the analysis of the RD program. The last section contains a brief summary of results and key recommendations.

## **ANALYSIS OF THE VGD PROGRAM**

In the 1998/99 cycle of the VGD program, which started in January, 1998, a total of 450,000 women were scheduled to participate into the program. This was a moderate increase from the 436,480 women who had participated in the 1997/98 cycle for which the total allocation of grain was 243,000 Metric Tons (MT).

### ***The Allocation of Cards***

In the 1997/98 cycle, the responsibility of central planning of the VGD projects and the distribution of resources was assigned to the Ministry of Women and Children Affairs (MOWCA), which was also responsible for preparing the necessary paperwork for the allocation of cards and the food distribution. At the thana level it is the Thana Nirbahi Officer (TNO), who implements the program in the field, while the executive responsibility remains with the Thana Project Implementation Officer (PIO), who works in collaboration with the Thana Women's Affairs Officer in the 136 Thanas where there is a Women's Affairs Directorate (WAD).

The number of cards allocated to each of the 461 Thanas was determined by WFP according to the food insecurity and vulnerability map<sup>7</sup>, which was prepared by WFP in collaboration with the Planning Commission. Those criteria were designed to address the different needs of each Thana, while still maintaining a minimum allocation for every Thana. The allocation of cards to each UP was made according its vulnerability and population size.

The actual list of the participants in the program was prepared by the Union VGD Women's Selection Committee. This list was then submitted to the Thanas's VGD

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<sup>7</sup> There are a few exceptions to the set criteria. For example, Thanas that had special development programs received more cards.

Implementation Committee, which finalizes it and sends it to the Chairperson of the District VGD Committee (who is the District Commissioner) and the RRD<sup>8</sup>.

The actual selection criteria for VGD beneficiaries are specified in WFP VGD Reports (1997). Preference is given to poor women who are household heads and women who are either widowed, divorced, separated, deserted or who have a disabled husband. Vulnerability of women is measured by a) landlessness or ownership of less than 0.2 hectares (.50 acres of land); b) irregular income or family income of less than Tk. 300 per month; c) lack of reproductive assets; d) women who are daily or casual laborers. Priority is given to women who are physically fit, have the ability to develop their socioeconomic condition and are interested to work in groups. Finally, women who have been selected once as a beneficiary of this project cannot be selected a second time and those who are already members of other organizations or other groups and enjoy the benefits of those projects are disqualified from being considered as beneficiaries of the VGD project.

### ***The Selection Process***

To identify whether the selection of women into the program at the local level was fair, we checked if the women selected were eligible, if they had to pay any fee to obtain the card, and if they had sold the cards to the UP chairperson or other people.

The results from our discussion and our analyses indicate that once the cards were allocated at the local (Union) level, the selection process worked fairly well. The allocation of the number of cards to each Thana, however, is an important issue. In fact, the number of cards allocated is seen very much as one of an array of resources available to alleviate poverty when used in combination with other programs, like the Food For Education (FFE) program, and a way for the UP chairperson to increase their popularity.

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<sup>8</sup> A list of the people participating in these committees is available upon request

We found that 93 percent of the participants in our sample thought that the selection process was fair, whereas 20 percent of the non-participants thought that it was unfair, generally because they had been excluded from the program. In general, the consensus was that poor women had been selected to participated in the program even though there were a lot of other poor women who were not selected.

The age of the participants remains to be a controversial issue. While officials recognize the need for older women to receive assistance, the guidelines of the selection process do not encourage their selection as they are probably not able to participate in the training and may not benefit from it. In our sample we found 26 percent of VGD women were over 50 year of age, compared to only 12 percent in the control group.

The analysis of the selection process showed that in the majority of cases, the Union Parishad chairperson and the selection committee were involved in the selection process (69 percent). In only one thana, it was reported that political leaders were involved in the selection and distribution process (Table 1). We also found that 16 percent of the women shared cards<sup>9</sup>.

### ***Delivery of grain***

In the analysis of the “efficiency of food delivery” in the VGD program, we defined leakage as the amount of grain sanctioned that has not actually been received by the beneficiaries. To estimate the amount of leakage, we tried to find out whether or not the participants had received the total amount of grain sanctioned for them. In cases where we found recipients who had received less than the allocated amount, we tried to identify what happened to the missing amount.

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<sup>9</sup> This result was confirmed by the HKI survey, but higher than in the IFADEP-1 project, where only eight percent of the women share cards. The percentage of shared grain was seven percent in the IFPRI survey and three percent in the HKI survey. [ADD CITATIONS]

In the discussions we had with the TNO and other officials at the Thana level, we found that they were very concerned about the delivery of grain and especially about the amount delivered from the LSD. They mentioned this as the only source of leakage.

Throughout our interview period, grain had been delivered twice. The delivery system was not very well organized and the women still were not aware as to exactly how much grain they were supposed to receive<sup>10</sup>. The majority of women received wheat and only a few women received a combination of rice and wheat. From the result of the survey, we found that 12.5 percent of the women received rice the first month and all participants received only wheat the second month (Table 2). On average, women received between 25 and 26 kg of grain a month.

The amount of food grain received by recipients did not vary much by Thana. The quality of the grain was not always good. Almost 70 percent of the women complained about the presence of insecticide (which they could identify from the smell) in the grain received the first month. It may be mentioned that insecticide is often used in storage depots. Over 75 percent of the women thought that the quality of the grain was good in the second month.

In our sample of 10 UPs in 5 Thanas, it appears that women received 85 percent of the grain sanctioned for them. What happened to the remaining 15 percent? About six percent of the total, (from a minimum of four to a maximum of nine percent per Thana) went to the LSD. A small percentage was used for paying chawkidars to help with the distribution process and the remaining nine percent was distributed in small quantities to other women who came to the distribution center at the time of delivery.

### *Consumption of wheat*

Most of the women interviewed did not consume very much wheat prior to being on the program. They consumed only 4.9 kg of wheat per family per month before participating in the program. Given that the ration size was almost 30 kg of wheat, it was not surprising that about 60 percent of the women sold all or part of the grain they had received (Table 3). Approximately 50 percent of the total of the amount of grain received was sold (59 percent the first month and 40 percent the second). Similarly, 60 percent of the women consumed the grain at home. We noticed a marked difference in the allocation of grain between the first and second months. While only 21 percent of the women stored a very small amount of wheat after the first month, 87 percent of them stored 19 percent of the wheat during the second month.

Because the quality of the grain distributed the first month was bad, it provided an added incentive for selling the grain and using the cash for purchasing food (rice), opening a bank account, paying loans, buying chicks and so on. The quality of the wheat was much better the second month. As a result, the amount of wheat consumed or stored for future consumption increased. It is also worth noticing that in the few cases that cardholders received rice, almost all the amount received was consumed and none was sold.

The rest of the grain received by the women was allocated to a variety of purposes. About 17 percent of the women had to “share” grain with other people while receiving the grain (amounting to about 7 percent of the total grain they had received). Some 13 percent of recipients gave some grain to family and friends (which is 2 percent of the total allocation), while some small amounts went to officials as well.

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<sup>10</sup> In response to this problem, WFP put several posters with the information of the program in local areas.

Even though a large quantity of grain was sold, given away or stored, some was consumed at home. In fact, the total consumption of grain increased about 5 percent and went from 43.4 kg to 45.7 kg of grain a month per household, which corresponds to 374 grams of grain per person per capita. The amount of wheat consumed increased from 4.4 kg to 16.5 kg a month, while the quantity of rice consumed decreased from 39.1 kg to 29.2 kg.

### ***Conclusions and recommendations for the the VGD***

Clearly, the VGD program, with only 450,000 participants, cannot by itself make a large impact in the alleviation of poverty in Bangladesh. Given the limited number of poor people who can participate in the program, the allocation of cards among thanas should be viewed as part of a safety net package available at the local level. Therefore, in the allocation process the poverty level of each thana and the level of poverty alleviation programs and resources instruments available should be taken into account. Some special provisions should be made for Thanas that have larger numbers of people who need to receive food assistance.

The selection of women at the local level appeared to be fair. Almost all the women participating in the program were worthy of the assistance. A few of them reported to have paid some fees in order to receive the cards. The only remaining dilemma is the age of the women selected. Younger women are more likely to get more out of the training aspect of the program, while older women might be more in need of food assistance.

In our investigation, we did find that at least 15 percent of the grain allocated did not reach the intended beneficiaries (women who have official VGD cards). We have established that at least six percent was lost to the LSD. The rest of the amount not accounted for apparently went to other poor women who did not officially participate in the program. In addition, 16 percent of the women shared cards with other people.

The practice of reserving some funds for giving small amounts of grain to poor women not participating in the VGD program is very common and it is not bad per se, but if accepted, the process should become transparent. One option is to work in collaboration with other food alleviation channels to provide short-term forms of assistance to women that are not participating in the program. Another option is to reduce the size of the rations and to increase the number of participants.

The VGD program appears to have had a positive impact on household grain consumption. Although poor women do not like to consume any staple other than rice, their consumption of rice declined as it was substituted by wheat. Further studies may be necessary to verify the impact of the grain received on the level of wheat and grain consumption.

Women participating in the program were very grateful and they expected to receive good quality wheat, even though they would prefer to receive rice. Many of the officials as well, starting with the TNO, were concerned with the quantity and the quality of the grain delivered. If the quality of the grain is not good, then not only will the value of the transfer be reduced, it will also be less likely that the women and their families will consume the grain. They will either sell the grain or use it as animal feed. Some officials asked for more supervision and suggested the use of military personnel at the time of grain delivery. They even suggested providing a 30 kg bag of grain to the women sealed with a WFP stamp. The women mentioned that if a relative was present with them at the time of delivery, then they received their full allotment of wheat.

The women participating in the group discussions had very high expectations for the saving and training components of the program. Their major complaint was about the lack of jobs and other economic opportunities and the lack of training.

## **ANALYSIS OF THE RD PROGRAM**

In contrast with the VGD, which is a direct transfer program where the amount of resources allocated to the beneficiaries was fixed, in the RD program payment to workers is based on the amount of work done. Therefore, there should be a direct correspondence for RD projects between the quantity of earthwork required to complete the project, the amount of work done and the amount of foodgrain received by workers. Whenever there is any discrepancy between those figures, leakage occurs and there is a loss in efficiency. Besides looking at this issue, we also researched how payment to workers were actually made. In other words, we investigated whether workers were paid according to the specifications of the project or mostly in cash. Finally, we briefly investigated the allocation of grain received by beneficiaries.

A detailed analyses on leakage in FFW programs, reported in Osmani and Chowdhury (1983), Asaduzzaman and Huddleston (1983) and Nishat and Chowdhury (1983), found to still be relevant in the early 1990s by Hossain and Akash (1993), identified two broad sources of leakage at that time. The first was underpayment of workers, i.e. the amount of payment that workers received was less than the amount they were supposed to receive. The second was padding, i.e. the volume of work that was supposed to be done was estimated to be higher than the amount of work reported completed. The range of underpayment to workers varied between 21 and 26 percent and that due to padding the volume of work completed between 3 and 7 percent, not including any overestimates based on the results of a pre-work survey, since those were not available. Therefore, total leakage on these two counts were at least between 24 to 29 percent.

In order to estimate the current level of leakages and possible ways to reduce them, we tried to identify how funds were diverted and how they were allocated. The list of the sources of leakage includes:

1. Difference between the amount of work done and amount stipulated in the project documents
  - 1.1 Overestimate the necessary amount of work (quantity of earthwork) necessary for the project and the amount of work stipulated in the project documents
  - 1.2 Under-completion of the work required; sometimes the work is not completed yet is reported as having been completed (In some extreme cases, no work is done at all).
2. Over-reporting of the resources allocated to the workers
  - 2.1 There may be a difference between the payment made to the worker for the work done and the wage rate stipulated in the project documents
  - 2.2 The remuneration does not conform to the work norms
  - 2.3 The number of workers reported is larger than the actual number of people employed by the project.
3. Difference between wages paid in cash and market value of wages in kind; at some sites, wheat is sold and workers are paid in cash. If the market price is higher than the standard conversion rate stipulated by the program at the beginning of the project, program officials profit on the price difference.
4. Appropriation of left over funds (allocation of funds above the amount of resources necessary for the completion of the project).

Among the four main sources of leakage listed here, the first two mentioned above are the largest sources of leakage. It is important to note that according to the definition used, it is still possible that individual workers receive a wage higher than the amount stipulated in the contract. Where such phenomena occur, the amount allocated to the individual workers is usually compensated by over-reporting of the number of working days utilized on the project.

Funds diverted and not delivered to the intended beneficiaries can be used for:

1. Compensation for LSD short delivery
2. Expenditure for approval of schemes (Payments to and entertainment of officials to facilitate the approval of one scheme instead of another)
3. Unforeseen project expenses
  - 3.1 Higher than anticipated project costs
  - 3.2 Land compensation
  - 3.3 Additional transportation and delivery costs.
4. Compensation for various engineers from local and central institutions (including LGED and BWDB officials).
5. Compensation for the Project Implementation Committee (PIC) Chairperson or other staff involved, including Sardars.

The implementation process and the possible sources of leakages are described graphically in Figure 1. At the different stages of the determination of the allocation of resources, leakages can occur in the form of overestimation of the work to be done, underestimation of the productivity and discrepancy between official and market price of grain. After the resources have been made available at local level for disbursement and before it reaches the workers, leakages may occur in the form of short delivery, sales of grain at higher market prices, underpayment to Sardars and workers.

### *Estimating Current Leakage*

In order to get an estimate of actual leakage, we compared the total amount of resources allocated with the total amount of resources disbursed, which is equal to the total number of person days times the average wage rate paid and received.

While there is only one source of information for the amount of resources allocated to the project, there are several sources of information that can be used to estimate the amount distributed to the workers. These are based on alternative estimates of the wage rate paid and of the number of person days employed.

Using the information collected from different sources (see Table 4), we obtained four alternative estimates of wage rates:

- the implicit wage rate,  $W_0$  (equal to  $WT_0/ET_0$ )
- the wage rate from the progress report,  $W_1$
- the wage rate reported by the Sardars,  $W_2$
- the wage rate reported by the workers themselves,  $W_3$ .

We then estimated the total number of person days utilized in the project by projecting the data obtained from the progress report ( $L_1E$ ) and the Sardars( $L_2E$ ). Therefore we calculated alternative estimates of total allocation with the variables in hand which reflect alternative estimates of leakage.:

- $W_1 * L_1E$  -- From Progress report
- $W_2 * L_2E$  --From Sardars
- $W_3 * L_2E$  -- From workers and Sardars

The same data was used to derive estimates of the productivity. These are referred to later as  $P_1$ , the productivity implied from the progress report,  $P_2$ , the productivity implied from the reports of the Sardars, and  $P_A$ , the productivity estimated from other studies.

### *Amount of Leakage in the RD Project*

The data needed for estimating the amount of leakages was collected during several field visits and interviews conducted in five sites covering four road construction projects implemented by the LGED and an embankment project implemented by the Water Board department selected from a list of WFP operating schemes in those areas<sup>11</sup>.

Most of the selected schemes were not in very poor areas as classified by the WFP/GOB poverty map. Two of the projects selected were in better off Thanas; the others were in Thanas classified as having moderate, high and very high levels of poverty.

The characteristics and provenance of the workers engaged in the projects and their remuneration varied from area to area (see Table 5). The main difference was between labor hired locally and recruited from outside the area and the type of remuneration received. It was more likely that Sardars hired labor from outside the project area in areas where the local wage rate for agricultural activities is higher. In our study, outside workers were found in three of the five sites. In the site where the wage rate was the highest among the five surveyed, all laborers were hired from outside and some came from as far as 200 km away. In the other two sites, outside workers represented 20 percent and 60 percent of the total work force.

This might be an indication that the number of migratory workers has increased over the years. This hypothesis is confirmed by results of the Work Norm Survey (1997). In fact,

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<sup>11</sup> The detailed list of project sites and their main characteristics are available upon request

the Work Norm Survey found migratory workers present in 16 of the 71 sites they investigated.

**Working hours and productivity.** Working hours ranged from a minimum of 7 hours to a maximum of 13 hours a day. Outside workers worked for longer hours and were more likely to be paid directly in cash.

Estimates of the productivity, reported in Tables 6 and 7 respectively, can give an indication of the quality of the reports from the Sardars. We found that the estimated implicit productivity, calculated using the progress reports, was equal to 2.3 m<sup>3</sup> per day, ranging from a minimum of 1.9 m<sup>3</sup> per person per day to a maximum of 4 m<sup>3</sup> per person per day. The estimate of productivity obtained using the Sardars' reports was higher and it was equal to 2.7 m<sup>3</sup> per person per day.

**Wage payment.** The general impression was that most workers did not know the actual rate they were supposed to receive. While most of the sign boards showed the rates in m<sup>3</sup> and kg, most of the workers interviewed (80 percent) cited wage rates of 42 or 43 kg per 1,000 cft (equivalent to 1.4 and 1.5 kg/m<sup>3</sup>). On the other hand they all had a very good idea of the price of wheat in the market and the prevailing agricultural wage rate in the area. It also appears that when the workers were hired by the Sardars, the workers negotiated a remuneration that included a minimum wage rate and additional remuneration to be received after the measurements were made.

When workers were brought in from other areas, some advanced payment was offered to them for two reasons. One reason was so that the workers' families could sustain themselves in the workers absence (since the worker is often the main earner in the family). The other reason was so that the workers could sustain themselves prior to getting their wages at the end of the month since they had no savings.

It was also not uncommon for the workers to receive only an advance of the payment and they often had to wait until the measurements were taken, and sometimes until the end of the project to receive the final portion of their payment. This aspect of the labor arrangement makes it rather difficult to compare the actual wage rate received. Therefore, some of the comparisons between wage rates and amount of work to be done have to be taken with caution.

In order to compare the data across sites and for different forms of payment we used uniform conversion rates. When we had to evaluate the wages received by the workers (Table 5) we convert the cash given as wages into wheat. In this case, the conversion rate used was 7.5 Tk/kg, which was the official conversion rate between wheat and cash. This was also the conversion rate used by the Sardars to pay the workers. In this case we found that wage rates received by the workers varied between 5.4 kg./day to 8.4 kg./day.

To compare the wage rates with the current agricultural wage rates, we converted the wages received in wheat into cash using the local price of wheat at the time of the investigation. This turned out to be between 8.1 Tk./kg and 8.7 Tk./kg. To further standardize the wages for the amount of work done, we used a common working day of 10 hours. The resulting wage rates varied between 59.1 Tk./day to 69.8 Tk./day (Table 6). The highest wage rate was recorded in the site where the agricultural wage rate was the highest among those surveyed. The rates reported are comparable with those reported in the Work Norm Study (1997). They found that in 1997, when the conversion rate of the wheat was 7 Tk./kg, the average wage rate was 45 Tk./day, if paid in cash and 6 kg of wheat if paid in kind.

**Estimates of Leakage.** Estimates of leakage vary depending on the source of data used. Even when progress reports were used the amount disbursed was less than the amount allocated. In fact, sometimes project managers use the grain received to pay the workers for

the work done and then at the end of the project, when they receive the last payment, they divert it to other uses.

At the first site, the reported productivity was lower than expected. The wage rate reported by the Sardar and the workers were higher than that reported by the progress report. Therefore, using the estimates of the Sardar, which appeared to be fairly reliable and were confirmed by the accountant the amount of leakage in this site was at least 17 percent.

At the second site, workers received more money than reported in the progress report, but less than the amount reported by the Sardar. The main difference between the two reports was the productivity values. In this case we expected higher wages because the PIC hired a contractor to carry out the work. He paid the contractor 31.8 Tk./m<sup>3</sup> (equivalent to 4.2 kg/m<sup>3</sup>). The contractor was supposed to pay the workers 26 Tk./m<sup>3</sup> (equivalent to 3.5 kg/m<sup>3</sup>). The workers received higher wages, but not as high as expected from the report of the accountant. If we use the Sardar's report and the wage rate reported by the workers, we can derive the amount of leakage to be at least 16 percent.

Actual productivity was reported to be higher than expected in the third site and the wage rates reported by the workers and the Sardars were the same. Therefore, the estimate of leakage is at least 30 percent. The situations in the fourth and fifth sites are very similar. The workers reported higher wages than the Sardars. Using the estimates of the number of man-days from the Sardars reports, we derived leakage of 37 percent and 39 percent respectively.

The summary of each the analysis is reported in Table 8. Using progress reports, the resulting leakage are only 16 percent, but are 26 percent, if we use the Sardars' reports. The main difference between these reports is the wage rate per m<sup>3</sup> (2.6 kg/m<sup>3</sup> vs. 2.3 kg/m<sup>3</sup>) and the number of man-days (212,570 vs. 180,711) reported. As a result, the implicit productivity is higher in the progress report than from the Sardars' reports (2.7 m<sup>3</sup>/day vs 2.3

m<sup>3</sup>/day). It is clear that the data from the Sardars is more credible since do not represent official estimates prepare for other officials. On the other hand, the wage rate reported by the workers is, on average, equal to the values reported by the Sardars. Therefore, we can conclude that the estimates of leakage in the amount of 26 percent are plausible.

### ***Amount of payments received in cash***

Evidence from our sites is overwhelming that most of the transactions took place in cash. In three sites, the PIC and the Sardars monetized the wheat and the contract was made directly in cash. These findings are in line with the Work Norm Survey (1997), where they found that 50 percent of the workers received payments in cash instead of in kind.

One of the reasons of our finding was because the price of grain in the market was higher than the official price of the wheat used in the project and people involved in the management of the project had the incentive to sell the grain at a higher price and pay the workers in cash.

### ***Allocation of wheat***

Given the fact that grain was received in only a few sites, we were not able to estimate the average amount of grain consumed. The evidence from the Work Norm Survey (1997) is that 50 percent of the workers receiving payments in kind end up selling the grain in the market. This result is not surprising given that the amount of grain each worker is supposed to receive for payment is very large. Each worker is entitled to receive between four to six kg of wheat per day. If they are paid every two weeks, workers will receive approximately 75 kg of wheat (one and a half sack). This is a total of 150 kg of wheat per month and is approximately twice the amount that a family of five would be able to consume in a month even if each member consumed a pound of wheat a day.

## ***Conclusions and Recommendations***

It is clear from the results of our preliminary investigation that leakage exists and it is sizable and that the major source of leakage is the overestimation of the amount of work to be done. Therefore leakage can be reduced substantially if the amount of work actually done is estimated correctly. This can be achieved with a credible pre-work survey to estimate the amount of work to be done, and a similar post-work survey to estimate whether the required work has been completed.

It is not clear that individual workers were paid less than the work norm or less than the amount stipulated. At least in some cases the wage paid to workers was slightly higher than the average work norm. It appears that workers were paid according to the prevailing wage rate in the area where the project is implemented. This created the need for generating additional resources for paying higher rates. The PICs and the Sardars did not pay the workers according to the wage rate specified in the work norm, especially if the norms are expressed in kind and the resulting wage rates deviate from the local market conditions. As long as the wage rates are stipulated in wheat, the remuneration received by the workers depends on the price of wheat in the market. Moreover, when project managers exchanged wheat for cash and pay the workers in cash, workers lose out because the managers sell the wheat at the highest possible price but still pay the workers using the conversion rate stipulated in project documents.

Our field discussions revealed that the amount of grain delivered from the LSDs to the PICs was five percent less than sanctioned in several cases. Moreover, we often heard that rent was paid at different stages of the set up, the supervision and implementation of the projects and to assure the delivery of funds. The *fee* paid to government officials was between to 5 to 15 percent of the total allocation for the project. Due to the widespread use of

cash instead of wheat and the resale of the same by the workers, the actual amount of wheat consumed by the intended beneficiaries is actually very little.

Since the government and donors incur the cost of the transfer while benefits accrue not to the targeted beneficiaries, but rather to those who have access to and sell the foodgrain, it is essential to identify and stop possible sources of leakage. However, the process of reducing the leakage, that is, the costs of monitoring and enforcing the proper transfer, must not exceed the value of the reduction in leakage.

Possible suggestions to improve the efficiency of RD programs include: increase the amount of monitoring and supervision, fix local salary rates in cash equivalent, improve the quality of measurement of the work done, speed up the delivery mechanism of the funds, and pay only for the work done.

A fairly simple way to increase the quality of the monitoring is to make better use of the progress reports. Even if the actual amount of work done is not measured, analysis of the data on a computer will highlight obvious discrepancies. If, for example, the implicit productivity reported is not too different from the norm and the wage rate reported is very different from the wage rate reported by the workers, then it is possible to deduce that some of the data is not accurate and that further investigation is required<sup>12</sup>. The use of the Sardars reports to check the leakage is a reliable alternative, since the reported amount of work will determine the amount of payment sanctioned for the workers.

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<sup>12</sup> In three out of the five sites reported in this study, the productivity reported was lower than expected. This is an indication that the number of people reported working on the project had been inflated. In another case it was very high, reflecting a serious reporting problem. The implicit wage rate in two cases was also different from the amount officially reported and was in line with the productivity, showing the possible existence of underpayment of the workers.

## CONCLUSIONS

In this analysis we found that in the VGD and the RD programs leakages exist and are sizable. Nevertheless, leakages in the RD program are lower than in the now defunct rationing program, and they even lower in the VGD program.

In fact in the VGD program approximately 94 percent of the food is received by poor women, even though they are not all intended beneficiaries. Efforts should be made to reduce leakages and increase the efficiency in this program.

In the RD program, instead, leakages are more sizable and by and large are not used by the workers. To reduce the amount of leakages, more efforts should be concentrated on the pre-work and post-work measurements. PICs should be given enough funds to allow them to complete the work, given the working conditions and the wage rates prevailing in the labor market and project funds should only be made for the amount of work actually done.

It is also possible that allocating the resources in kind instead of cash may increase the scope for leakages, especially if there is a large discrepancy between the official value of the grain and its market value.

Ultimately, the real challenge is to decide where the projects should be located and the resources they should receive. As long as projects are allocated to areas that have a higher rate of unemployment during the dry season and require more infrastructure, it will be cheaper to build the infrastructure and it will be possible to employ more workers at a lower wage rate using the same amount of resources.

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**Table 1—Who Decides the Allocation of Cards**

Name of the Thana	Who decides the allocation of cards (percent)				Total	
	UP Chairperson	UP selection committee	UP Secretary	Local elite/ political leaders	Percent	Number
Jamalpur	7.69	7.69	7.69	76.92	100	13
Melandaha	3.33	56.67	0.00	40.00	100	29
Nilphamari	33.33	61.9	4.76	0.00	100	21
Madaripur	10.00	90.00	0.00	0.00	100	10
<b>Total</b>	<b>13.51</b>	<b>54.05</b>	<b>2.7</b>	<b>29.73</b>	<b>100</b>	<b>73</b>

Source: VGD Investigation, FMRSP-IFPRI, Feb-May, 1998.

**Table 2—Amount and Type of Grain Received by Month**

Type of Grain Received	1 <sup>st</sup> month (February, 1998)		2 <sup>nd</sup> month (March, 1998)	
	Average Amount (kg)	Number of Recipients	Average Amount (kg)	Number of Recipients
Wheat only	24.96	63	26.05	73
Both Rice & Wheat		9		
Portion of Wheat	12.67			
Portion of Rice	11.44			
Total	24.11		26.05	.
Number		72		73

Source: VGD Investigation, FMRSP-IFPRI, Feb-May, 1998.

**Table 3—Allocation of Grain to Different Uses by Type and Month of Delivery**

Allocation of the amount received	1 <sup>st</sup> Month (February, 1998)				2 <sup>nd</sup> Month (March, 1998)			
	Receiving Rice and Wheat		Receiving Wheat only		Wheat			
	Quantity	Women Involved	Quantity	Women Involved	Quantity	Women Involved	Quantity	Women Involved
	(Percentages)							
Amount shared	11.65	33.33	21.93	65.05	7.04	17.95	6.65	16.03
Amount for official	0.00	0.00	0.00	0.00	0.64	3.85	2.08	9.96
Consumed at home	85.44	88.89	73.68	74.63	29.39	60.90	29.24	60.07
Used for Animals	0.00	0.00	0.00	0.00	1.15	17.95	0.88	7.83
Amount for friends	2.91	11.11	4.39	23.21	2.42	12.82	2.01	14.73
Amount sold	0.00	0.00	0.00	0.00	59.04	63.46	40.47	57.36
Amount stocked	0.00	0.00	0.00	0.00	0.32	21.15	18.67	87.35
Total	100.00		100.00		100.00		100.00	
Total Amount	11.44		12.67		24.90		26.05	
Number	9		9		63		73	

Source: VGD Investigation, FMRSP-IFPRI, Feb-May, 1998.

Note: The total values reported here include all households.

**Table 4—Relevant Variables used to Estimate Leakages in the RD Program**

*From project documents (LGED and BWDB)*

- a) Amount of work required =  $ET_0$ , reported in cubic meters ( $m^3$ ) of earthwork
- b) Total resources allocated in wheat in kg (cash resources have been converted if necessary) =  $WT_0 = W_0 * L_0$

*From progress Report (LGED and BWDB)*

- a) Total work done =  $ET_1$
- b) Amount disbursed =  $WT_1$
- c) Total number of person days =  $L_1$
- a) Wage rate paid =  $W_1$

*From PICs and Sardars*

- b) Number of groups
- c) Average number of people working in a group
- d) Average number of days worked
- e) Average number of hours worked per day
- f) Earthwork done =  $ET_2$
- g) Amount disbursed =  $WT_2$
- h) Total person days =  $L_2$
- i) Wage rate paid =  $W_2$

*From Workers*

- a) Usual place of residence
- b) Days worked
- c) Hours worked per day
- d) Amount of payment stipulated
- e) Amount actually received in cash and kind =  $W_3$
- f) Utilization of amount received

**Table 5—Wage Rate Received by Workers: Participant Questionnaire**

Site	Site 1	Site 2	Site 3	Site 4 <sup>1</sup>	Site 5
Average number of working days	17.0	21.7	18.6	35.7	45.0 <sup>2</sup>
Average working hours per day	7.0	9.2	12.0	10.2	10.0
Amount received per day in cash (Tk)		64.2		60.3	20.3
Amount received per day in wheat <sup>3</sup> (Kg)	5.4		8.2		3.9
Local price of wheat (Tk)	8.5	8.5	8.7	8.4	8.1
Total wage in cash (converted) <sup>4</sup> (Tk)	45.9		71.3	0.0	62.2
Total wage in wheat (@7.5 Tk/kg) <sup>5</sup> (kg)	5.4	8.4	8.2	7.3	7.3
Total wage rate per 10 hours (Tk/day)	65.6	69.8	59.5	59.1	62.2
Local agriculture wage rate (Tk/day)	60.0	90.0	70.0	55.5	46.5
No of respondents	2	6	6	19	22
Location of workers	Local	outside	local	Both	Local
Workers receive mostly	Both	cash	wheat	Both	Cash
Amount of wheat sold	None	100%	44%	53%	43%

Source: Workers questionnaire, rapid appraisal and authors calculations

Notes:

1. Data in Site 4 is questionable. Laborers reported receiving only wheat and exaggerated the amount received.
2. As reported by workers and Sardars at the time of the field survey
3. Wheat received may not include cash. Not all workers receive the same type of payment
4. Wheat has been converted into cash using its opportunity cost calculated as the market price reported and is reported in italics
5. Most of the time laborers receive the equivalent of wheat in cash valued at 7.5 Tk per kg

**Table 6—Implicit Wages Rates and Productivity from Progress Reports**

<b>Site</b>	<b>Site 1</b>	<b>Site 2</b>	<b>Site 3</b>	<b>Site 4</b>	<b>Site 5</b>
Earth moved (m <sup>3</sup> )	57,061	197,906	22,000	21,254	65,876
Total person days reported	29,840	98,268	5,480	9,465	18,090
Total wheat allotment(MT)	142	589	40	47	119
Working days	86	70	82	91	67
Average number of workers per day	347.0	1,403.8	66.8	104.0	270.0
Earth moved per person/day (Productivity) (m <sup>3</sup> )	1.9	2.0	4.0	2.2	3.6
Wheat per m <sup>3</sup> (kg)	2.5	3.0	1.8	2.2	1.8
Wheat per person per day (kg)	4.8	6.0	7.3	5.0	6.6
Average salary norm (kg/m <sup>3</sup> )	2.1	2.1	2.1	2.1	2.1
Wheat to be received (kg)	3.9	4.1	8.2	4.6	7.5
Wheat received (official est.) (kg)	5.5	6.0	4.5	5.0	6.5
Month of Report	April	March	April	March	May

Source: Progress Reports and Author's calculations

Notes: The values in Italics have been calculated.

**Table 7—Implicit Wages Rates and Productivity According to Sardars**

<b>Site</b>	<b>Site 1</b>	<b>Site 2</b>	<b>Site 3</b>	<b>Site 4</b>	<b>Site 5</b>
Earth moved (m <sup>3</sup> )	6,578	7,837	2,269	12,719	7,576
Person days	3,388	2,491	521	5,096	2,449
Wheat Disbursed (@ 7.5 Tk) (Tk)	32,438	173,260	31,850	208,689	85,922
Wheat Disbursed (@ 7.5 Tk) (kg)	17,351	23,101	4,247	27,825	11,456
Working days	17	30	14	22	12
<b>Averages</b>					
Persons per day	21.0	20.8	12.7	30.3	18.9
Earth moved per person/day (Productivity) (m <sup>3</sup> )	1.9	3.1	4.4	2.5	3.1
Wheat per m <sup>3</sup>	2.6	2.9	1.9	2.2	1.5
Cash per m <sup>3</sup> (kg)	19.8	22.1	14.0	16.4	11.3
Average Salary Norm (kg/m <sup>3</sup> )	2.1	2.1	2.1	2.1	2.1
Expected Payment for work done (kg)	4.1	6.6	9.1	5.2	6.5
Expected Payment for work done (Tk)	30.6	49.6	68.6	39.3	48.7
Actually Payment (@7.5 Tk/kg) (Tk)	38.5	69.6	61.1	41.0	35.1
Actually Payment (@7.5 Tk/kg) (kg)	5.1	9.3	8.2	5.5	4.7
Number of Work Groups Interviewed	11	4	3	7	11

Source: RD Preliminary investigation

Notes: The values in Italics have been calculated.

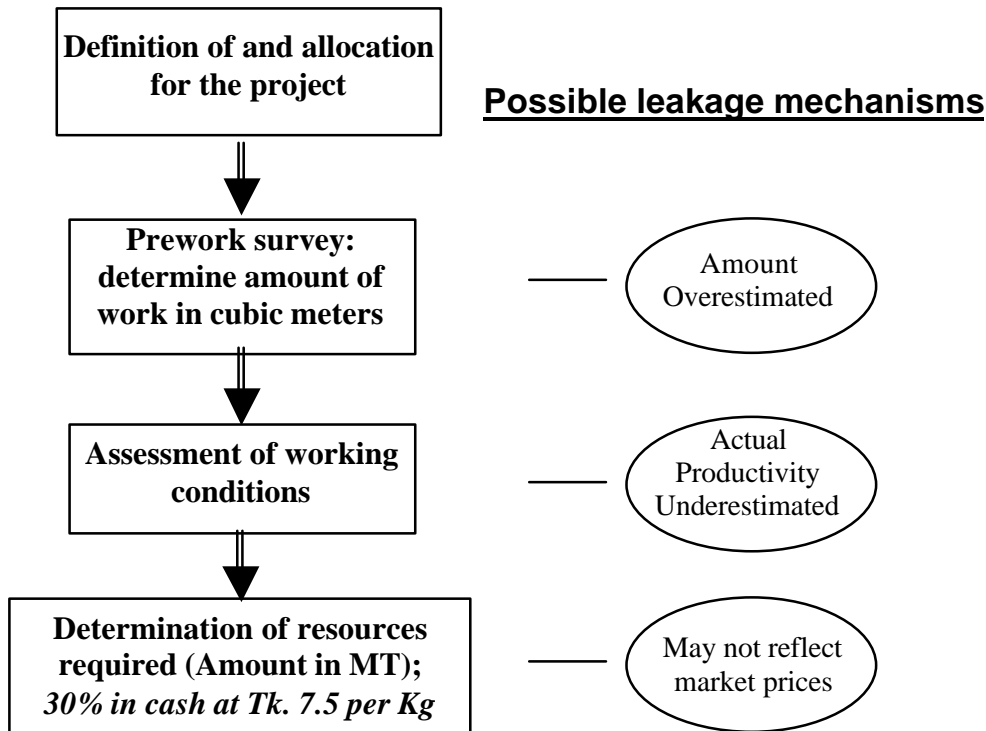
**Table 8—Estimated Amount of Leakage from Five Sites**

	<b>Project Document</b>	<b>Performance Report</b>	<b>Sardar Interview</b>	<b>Worker Survey</b>
(1) Work Done ('000 cubic meters of earth)	479,406	364,097	36,979	
(2) Wheat Paid (MT)	1,472	937	84	
(3) Wage Rate (kg wheat/m <sup>3</sup> ) = (row 2)/(row 1)*1000	3.1	2.6	2.3	
(4) Labor (man-days)		161,182	13,939	
(5) Wage Rate (kg/man-day) = (row 2)/(row 4)*1000		5.8	6.0	6.0
(6) Implied Productivity (m <sup>3</sup> /man-day) = (row 1)/(row 4)		2.3	2.7	
(7) Total Labor to be Used (est.) = (row 4)*(row 1 <sub>PD</sub> )/(row 1)		212,570	180,710	180,710
(8) Total Wages to be Paid (est.) = (row 7)*(row 5) MT	1,471	1,233	1,088	1,084
Percent of Project Allocation	100.0%	83.8%	74.0%	73.7%

Source: Author's Calculation

**Figure 1 — The RD Implementation Process and Possible Leakage Mechanisms**

*Determination of the Amount of Resources*



*Disbursement of funds*

