Study of UPPR's Urban Food Production Component

Increasing Income and Improving Nutrition of the Poor in 20 Cities and Towns





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Urban Partnerships for Poverty Reduction
Local Government Engineering Department

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Urban Partnerships for Poverty Reduction Project

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Preface

Bangladesh is one of the most densely populated countries of the world. Due to rapid industrialization and population growth, its citizens are migrating every day from rural to urban areas to seek better income generation opportunities. Unable to break the poverty cycle, migrants oftentimes settle in low income settlements where guaranteeing household food security remains a challenge.

Some urban poor households are known to produce their own food as a coping mechanism to boost their nutritional status and increase their income. But until recently, such efforts have not been supported by any development or governmental organization. During 2006 and 2007, under the Local Partnerships for Urban Poverty Alleviation Project, the Food and Agriculture Organization (Bangladesh) initiated technical support to about 1,500 households in starting selected urban food production activities in six towns. The successful results of this pilot were clearly visible but not documented thoroughly.

Based on the success, Urban Partnerships for Poverty Reduction (UPPR), in 2009, conducted a survey to identify available resources in 23 of its project towns, finding that almost 35 percent of households had resources to produce food, such as empty space. Following this, UPPR introduced several packages to promote new and increase the productivity of existing practices.

So far 60 thousand households have benefited. And this report showcases the results of a survey conducted to quantify these benefits. Chiefly, it presents the impact of UFP schemes on the nutritional status and income generation ability of poor urban communities. Likewise, the findings also serve to guide UPPR's future UFP programming with the aim of reaching the urban poorest.

The survey results can be used by a wide variety of stakeholders at the national and local level. The Local Government Division can advocate with other national-level institutions such as the Ministry of Agriculture, the Ministry of Fisheries and Livestock, and the Ministry of Forestry, to develop joint comprehensive urban food production strategies that target the poorest and optimize the use of available productive resources. Similarly, town-level policy makers such as Mayors and Ward Councilors can use the findings to initiate urban food production activities locally. Finally, academic and development partners may be able to improve their understanding on the scale and nature of UFP, and further explore a topic that has not been the subject of wide research in Bangladesh.

I am extremely proud to have been associated with this innovative and successful initiative.

Engineer Ali Ahmed.
National Project Director
UPPR - LGED
14 March 2012

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Acronyms

BBS	Bangladesh Bureau of Statistics
BG	Block grant
BGR	Bogra
BK	Bee keeping
BRL	Barisal
CC	Catfish culture
CD	Community demo
CML	Comilla
DNP	Dinajpur
EP	Extreme poor
G	Grammes
GoB	Government of Bangladesh
GPG	Gopalganj
GZP	Gazipur
HBG	Hobiganj
HH	Household
HIES	Household Income and Expenditure Survey
HQ	Head quarter
JSR	Jessore
Kcal	Kilocalories
Kg	Kilogrammes
LGI	Local Government Institute
N	Non-poor
NBG	Nawabganj
NOG	Naogaon
OHOF	One House One Farm
P	Poor
RNP	Rangpur
SIS	Small Input Support
SRG	Sirajganj
TGL	Tangail
Tk.	Taka
UFP	Urban Food Production
UPPR	Urban Partnerships for Poverty Reduction

Executive Summary

Context and rationale

About one third of Bangladesh's population lives in urban areas and according to the latest national poverty survey 21.3 per cent of the urban population are either poor or extreme poor (HIES; BBS, 2011). The urban poor, especially women and children, often suffer from malnutrition, which results in stunted growth, weakening of the immune system, mental impairment and, in some cases, death. Moreover, poverty of this nature has a *lock-in* quality guaranteeing the inter-generational transmission of deprivations.

A body of evidence suggests that Urban Food Production (UFP) initiatives targeting the extreme poor, can significantly contribute to poverty alleviation by improving the nutritional status of dwellers and/or providing additional sources of income. In this regard, UPPR developed and introduced in 2009 a series of urban food production schemes, or packages, which have so far benefited 61,949 urban poor households in the 23 towns it operates.

This report presents the findings of a study based on a sample survey conducted during 2011 among UPPR 2009 and 2010 urban food production beneficiaries. The survey aimed to measure the economic and nutritional impact of food production support activities on slum dwellers; and specifically, to provide evidence on the comparative performance of the main food production schemes resourced by UPPR, namely Block Grants, Small Input Support, Community Demonstration and One House One Farm.

Study findings

In terms of equity, Business Grants are the only scheme explicitly targeting the extreme poor. Yet the differences in the allocations of Small Input Support, One House One Farm and Community Demonstration grants among the extreme poor and the poor are marginal. Moreover, it may well be that productive opportunities are also constraining these activities from the supply side, given the potentially weaker productive potentials of the most poor.

On the cost side, the highest average levels of total inputs were found among One House One Farm beneficiaries (Tk. 8,390/hh), followed by Business Grant beneficiaries (Tk.6,361/hh), Community Demonstration beneficiaries (Tk. 2,500/hh) and Small Input Support (Tk. 295/hh). This is perhaps unsurprising given the mix of activities the various packages support. OHOF is the primary vehicle for funding a variety of produce ranging from vegetable cultivation through to larger animal husbandry. The range of inputs is nevertheless surprising - with SIS investments being on average being one twentieth of the average OHOF inputs.

An item-based production analysis suggests that Business Grants have as good if not a better productive record than OHOF. This is especially gratifying given these awards are targeted on the most poor. It is also worth noting that production levels from SIS grants, although relatively low on a simple comparative basis, are impressive when compared against the relatively modest investment costs.

With regards to food consumption, it is SIS beneficiaries (57 per cent), who consume most of the greatest share of their own production, followed by OHOF beneficiaries (41 per cent) CD beneficiaries (37 per cent) and BG beneficiaries (13 per cent). This somewhat reflects the mix of producers benefiting from the packages, but crucially also the mix of produce and nature of the respective packages. In general, poorer households consume a larger share of low value items, and predominate in those schemes which require lower productive inputs and capital.

The four main food production packages provide on average 39.4 kcal/person/day and 2 protein g/person/day. Although this forms a relatively low share of overall caloric requirements (as given by the national poverty line of 2,122 calories), it is not an inconsequential contribution at close to 20 per cent of the total. It is also worth remembering that virtually all of UPPR's client base, and the producers within this survey, are likely to be subsisting on consumption levels below this threshold.

The income impacts data show some correspondence with the production findings in showing that OHOF and BG packages secure the highest income payoffs. Yet, crucially for the Extreme Poor BG appears the more effective in boosting household incomes. Additionally, if we attempt to take into account the cost investment data (recognizing the data and cost comparison problems) BG ranks especially well. In a similar vein, the SIS package provides an impressive income benefit given the very low input costs. The reverse might be noted in respect of the CD package where gross income impacts are weak and the likely net income position still more so.

Recommendations

Study findings suggest that further programming efforts should focus more on Business Grants and Small Input Support grants, with a specific focus on the extreme poor. Further research will be conducted on the feasibility of One House One Farm for the extreme poor, as the lack of extreme poor targeting remains as a concern, as well as the lack of access to a productive resource base by the extreme poor. Finally, consideration ought to be given to discontinuing the Community Demonstration scheme as production and sales data shows that the results of households jointly co-operating in the same urban food production activity are modest when compared to individual grant transfers such as Business Grants and Small Input Support.

Although the results of this study show the success of urban food production initiatives which target the poor and the extreme poor slum dwellers, these population groups oftentimes lack the access to a productive resource base that would enable to conduct urban food production activities. In this regard, UPPR will continue to conduct advocacy with Government of Bangladesh and local government institutions in order to improve the access of the urban poorest to Government-owned productive resources. This links to wider land tenure concerns, and the need to allow for better use of common and community assets, respecting the need to maintain private incentives, alongside the environmental quality of these assets.

Survey results have shown that households consume 47 per cent of the items they produce, selling the remaining production. In this regard, UPPR will conduct advocacy activities with poor and extreme poor beneficiaries to guarantee an adequate balance between consumption and sale. The precise balance is a matter for the UPPR and communities to resolve. Yet prima facie, it seems that consumption and improved nutrition should be the more pressing consideration.

Finally, in addition to conducting further research on individual food production packages for programme decision-making, further efforts should be directed at assessing the real net cost of production. This should allow for the amortization of all inputs and the recognition of stock levels. Without this research is difficult to accurately provide a value-for-money appraisal of the various packages. Collecting the necessary data should be prioritized in future surveys.

Likewise, efforts should be directed at determining the uses of the income generated by the extreme poor and the poor after selling their production, in order to determine the share of income re-invested in food production, used to purchase food or assets, or deposited as savings, among others.

1. Introduction

This report presents the findings of a study based on a sample survey conducted during 2011 among UPPR 2009 and 2010 urban food production beneficiaries. The survey aimed to measure the economic and nutritional impact of food production support activities on slum dwellers; and specifically, to provide evidence on the comparative performance of the various food production schemes (*food production support packages*) resourced by UPPR. These constitute financial and technical support to enable poor and extreme poor urban dwellers to produce food (including vegetables, poultry and livestock).

The findings of this study will be used to make improvements to the existing portfolio of packages, and hone targeting and delivery. This appraisal is undertaken using five performance objectives.

Two of these are input and process related:

- The quality of pro-poor targeting and distributional equity of support;
- Investment levels and input costs, given by the total cost inputs.

And three are output related:

- Comparative production levels, given by the weight of produce;
- Nutritional benefits , defined in terms of the caloric and protein gains accruing;
- Finally, the proceeds from the sale of surplus output and the direct impact on incomes.

It is understood that several of these criteria are not mutually exclusive and often make joint contributions to welfare gains. Moreover, although each of the criteria is formally ranked equally, it is important to emphasize the primacy of nutritional outcomes and the overall pro-poor orientation of the programme.

This report is divided into six different sections: first, the context of urban food production in Bangladesh is examined; second, UPPR's portfolio of urban food production activities is described; third, the study methodology is presented; fourth, the main findings described within each of the five given criteria; fifth, conclusions are outlined; and sixth, programming and delivery recommendations are made.

2. Urban Food Production of Bangladesh

About one third of Bangladesh's population lives in urban areas and according to the latest national poverty survey 21.3 per cent of the urban population are either poor or extreme poor (HIES; BBS, 2011). The urban poor, especially women and children, often suffer from malnutrition, which results in stunted growth, weakening of the immune system, mental impairment and, in some cases, death. Moreover, poverty of this nature has a *lock-in* quality guaranteeing the transmission of deprivations between successive generations. Urban household food security remains a major challenge for Bangladesh.

A body of evidence suggests that Urban Food Production (UFP) initiatives targeting the extreme poor, can significantly contribute to poverty alleviation by improving the nutritional status of dwellers and/or providing additional sources of income. At the household level, urban food production provides valuable nutritional and income supplements: it encourages dwellers to establish a better production and marketing chain; and improves the level, variety and quality of consumption, since products are local, fresh and easily accessible. At the community level, urban food production can also provide significant environmental benefits and amenity gains. For instance, these activities can improve the composting organic materials, solid waste management, and revitalize derelict ponds and land areas through the by breeding of fish and ducks, in the water, and the growing of vegetables on the dikes. There are also waste water disposal improvements, as effluent can be run off to agricultural ground in peri-urban areas.

Previous UPPR agro-based resource surveys have shown that there are underutilized household and community resources which can be used to conduct food production activities. The former includes empty homestead spaces, house rooftops, and backyard spaces/ditches. Community resources include ponds, empty housing plots, railway tracks, highway roadsides and the empty spaces around public facilities - schools, colleges, madrasas, and mosques, governmental and non-governmental office premises. Often these vacant lands have no real opportunity cost, but in turn, it is recognized that food production activities must not displace employment and other income generating activities, which have a higher value in cities and towns.

In the light of above, UPPR developed and introduced a series of urban food production initiatives in all of the 23 towns it operates, to supplement household food security, and improve the nutritional status and incomes of the urban poor. These provided different packages of support tailored to localities, different types of production opportunities and the beneficiaries.

3. UPPR support to urban food production in Bangladesh

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This section describes the support provided by UPPR to urban food production in Bangladesh. It sets out the geographical scope and gives details of the specific urban food production packages provided by the programme. In addition, it discusses in summary how beneficiary households are engaged and trained in urban food production.

3.1. Geographical scope and urban food production packages

Since 2009, UPPR has been supporting promotion of and support to urban food production in all of its 23 project towns: Bogra, Barisal, Chapai Nawabganj, Chittagong, Comilla, Dhaka, Dinajpur, Gazipur, Gopalganj, Hobiganj, Jessore, Khulna, Mymensingh, Naogaon, Rajshahi, Rangpur, Sirajganj, Sylhet, Tangail, Tongi, Savar and Narayanganj and Kushtia. UPPR has developed and offered seven types or *packages*, of urban food production to prospective beneficiaries. These are:

- **Small input support (SIS) grants** – At Tk. 100-200 per household, these grants are used by extreme poor and poor households to buy High Yielding Variety (HYV) vegetable seeds, and chickens and ducks, and medications for larger self-purchased animals. This is the most expansive package of support, and focused on the poorest households. Since 2009, some 47,618 awards have been made.
- **One House One Farm (OHOF)** – This approach offers an integrated household food production system worth Tk. 5000 per household and used to optimize household food production resources. This includes a broad swathe of activities – vegetable and fruit growing, animal husbandry and aquaculture. While the focus remains on assisting the poor, the scale of the resource requirements ensures those recipient households are more mixed. In total 1,494 awards have been made.
- **Business Grants (BG)** – These grants worth Tk. 5000 per household are given to extreme poor women to initiate urban food production activities such as goat or poultry rearing or beef fattening. The number of awards given since 2009 has totalled 11,947.
- **Community Demonstration Grants (CD)** – These larger awards support integrated aquaculture activities in leased and private ponds or *khas* by groups of 10 to 25 poor and extreme poor households. Pond water is used for fish culture and pond dikes for vegetable production and duck rearing in integrated system. Project grants range from Tk. 15,000 to Tk. 30,000. In total, some 650 grants have been made since 2009.
- **Bee keeping and honey production grants (BK)** have been introduced on a pilot scale, and thus far 190 have been awarded since 2011. The average award is running at Tk. 5,000.
- **Catfish culture grants (CC)** – Similarly, these awards for tanks using wastewater run-off have been introduced on a pilot scale. In total 230 awards have been made since 2011.

The report examines the full portfolio of production packages using a comparative approach. However, it report focuses on the four main schemes given by household coverage - there are SIS, OHOF, BG and CD. It must also be emphasized that within one package, a beneficiary can produce more than one variety of food. For example, a beneficiary might be rearing chickens and goats, or rearing cattle and growing vegetables. The analysis therefore operates at the package level examining performance according to each of the five criteria listed above: equity of distribution; costs of investment inputs; production volumes; nutritional benefits and sale proceeds. Each uses a different unit of measurement (kilograms, calories, Taka). It is important that the comparisons are strongest where outcomes can be transferred across food groups – notably with respect to nutrition (calories, grams of protein) and sales (moneys spent and received). Additionally, it must be noted that data limitations have prevented the matching of costs to specific outcomes, and therefore input cost data is not compared with outcomes.

3.2. Engagement of beneficiary households in urban food production activities by food items

The number and cumulative numbers of 2009, 2010 and 2011 urban food production beneficiaries are shown in

Table ***1***. UPPR has significantly increased its commitment to urban food production activities year-on-year. Cumulative household coverage has grown from 8,037 households in 2009, to 21,495 households in 2010 and to 61,949 households in 2011. This represents 2 per cent of the total population served in 2009, 4.7 per cent in 2010 and 9.8 percent in 2011.

Table 1: Household coverage of UPPR urban food production activities

	2009 Household Coverage	2010 Household Coverage	2011 Household Coverage
Beneficiaries	8,037	13,558	40,454
Cum. Beneficiaries	8,037	21,495	61,949

On joining any of the scheme packages, UPPR beneficiates are given basic awareness training and some technical support during the production process. This alongside follow-up is undertaken by 10 Urban Food Production Experts in the field and supported by a team at HQ. Recipients are counselled not to sell the original assets and to maintain to ensure longer term viability. Field workers have reported very few instances where the original stock has been disposed of.

4. Survey methodology

This section describes the methodology used to conduct the sample survey during October 2011. It has eight subsections which offer a detailed review of the approach.

4.1. Survey objectives

The objective of the sample survey was two-fold. Firstly, it aimed to determine the nutritional and economic impact of UPPR urban food production packages for poor and extreme poor households. Secondly, it aimed to evaluate the performance of the current set of urban food production packages in terms of pro-poor targeting, investment costs, self-consumption, production (comprising consumption and sale). Within this report however, these objectives are presented in reverse, taking the input and process of objectives first, followed by the output goals.

4.2. Survey coverage

The survey covered beneficiaries that had received urban food production support in 2009 and 2010. Considering available time, cost and human resources, 20 out of the 23 towns where UPPR conducts urban food production activities were included in the sample survey. These were Bogra, Barisal, Chapai Nawabganj, Chittagong, Comilla, Dhaka, Dinajpur, Gazipur, Gopalganj, Hobiganj, Jessore, Khulna, Mymensingh, Naogaon, Rajshahi, Rangpur, Sirajganj, Sylhet, Tangail, and Tongi. The three towns that were excluded were Savar, Khustia and Narayanganj.

4.3. Sampling frame of survey respondents

The sampling frame was formed by 15,942 Households that received UPPR UFP grants in six key packages (Business Grants, Community Demonstration, One House One Farm and Small Input Support, Bee Keeping and Catfish Culture) during 2009 and 2010 in the sampled towns. The sampling frame was not formed by the 21,495 beneficiaries indicated in Table 1 as Savar, Khustia and Narayanganj were excluded from the survey.

4.4. Sampling design and coverage

The study used stratified and simple random sampling to in order to obtain a programme-wide sample of beneficiaries' representative at the town and package levels. This was conducted in four different stages. Firstly, the sample size of respondents to be interviewed within each town was determined using the standard formula for a finite population:

$$n = \frac{Nz^2 p(1-p)}{d^2(N-1) + z^2 p(1-p)} \quad = \frac{Nz^2 pq}{d^2(N-1) + z^2 pq}$$

Here the proportion of food consumption among producer households is used as the key variable to determine the sample size. However, the programme had no estimate of the coverage of food consumption among producer households in the intervention areas. Therefore, it was assumed that 50 per cent of households were consuming their own production. In the above formula, this is expressed by *p*, while *d* denotes the tolerance level of error of 0.1 (the10 per cent level),the *z* value is taken ass 1.96 indicating a confidence level of 95 per cent, and *N* represents the sampling frame of beneficiaries at the town level.

Second, the estimated sample sizes at the town level were allocated to each of the six packages according to the proportions of the town beneficiaries of the total. In this stratification technique, the six packages provided by UPPR (Bee Keeping, Business Grants, Catfish Culture, Community Based Food Production, One House One Farm and Small Input Support) were taken as

individual strata. Thirdly, a 5 per cent adjustment of the sample sizes was allowed for non-response.

Finally, simple random sampling was used to draw the selected beneficiaries to be interviewed. A total of 1,710 beneficiary households were selected from the 20 survey towns (Table 2). Out of these, a total of 1,697 beneficiary households were successfully interviewed, achieving a programme-wide response rate of 99 per cent. Package-wise, beneficiary household coverage ranges from 10 to 13 per cent. Table 16 in Annex 1 provides detailed information on the sampling design and coverage by town and package.

Table 2: Distribution of beneficiary households sampled and interviewed

Package	Total HH-2009, 2010	Population proportion/ Fraction (%)	As per Sampling Design (no. of HHs)	Adding 5% as non-response with sample (#)	Actual Drawn Sample (no. of HHs)	Household response rate (%)	Pop. Coverage (%)
BK	48	0.3	5	5	5	100	10
BG	2278	14.3	229	240	238	99	10
CC	34	0.2	4	4	4	100	12
CD	660	4.1	66	69	69	100	10
OHOF	758	4.8	90	95	95	100	13
SIS	12164	76.3	1234	1297	1286	99	11
Total	**15942**	**100.0**	**1628**	**1,710**	**1,697**	**99**	**11**

4.5. Survey questionnaire

A structured survey questionnaire was designed by the headquarters team in consultation town-level UPPR Urban Agriculture Experts. After finalization, the questionnaire was shared with UPPR town teams for piloting and roll-out. The questionnaire includes a set of close-ended questions on the food production, consumption and sale resulting from the UPPR grants.

4.6. Survey data characteristics

The survey collected the data on six main themes:

- Household poverty data: according to UPPR's Participatory Identification of the Poor (PIP) tool classifying households as extreme poor, poor and non-poor.
- Investment/ cost data: type of package, amount of UFP grant received from UPPR, additional amount of funds invested by the beneficiary and running costs incurred. It is important to note that cost information has been collected on payments and not an accounting (i.e. accrued or matching) basis. No allowance has been made for the longevity of animals beyond the period, nor has any adjustment been made for changes in the stock level. It is therefore not possible to match costing data with output results on a comparable basis.
- Production data: weight units (kilogrammes or grammes) of items such as vegetables, chicken, duck, egg, beef, goat, milk, fish, honey and fruits produced divided by culture duration (in months) of units produced.
- Consumption data: weight units of items such as vegetables, chicken, duck, egg, beef, goat, milk, fish, honey and fruits consumed divided by production months. These have been standardized through a given caloric conversion based on Kcals per Kg.
- Sales data: weight units of items such as vegetables, chicken, duck, egg, beef, goat, milk, fish, honey and fruits produced, consumed and balance sold divided by production months. These have been converted using market prices obtained from UPPR localities.

4.7. Survey data collection fieldwork and quality assurance

A total of 20 teams (one for each town) were deployed to carry out the data collection fieldwork. Teams consisted of one supervisor and 10 interviewers. Urban Agriculture Experts were deployed to supervise the work of the interviewing teams. Moreover, senior management of town teams visited the field to monitor the data collection work. During the fieldwork stage a sample of filled-in formats were cross-checked. The Urban Agriculture Coordinator managed the data collection process from headquarters.

4.8. Survey data processing and analysis

Town teams entered the data collected using an Excel template. This was then checked and *cleaned* to ensure completeness and consistency. The statistical software program - *Statistical Package for Social Sciences (SPSS)* was used for analyzing the clean dataset. The analysis reported below was carried out by the M&E Expert at headquarters.

5. Study Findings

This section presents the survey's main findings. It is divided into five main sub-sections covering the performance criteria given in the introductory section: pro-poor targeting of UPPR urban food production; investment input costs; household production levels (including consumption and sales); nutritional impacts (given by calorie and protein intake); and the impact on household incomes**.**

5.1. Pro-poor targeting of UPPR urban food production

The distribution of beneficiary households by poverty status according to the different urban food production packages is shown in Table 3. Out of the total sample of households surveyed (1,697 households), 55 per cent were extreme poor, 44 per cent poor and 1 per cent were non-poor. Given the focus of the programme is poverty alleviation, and the active use of targeting in making allocations, this is an encouraging result. However, analysis of the individual packages shows (perhaps unsurprisingly) that the variation in the poverty status of clients is variable.

Table 3: Distribution of interviewed beneficiary households by package and poverty status

Poverty status	All Households	SIS	OHOF	CD	BG	Catfish	Bee keeping
Extreme poor	928 (55%)	640 (50%)	46 (48%)	31 (45%)	204 (86%)	3 (75%)	4 (80%)
Poor	748 (44%)	625 (48%)	49 (52%)	38 (55%)	34 (14%)	1 (25%)	1 (20%)
Non-poor	21 (1%)	21 (2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	1697 (100%)	1286 (100%)	95 (100%)	69 (100%)	238 (100%)	5 (100%)	5 (100%)

In overall terms, coverage is sound, with more than 76 per cent of all households receiving Small Input Support grants, followed by Business Grants (14 per cent), One House One Farm grants (6 per cent) and Community Demonstration grants (4 per cent). As pilot schemes, Catfish and Bee-Keeping grants were provided to 10 beneficiaries only (5 in each).

In terms of poverty status, as noted, the picture varies between packages. Among Small Input Support (SIS) beneficiaries, extreme poor households represent 50 per cent of all households, while the poor represented 48 per cent and the non-poor 2 per cent. In spite of the strong poverty orientation, it is perplexing, given the non-poor are not eligible for direct support from UPPR that 21 household within the sample are recorded as not being poor. The distribution on One House One Farm support was similar, with a split of poor/ extreme poor split of 52/ 48 per cent. The somewhat lower participation of the extreme poor may be linked to less poor households having a wider productive resource base.

Business grants aim to target extreme poor women, and these show a far stronger poverty bias. More than 8 out of every 10 beneficiaries were extreme poor women (86 per cent) while the remaining 14 per cent are within the poor category. With regard to Community Demonstration, which is a multi-item group-based food production modality using ponds, pond dikes or *khas* land, 45 per cent of participating households were extreme poor, while 55 percent were poor. Finally, the vast majority of catfish culture and bee-keeping pilot scheme beneficiaries are extreme poor, although both schemes remain small-scale as they are being piloted. However, this does underline their potentials highly pro-poor types of production support.

Overall, among the four main schemes of urban food production offered by UPPR, business grants are clearly the most pro-poor, while differences in extreme poor and poor allocations of Small Input Support, One House One Farm and Community Demonstration grants are marginal, with these schemes having an even split between poor and extreme poor. There is limited evidence of mis-targeting to the non-poor, although SIS allocation practices may require some

review. The main challenge is perhaps to further focus the main packages on the extreme poor category. Yet this may be limited by field realities – i.e. the productive potentials of the most poor are the key constraint.

5.2. Household investment costs

This section examines the investment cost side of the equation and aims to capture the total input costs over the current 18 month to 2 year cycle of the various pancakes. It begins by examining the overall distribution of resources. Second, the total investment in urban food production activities for each household is computed. This is given by summing the initial UPPR grant, plus any additional initial investment incurred by the beneficiaries, as well as the running cost. It is again empathized that costs are given on expended and not an accrued basis, they represent all disbursements in the period, rather than a resource accounting assessment. No allowance to amortize the cost of stock animals or other production asset inputs and no stock adjustment has been made.

5.2.1. Household investment by package

A package-wise average investment analysis is shown in Table 4. The data is provided per household and per household per month**.** This covers both the initial (UPPR) provided investment and any additional costs.

As the table illustrates, across all packages, the highest levels of total investment were found among One House One Farm (Tk. 1162/hh/month) beneficiaries, followed by Business Grant (Tk. 743/hh/month) beneficiaries, Community Demonstration (Tk. 362/hh/month) beneficiaries and Small Input Support (Tk. 54/hh/month) beneficiaries. If project grants are excluded, this same ranking is also applicable in terms of average additional investment and average running cost.

Table 4: Average household investment by package

Package	Average additional investment (Tk/hh)	Average running cost (Tk/hh)	Average project grant (Tk/hh)	Total investment (Tk/hh)	Average Investment (Tk/hh/month)
SIS	96	29	170	295	54
OHOF	1,707	1,689	4,994	8,390	1162
CD	170	269	2,062	2,500	362
BG	805	748	4,808	6,361	743
Overall	289	233	1,191	1,713	230

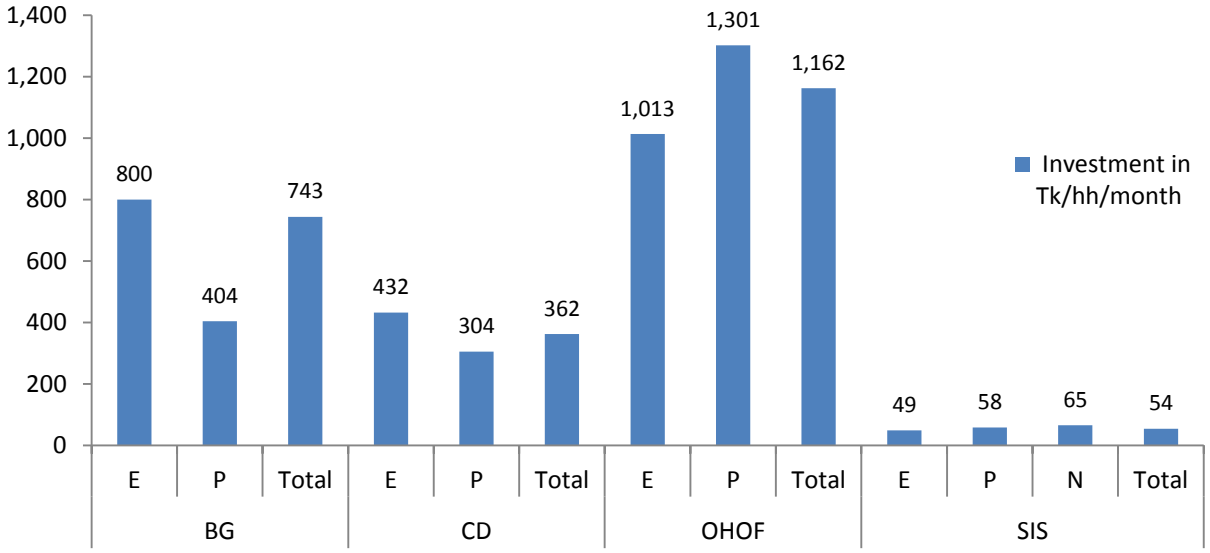
Clearly therefore, SIS has the lowest beneficiary cost (with a monthly average of only 5 per cent of the OHOF figure). Of the more scaled-up production packages CD ranks best in cost terms, at around one third of the OHOF monthly unit cost. This cost-side analysis does not however take account of the gains accruing from each programme. Indeed, as discussed below, the mainstream scaled-up schemes also have very much higher outputs and therefore, potentially higher marginal rates of return.

5.2.2. Household investment by package and poverty status

Although results are not strictly representative by poverty status (due to the sampling approach), Table ***17*** in Annex 1 suggests within these four packages, the Extreme Poor invest more on average per month than the poor. This is illustrated in the chart below. In the case of Business Grants the Extreme Poor (EP) invested Tk 800/hh/month and the Poor (P)=Tk. 404/hh/month); and on Community Demonstration activities (EP=Tk. 432 /hh/month and P=Tk. 304 hh/month), while the Poor invest more on average per month than the Extreme Poor in the case of Small Input Support (E=Tk. 49 hh/month and P=Tk. 58 hh/month) and One House One Farm activities (EP=Tk. 1013 /hh/month and P=Tk. 1301 hh/month). Across all packages, the total average

monthly investment levels (poor and extreme poor) are highest in the case of One House One Farm activities, followed by Business Grants, Community Demonstration and Small Input Support.

Figure 1: Average monthly household investment (Tk./hh/month) by package and poverty status



5.3. Household production (including consumption and sales)

This sub-section examines the first of the output level criteria, that of household food production, but it also probe the uses of production either for own consumption and onward sale. Production provides a direct measure of the outcome of the investment costs. This presents a number of comparison issues, especially given differing food commodities have differing weights, and caloric and monetary values. Output levels are best therefore examined by food item type. The categorization by usage is also the first stage of the calculations needed to estimate the nutritional and income benefits, the findings for which are presented in the following subsections. Again it must be borne in mind, especially in relation to livestock, that the following data, refers only to food produced in the period and excludes the original stock inputs.

5.3.1. Household production by package

Given the above, presenting an average aggregate food production level given the varying type of production for each of the packages is problematic. Nevertheless on this is very crude basis, the weight of overall, food production is estimated at 7.4 kg/hh/month, with consumption at 3.5 kg/hh/month and sale at 3.9 kg/hh/month. Urban food producers are consuming 47 percent of their production while the remaining balance is sold for income generation. The data by package show that One House One Farm beneficiaries largely have the highest aggregate production levels (15.9 kg/hh/month), followed by Business Grant (8.9 kg/hh/month), Community Demonstration (7.8 kg/hh/month) and Small Input Support (6.6 kg/hh/month) beneficiaries.

However, as the data in

Table *5* shows, which provides a more meaningful account of production by detailing the output by type of item the underlying comparative position is very different. Table 6 (also below) which lists each package by standardizing according to the ratio to the average production level data, offers a still more clear comparison of relative performance.

Table 5: Average household production by package and item

Scheme	Production (kg/months/household)										Producers
	Veg.	Duck	Chicken	Eggs	Goat	Milk	Beef	Fish	Fruits	All	
SIS	5.1	1.5	0.9	0.9					6.7	**6.6**	1286
OHOF	7.4	1.5	1.6	2	3.2	0.3	6.6	7.2	7	**15.9**	95
CD	7.2	0.5	0.6	0.7				2.0	1.1	**7.8**	69
BG	24.1	1.9	1.8	1.7	3.6	7.3	7.9	6.8	0	**8.9**	238
Average	**6.0**	**1.5**	**1.1**	**1.2**	**3.5**	**6.3**	**7.5**	**3.2**	**6.6**	**7.4**	**1688**

Table 6: Household production relative to the average by package and item

Scheme	Production relative to average levels (+/- above/ below mean)									
	Veg.	Duck	Chicken	Eggs	Goat	Milk	Beef	Fish	Fruits	All
SIS	-15%	0%	-18%	-25%	-	-	-	-	2%	-11%
OHOF	23%	0%	45%	67%	-9%	-95%	-12%	125%	6%	115%
CD	20%	-67%	-45%	-42%	-	-	-	-38%	-83%	5%
BG	302%	27%	64%	42%	3%	16%	5%	113%	-	20%
Average	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Reflecting on both, a foremost finding is the comparative effectiveness of Business Grants, which it must be recalled are targeted on extremely poor women. BG production totals are well above averages on virtually all food categories. OHOF in site of providing the best overall output weight does, so on the basis of having a higher multiple product mix (within household), and its presence in categories where the outputs are heavier, notably animals and fish, where other packages are also less represented. This is not however to detract from its overall success, and indeed, it continues to perform well on individual categories also.

5.3.2. Consumption rates

As illustrated in Table 7 the highest consumption rates are found in the case of vegetables (58 per cent) followed by fruits (41 per cent), eggs (36 per cent), chicken (25 per cent), fish (32 per cent), milk (19 per cent). While the consumption of chicken and eggs, as returned to below, leads to higher levels of protein intake, extreme poor and poor food producers do not tend to consume beef or mutton meat, but rather sell it to generate income. This finding matches with expectations that local vegetables and fruit provide cheaper calories over meats.

Table 7: Average household production, consumption and sale by item

Item	Production (kg/hh/month)	Consumption (kg/hh/month)	Sale (kg/hh/ month)	Rate of food consumption (%)	Producers
Vegetable	6.0	3.5	2.5	58	1,312
Duck	1.5	0.2	1.3	14	265
Chicken	1.1	0.3	0.8	25	741
Eggs	1.2	0.4	0.8	36	627
Goat	3.5	0	3.5	1	162
Milk	6.3	1.2	5.1	19	14
Beef	7.5	0	7.5	0	0
Fish	3.2	1	2.2	32	54
Honey	0.2	0.1	0.1	39	5
Fruits	6.6	2.7	3.9	41	260
Overall	**7.4**	**3.5**	**3.9**	**47**	

Note: 10 eggs were converted as 1 kg. UPPR beneficiary average family size is 4.2 persons per household

5.3.3. Production by poverty status

Production performance by poverty status for the different food items is shown in Table 8. Overall production among the non-poor is the highest (12.2 kg/hh/month) of the three groups, followed by that of the poor (8 kg/hh/month), and the extreme poor (6.9 kg/hh/month). Yet, again however, aggregate weight is a problematic measure of performance. Indeed, it also has limited ordinal value given the different product mix and packages employed by each of the groups.

Indeed, the extreme poor (EP) perform better than the poor (P) in vegetable production (EP=6.2 kg/month/hh and P=5.7 kg/month/hh) and goat rearing (EP=3.6 kg/hh/month and P=3.1 kg/hh/month). In this latter case, the majority of extreme poor goat producers are BG beneficiaries, while the majority of poor goat producers are OHOF beneficiaries.

Similarly, fish production is another dimension where the extreme poor perform significantly better than the poor (EP=4.5 kg/hh/month and P=2.2 kg/hh/month). This might be the result of community based fish farming involving the extreme poor in *khas* or in ponds funded or leased by UPPR. The extreme poor also perform better than the poor in beef fattening (EP=8.7 kg/hh/month and P=5.7 kg/hh/month) and this might be explained by the direct provision of beef fattening business grants to the extreme poor.

Referring again to Table 8, there are no significant differences in the production of chickens (EP=1.0 kg/month/hh and P=1.2 kg/month/hh), ducks (EP=1.5 kg/month/hh and P=1.6 kg/month/hh) and eggs (EP and P=1.2 kg/hh/month) between the extreme poor and poor. Although the average milk production rate is 6.3 kg/hh/month in the case of extreme poor and poor households combined, production rates are considerably higher among the poor than among the extreme poor (EP=1.1 kg/month/hh and P=10.2 kg/month/hh).

Table 8: Average household production by item and poverty status

Item of food	Extreme poor production (kg/month/hh)	Extreme poor producers	Poor Production (kg/month/hh)	Poor Producers	Non-poor Production (kg/month/hh)	Non-poor producers
Vegetable	6.2	643	5.7	650	5.8	19
Duck	1.5	131	1.6	130	1.2	4
Chicken	1	425	1.2	306	1.6	10
Eggs	1.2	350	1.2	270	1.3	7
Goat	3.6	125	3.1	37	0	0
Milk	1.1	6	10.2	8	0	0
Beef	8.7	12	5.7	8	0	0
Fish	4.5	24	2.2	30	0	0
Honey	0.2	4	0	1	0	0
Fruits	6	101	6.7	149	11.5	10
Overall	**6.9 (928)**		**8.0 (748)**		**12.2 (21)**	

Note: Figures in parenthesis indicate the number of households producing each food item

The results of the bee-keeping and honey production pilots sampled only 5 beneficiaries, 4 of which are extreme poor. The average production of these latter beneficiaries was low (0.2 kg/hh/month) during a six-month period which covered the lean season. Results for this food production activity should be captured after one full flowering season. Indeed, the extreme poor simply do not have the capacity to feed the bees during the lean season, resulting in low production.

Local fruits such as guava, banana, lemons, papaya, mango, jackfruit and lychees were produced at an overall at the rate of 6.6 kg/hh/month. Fruit production is considerably higher in the case of non-poor (11.5 kg/hh/month) if compared to the poor (6.7 kg/hh/month) and extreme poor (6.0 kg/hh/month). This is almost certainly related to the access of the non-poor to a productive resource-base. A total of 21 non-poor beneficiaries received small input support (SIS) from the project. In fruit production, the involvement of the extreme poor (101 households) is lower than that of the poor (149 households). Clearly, here the production (and consumption) of

fruit could be scaled up as it represents a rich source of vitamins and minerals to improve nutritional status.

5.3.4. Household sales

Table 20 in Annex 1 shows that extreme poor urban food producers are consuming a smaller fraction of their production than the extreme poor (EP=43 per cent and P=50 per cent). Examining each food item individually, there are four items where the extreme poor consume a higher proportion than the poor. These are goat (EP=2 per cent and P=0.3 per cent), milk (EP=82 per cent and P=14 per cent), honey (E=39 percent and P=0 percent) and fruits (E=52 percent and P=34 percent).

Detailed analyses on household food production and consumption quantities, as well as consumption rates by package, poverty status and item can be found in Table 18, Table 19 and Table 20 in Annex 1. Likewise, household sale quantity and monetary value data by package, poverty status and item are included in Table 21 and
Table *22* in Annex 1. The impact on household incomes is also returned to in some detail, as a distinct programme objective, is returned to at section 5.5 below.

5.4. Household member calorie and protein intake

This sub-section estimates the nutritional (i.e. the calorie and protein intake) by household members resulting from UPPR urban food production activities. This project goal somewhat ranks first among equals, and therefore the impacts are examined in some detail. Moreover, it is worth highlighting that by converting food consumption into calories and grams of protein, we are able to provide standardized, and therefore, cross-food item comparisons.

5.4.1. Household member calorie and protein intake by package

Table 9 shows the caloric intake in kcal/person/day and the protein intake in g/person/day that the different packages provide for those households that consume their production. Packages on average provide 39.4 kcal/person/day and 2 protein grams/person/day. As elsewhere, the package level pattern varies to a certain extent. With regards to calorie intake, the One House One Farm scheme provides the highest calories to household members (65.6 kcal/person/day) among the four main schemes, followed by Small Input Support (40.1 kcal/person/day), Community Demonstration (30.4 kcal/person/day) and Business Grants (21.1 kcal/person/day). Examining protein intake levels, it can be seen that One House One Farm again provides the highest protein levels among the four main schemes (3.8 g/person/day), followed by Small Input Support 1.9 g/person/day), Community Demonstration (1.9 g/person/day) and Business Grants (1.6 g/person/day).

Table 9: Average household member calorie and protein intake by package

Scheme	Calorie Intake (kcal/person/day)	Protein Intake (g/person/day)	Consumers
SIS	40.1	1.9	1,189
OHOF	65.6	3.8	92
CD	30.4	1.9	66
BG	21.1	1.6	132
BK	7.2	0	4
CC	11.3	2	3
Overall	**39.4**	**2**	**1,486**

This is a very positive finding for OHOF, but not wholly unexpected given the scale of household activities. Moreover, it does not account for the varying cost of nutritional inputs, and indeed, if it might have been more cheaply procured elsewhere. Without further data it is not possible to probe these questions. Nevertheless, it is striking that SIS households, who receive very much

lower investment support achieved a caloric and protein input which is some 61 and 50 per cent respectively, of the OHOF figures.

5.4.2. Household member calorie and protein intake by item as a share of daily diet

Bangladeshi diets are dominated by cereal-based food staples, which represent the main source of calories (83 per cent). Non-cereal food items including fish, chicken, duck, mutton, beef, vegetables and fruits, account for 17 per cent of caloric intake[1]. The average kilocalorie value (kcal) of the different food items produced in urban areas was estimated[2].

The calorie intake per person per day (kcal/person/day) is calculated in Table 10 based on the different food items consumed by the household monthly (kg/household/month), assuming the UPPR average household size of 4.2 individuals. Table 6 shows that the average calorie intake is 39.4 kcal/person/day. Among all food items, vegetable calorie intake is found the highest (38 kcal/person/day), followed by fruits (17.3 kcal/person/day) and fish (12.7 kcal/person/day). As above, this confirms poorest household preference for cheaper sources of food energy.

Table 10: Average household member consumption and calorie intake by item

Item	Consumption (kg/hh/month)	Calorie intake (kcal/person/day)	Consumers
Vegetable	3.5	38	1312
Duck	0.2	4	265
Chicken	0.3	4.3	741
Eggs	0.4	6.6	627
Goat	0.0	10	162
Milk	1.2	6.2	14
Beef	0	0	20
Fish	1	12.7	54
Honey	0.1	5.8	5
Fruits	2.7	17.3	260
Overall	**3.5**	**39.4**	

Note: *UPPR beneficiary average family size is 4.2 people*

The national average protein intake in Bangladeshi people is 66 g/person/day (BBS; HIES, 2010). However, there is no disaggregated data on protein intake by poverty status. The programme's contribution towards protein intake, for the poor and extreme poor, is some 2 g/person/day, which represents 3 per cent of the threshold (Table 11). Survey results show that the main source of protein intake comes from fish (2.22 g/person/day), followed by eggs 1.85 g/person/day and vegetable 1.56 g/person/day.

Table 11. Average household member consumption and protein intake by item

Items	Consumption (kg/hh/month)	Protein intake (g/person/day)	Consumers
Vegetable	3.5	1.6	1312
Duck	0.2	0.9	265
Chicken	0.3	1	741
Eggs	0.4	0.4	627
Goat	0	1.9	162
Milk	1.2	0.3	14
Beef	0	0	20

[1] *Nutrition Country Profile 1999, published by FAO*).

[2] Sources used included Advance text book on food and nutrition Vol. II, P-43, 1991, Bangalore, India. and Important basic food charts. http://healthyeatingclub.com/info/books-phds/books/foodfacts/html/data/data2ahtml

Fish	1	2.2	54
Honey	0.1	0.0	5
Fruits	2.7	0.6	260
Overall	**3.5**	**1.98**	**1486**
National average		**66.0**	
UPPR share		**3%**	

5.4.3. Household member calorie and protein intake by poverty status

Although results are not representative according to poverty levels (as the sampling procedure was not structured to permit this), overall calorie intake levels by poverty status are shown in Table 12. Non-poor beneficiaries present the highest calorie intake levels (60 kcal/person/day), followed by the poor (42.6 kcal/person/day) and the extreme poor (36 kcal/day/person). This is related to the fact that across the product range, the extreme poor are consuming on average a smaller fraction of production, when compared to the poor and non-poor, despite household food production levels being relatively similar.

Table 12: Average household member calorie intake by poverty status

Items	Extreme poor (kcal/person/day)	Consumers	Poor (kcal/person/day)	Consumers	Non-poor (kcal/person/day)	Consumers
Vegetable	36.4	616	39.1	628	44.7	19
Duck	3.9	50	4.0	67	3.6	3
Chicken	3.9	202	4.58	186	4.8	7
Eggs	6.1	309	7.2	241	9.3	6
Goat	11.2	6	3.4	1	0	
Milk	4.8	6	7.2	8	0	
Beef	0	0	0	0	0	
Fish	17.1	15	9.7	22	0	
Honey	7.2	4	0	1	0	
Fruits	20.7	86	14.4	134	27.3	9
Overall	**36.0**	**765**	**42.6**	**701**	**60.0**	**20**
National average	**1,805**		**2,122**			
Non-cereal food intake	**17%**		**17%**			
National average, non-cereal food	**307**		**360**			
UPPR share, non-cereal food	**11.7%**		**11.8%**			

Examining each food item individually, the main source of caloric intake is found from vegetables (E=36.4 kcal/person/day and P=39.1 kcal/person/day), followed by fish (EP=17.1 kcal/person/day and P=9.7 kcal/person/day) and milk (EP=4.8 kcal/person/day and P=7.2 kcal/person/day). The pattern across the status groups again confirms our expectations that poorer producers both consume fewer calories, and proportionately draw on cheaper sources of calories (i.e. vegetables).

The national poverty line is predicated on a minimum consumption level of 2,122 kcal/person/day (BBS; 2010 HIES). As the daily non-cereal food intake is estimated at 17 per cent, the minimum daily non-cereal calorie intake can be estimated at 360 kcal/person/day for the poor. As UPPR urban food production grants are providing the extreme poor and the poor with an average of 36 kcal/person/day and 42.6 kcal/person/day supplements respectively, this represents 10 per cent and 12 per cent respectively of the threshold. In direct terms alone therefore, UFP activities have boosted caloric intake by one tenth of the minimum level. Given most UPPR dwellers will be below the poverty line, the boost to actual consumption will be considerably higher.

Table 13 shows that overall protein intake levels are lower among the extreme poor (1.81 g/person/day) if compared to the poor (2.14 g/person/day). This again supports the general pattern of extreme-poor urban food producers consuming a smaller fraction of their production, and that they are also generally consuming a lower level of proteins. The impact is especially pronounced as it is the higher protein food items which are sold on. Examining the different food items separately, the main source of protein intake for both groups comes from fish (EP=2.98 g/person/day and P=1.7), followed by goat in the case of the extreme poor (2.05 g/person/day) and vegetables in the case of poor (1.61 g/person/day). Vegetables also represent a rich source of protein intake for the extreme poor (1.5 g/person/day).

Table 13. Average household member protein intake by item and poverty status

Items	Extreme Poor (g/person/day)	Consumers	Poor (g/person/ day)	Consumers	Non-Poor (g/person/ day)	Consumers
Vegetable	1.50	616	1.61	628	1.84	19
Duck	0.93	50	0.94	67	0.85	3
Chicken	0.92	202	1.13	186	1.13	7
Eggs	0.35	309	0.41	241	0.53	6
Goat	2.05	6	0.62	1	0	0
Milk	0.23	6	0.34	8	0	0
Beef	0	0	0	0	0	0
Fish	2.98	15	1.7	22	0	0
Honey	0.002	4	0	0	0	0
Fruits	0.73	86	0.51	134	0.95	9
Overall	**1.81**	**765**	**2.14**	**701**	**2.87**	**20**

Finally, thorough analyses on household member calorie and protein intake by package, poverty status and item can be found in Table 23 and
Table *24* in Annex 1.

5.5. Impact on household incomes

The final performance criterion examined is the impact of onward sales on the incomes of producing households. The analysis builds on the initial data reported above within subsection 5.3 which deals with production. The analysis there, found that sales accounted around 53 per cent of overall production (50 per cent for Poor and 57 per cent for Extreme Poor Households). At this level sales income is a major outcome of the intervention. Indeed, it might be argued that an economic productivity case can be built around encouraging greater specialization, alongside inter-household trade and wider sales. It might also argued this is not necessarily problematic for nutritional impacts, assuming market purchases can ensure a balanced diet.

The analysis of income impacts is also enhanced by being able to use notional market incomes as cross-food item basis for comparisons. By using a standard set of market prices we can gross up sales production data to yield estimated incomes for packages and item types by poverty status (refer to Table 22 in Annex 1 for details). Table 14 below reports this data by package and *Table 13* reports this for item types. Incomes in both tables are given by Taka per household per month.

Table 14. Average monthly incomes (Tk/hh/month) by package and poverty status

Package	Extreme Poor (Tk/hh/month)	Poor (Tk /hh/month)	Non-poor (Tk/hh/month)
SIS	110	180	326
OHOF	1265	1468	-
CD	257	108	-
BG	1113	511	-
BK	52	0	-
CC	65	0	-
Overall	**393**	**275**	**326**

Table 15. Average monthly incomes (Tk/hh/month) by item and poverty status

Items	Extreme Poor (Tk /HH/ Month)	Producers	Poor (Tk /HH/ Month)	Producers	Non-Poor (Tk /HH/ Month)	Producers
Vegetable	58	643	42	650	31	19
Duck	162	131	158	130	111	4
Chicken	122	425	122	306	175	10
Eggs	68	350	59	270	62	7
Goat	1416	125	1219	37	-	-
Milk	10	6	442	8	-	-
Beef	2256	12	1474	8	-	-
Fish	405	24	165	30	-	-
Honey	52	4	0	1	-	-
Fruits	144	101	221	149	361	10
Others	102	16	255	24	25	1
Overall	**393**	**928**	**275**	**748**	**326**	**21**

The overall data reveal that onward sales are raising, on average, Tk.340 per householder per month. Moreover, that a greater sum is being generated from UFP packages by the Extreme Poor (Tk. 393 per household per month) to Poor households (Tk. 275 per month) and the Non-Poor (Tk. 326 per household per month). Table 14 which provides data for each of the main packages of support shows One House One Farm participant households are the most income generating. This is somewhat expected however, given the relative size of these activities within households. Yet additionally, and especially within extreme poor households, Business grants also rank highly. This rather tallies with similar findings made with regard to production. The range of income impacts by package is also surprising, again underlining the relative size of OHOF support in relation to others.

Referring to Table 15 on item contributions to incomes we find, as anticipated, that higher value added income generating activities are associated with higher value items - notably cattle and goats. Again, the returns to Extreme Poor households on this produce are above those for other groups. However, it is also important to underline that these are gross incomes data. Unfortunately, as noted, it has not been possible to report the net position, which would allow for input costs to be set off against income flows, and this must be borne in mind in considering these findings.

6. Conclusions

6

This penultimate section provides the main conclusions for this study and it is followed by a set of recommendations. It is divided into five sub-sections, which examine the two input criteria, and three output criteria outlined at the beginning of this report (respectively: distributional equity, investment costs, production volumes, nutritional outputs and income impacts). Taken in sum, these enable a judgment to be reached on the performance of UPPR's urban food programme, and that of the individual packages.

6.1. Pro-poor targeting of UPPR urban food production packages

In terms of equity, the primary consideration is the extent to which benefits reach the most deprived slum dwellers. Across the board, the data shows the measures are broadly pro-poor but vary in their coverage of the poorest households. Business Grants are the only scheme explicitly targeting the extreme poor. Yet the differences in the allocations of Small Input Support, One House One Farm and Community Demonstration grants among the extreme poor and the poor are marginal. Moreover, it may well be that productive opportunities are also constraining these activities from the supply side, given the potentially weaker productive potentials of the most poor. However, it is also important to recognize that there is some evidence of leakage to the non-poor (notably from SIS resources), and more might be done within the mass mainstream packages to further improve the proportion of extreme poor participants.

6.2. Household investment of UPPR urban food production packages

On the cost side, the highest average levels of total inputs were found among One House One Farm beneficiaries (Tk. 8,390/hh), followed by Business Grant beneficiaries (Tk.6,361/hh), Community Demonstration beneficiaries (Tk. 2,500/hh) and Small Input Support (Tk. 295/hh). This is perhaps unsurprising given the mix of activities the various packages support. OHOF is the primary vehicle for funding a variety of produce ranging from vegetable cultivation through to larger animal husbandry. The range of inputs is nevertheless surprising - with SIS investments being on average being one twentieth of the average OHOF inputs.

6.3. Household food production, consumption and sales

On the basis of crude volumes of output overall food production is estimated at 7.4 kg/hh/month, consumption at 3.5 kg/hh/month and sales at 3.9 kg/hh/month. Urban food producers are consuming 47 per cent of their production while the remaining balance is sold for income generation. One House One Farm beneficiaries present the highest aggregate production levels (at 15.9 kg/hh/month). There is however considerable variation among the packages and belying this are varying patterns of the output by food type. It is thus highly problematic to rank packages on the basis of overall output. Indeed, this is perhaps even more egregious than *comparing apples with oranges.*

A more nuanced and reliable analysis on the basis of item outputs suggest, in contrast, that Business Grants have as good if not a better productive record than OHOF. This is especially gratifying given these awards are targeted on the most poor. It is also worth noting that production levels from SIS grants, although relatively low on a simple comparative basis, are impressive when compared against the relatively modest investment costs.

Indeed, in respect of food consumption the data shows Small Input Support beneficiaries (57 per cent), who consume most of the greatest share of their own production. These are followed by One House One Farm beneficiaries (41 per cent), Community Demonstration Beneficiaries (37 per cent) and Business Grant beneficiaries (13 per cent). This somewhat reflects the mix of producers benefiting from the packages, but crucially also the mix of produce and nature of the respective packages. In general, poorer households consume a larger share of low value items, and predominate in those schemes which require lower productive inputs and capital.

Thus, in turn, we find, referring to the value of the food items produced which are sold, the more complex packages which comprise some animal husbandry activities – notably, One House One Farm provides households, followed by Business Grants rank above others. Lower value work supported by Community Demonstration and Small Input Support record far lower levels and proportions of sold output. The impact of poverty status tends to have the reverse but consistent effect here, with the poorest selling on high value items.

6.4. Nutritional impacts

The four main food production packages provide on average 39.4 kcal/person/day and 2 protein g/person/day. Although this forms a relatively low share of overall caloric requirements (as given by the national poverty line of 2,122 calories), it is not an inconsequential contribution at close to 20 per cent of the total. It is also worth remembering that virtually all of UPPR's client base, and the producers within this survey, are likely to be subsisting on consumption levels below this threshold.

With regards to calorie intake, the One House One Farm scheme provides the highest calories to household members among the four main schemes; this is followed by Small Input Support; then Community Demonstration; followed by Business Grants. Examining the protein intake, the One House One Farm again provides the highest protein levels among the four main schemes, with the others following a similar ordering. This pattern somewhat underlines the size of the OHOF activities, which typically amount to a micro-enterprise undertakings. It is also important to recognize that although there is a large range in nutritional inputs, each of the mainstream packages is making a clearly positive contribution to caloric intake and the quality of the diet. In terms of the mass contribution SIS activities stand out.

6.5 Income impacts

The income impacts data show some correspondence with the production findings in showing that OHOF and BG packages secure the highest income payoffs. Yet, crucially for the Extreme Poor BG appears the more effective in boosting household incomes. Additionally, if we attempt to take into account the cost investment data (recognizing the data and cost comparison problems) BG ranks especially well. In a similar vein, the SIS package provides an impressive income benefit given the very low input costs. The reverse might be noted in respect of the CD package where gross income impacts are weak and the likely net income position still more so.

It is however important to be cautious about rough and ready net cost comparisons without reliable data. OHOF activities will include the purchase of large animals which have longevities in excess of the cycle this survey. It is simple impossible to be definitive about these issues without further detailed research, and potentially, a new survey.

7. Recommendations

This section has been divided into three sub-sections. Firstly, recommendations on the future of UPPR urban food production programming are outlined; secondly,

7.1. Future UPPR urban food production programming

UPPR is aiming to streamline its urban food production portfolio, using the evidence generated by this survey. In this regard, the programme should focus more on Business Grants and Small Input Support grants, with a specific focus on the extreme poor.

Business Grants present relatively high investment costs, but these result in an excess of household food production that is sold and provides a significant additional source of household income. Moreover, the gender dimension of Business Grants, which are primarily allocated to extreme poor women, cannot be ignored as they have a very significant impact on women's empowerment and the welfare of these especially challenged families.

Small Input Support has proven to be inexpensive in terms of investment, which will facilitate its expansion in the future, while contributing significantly to the nutritional status of beneficiaries in terms of calorie and protein intake. The increase of SIS grants to diversify urban food production activities might also be considered. There are also major positive externalities associated with this type of production given the amenity value and greening of communities.

With regards to the other main individual urban food production scheme, One House One Farm, it is acknowledged its potential in terms of food production, consumption and sale, despite being the most expensive scheme in terms of investment. However, the lack of extreme poor targeting remains as a concern, as well as the lack of access to a productive resource base by the extreme poor. Further research will be conducted on the feasibility of this initiative for the extreme poor.

Consideration ought to also be given to discontinuing the Community Demonstration scheme as production and sales data shows that the results of households jointly co-operating in the same urban food production activity are modest when compared to individual grant transfers such as Business Grants and Small Input Support. This is somewhat consistent with incentive compatibility arguments put by contemporary agricultural economists.

7.2. Pro-poor urban land allocation for food production activities

The results of this study show the success of urban food production initiatives which target the poor and the extreme poor slum dwellers. Nonetheless, these population groups oftentimes lack the access to a productive resource base that would enable to conduct urban food production activities. In this regard, UPPR will continue to conduct advocacy with Government of Bangladesh and local government institutions in order to improve the access of the urban poorest to Government-owned productive resources like *khas* land and ponds. This links to wider land tenure concerns, and the need to allow for better use of common and community assets, respecting the need to maintain private incentives, alongside the environmental quality of these assets.

7.3. Ensuring food consumption among the poor and extreme poor

Overall, survey results have shown that households consume 47 per cent of the items they produce, selling the remaining production. UPPR should conduct advocacy activities with poor and extreme poor beneficiaries to encourage an adequate balance between consumption and sale. The precise balance is a matter for the UPPR and communities to resolve. Yet prima facie, it seems that consumption and improved nutrition should be the more pressing consideration. Given production costs for most items of food will be lowest in rural areas; Urban Food

production must have an additional and novel rationale, which emphasizes community and private benefits.

Although items produced can certainly represent a source of income to purchase nutritious food items or household assets, the nutritional impact that the protein and calorie-rich food items produced by the extreme poor and the poor themselves can have on their diet cannot be neglected.

7.4. Further research

In addition to conducting further research on individual food production packages for programme decision-making, further efforts should be directed at assessing the real net cost of production. This should allow for the amortization of all inputs and the recognition of stock levels. Without this research, it remains difficult to accurately provide a value-for-money appraisal of the various packages. Collecting the necessary data should be prioritized in future surveys.

Likewise, efforts should be directed at determining the uses of the income generated by the extreme poor and the poor after selling their production, in order to determine the share of income re-invested in food production, used to purchase food or assets, or deposited as savings, among others.

Annex 1. Additional Tables

Table 16. Stratified survey sampling design by town and package

Town	Package	Total HH-2009, 2010	Population proportion	Sample required	5% Adjustment for Non-response	Sample drawn	Household response rate (%)	Population coverage (%)
CHT	BK							
	BG	129	5.7%	5	5	5	100%	4%
	CC							
	CD	20	0.9%	1	1	1	100%	5%
	OHOF	19	0.8%	1	1	1	100%	5%
	SIS	2100	92.6%	85	89	88	98%	4%
	Total	2268	100.0%	92	96	95	99%	4%
DHK	BK							
	BG							
	CC							
	CD							
	OHOF	5	6.7%	3	3	3	100%	60%
	SIS	70	93.3%	39	41	40	98%	57%
	Total	75	100.0%	42	44	43	98%	57%
KNL	BK	10	1.0%	1	1	1	100%	10%
	BG	151	15.2%	13	14	13	93%	9%
	CC							
	CD	140	14.1%	12	13	13	100%	9%
	OHOF	22	2.2%	2	2	2	100%	9%
	SIS	672	67.5%	59	62	61	98%	9%
	Total	995	100.0%	88	92	90	98%	9%
SHT	BK							
	BG	116	16.6%	14	15	15	100%	13%
	CC							
	CD							
	OHOF	7	1.0%	1	1	1	100%	14%
	SIS	575	82.4%	70	74	73	99%	13%
	Total	698	100.0%	85	90	89	99%	13%
RAJ	BK	10	1.5%	1	1	1	100%	10%
	BG							
	CC	14	2.1%	2	2	2	100%	14%
	CD	20	2.9%	2	3	3	100%	15%
	OHOF	9	1.3%	1	1	1	100%	11%
	SIS	625	92.2%	77	81	81	100%	13%
	Total	678	100.0%	84	88	88	100%	13%
TNG	BK							
	BG	78	28.6%	20	21	21	100%	27%
	CC							
	CD	20	7.3%	5	5	5	100%	25%
	OHOF	15	5.5%	4	4	4	100%	27%
	SIS	160	58.6%	42	44	44	100%	28%
	Total	273	100.0%	71	74	74	100%	27%
MMS	BK							
	BG	150	29.1%	24	25	25	100%	17%
	CC							
	CD	15	2.9%	2	2	2	100%	13%
	OHOF	50	9.7%	8	8	8	100%	16%
	SIS	300	58.3%	47	50	50	100%	17%

	Total	515	100.0%	81	85	85	100%	17%
RNP	BK	8	0.6%	1	1	1	100%	13%
	BG	60	4.7%	4	4	4	100%	7%
	CC	10	0.8%	1	1	1	100%	10%
	CD	120	9.4%	8	9	9	100%	8%
	OHOF	78	6.1%	5	6	6	100%	8%
	SIS	1000	78.4%	70	73	72	99%	7%
	Total	1276	100.0%	89	94	93	99%	7%
BRL	BK							
	BG	197	25.4%	22	23	23	100%	12%
	CC							
	CD	40	5.1%	4	5	5	100%	13%
	OHOF	40	5.1%	4	5	5	100%	13%
	SIS	500	64.4%	55	58	57	98%	11%
	Total	777	100.0%	86	91	90	99%	12%
JSR	BK							
	BG	16	1.3%	1	1	1	100%	6%
	CC							
	CD							
	OHOF	22	1.8%	2	2	2	100%	9%
	SIS	1200	96.9%	86	91	90	99%	8%
	Total	1238	100.0%	89	94	93	99%	8%
CML	BK							
	BG							
	CC							
	CD							
	OHOF	35	10.1%	8	8	8	100%	23%
	SIS	310	89.9%	67	70	70	100%	23%
	Total	345	100.0%	75	78	78	100%	23%
DNP	BK	10	0.8%	1	1	1	100%	10%
	BG	189	16.0%	14	15	15	100%	8%
	CC	10	0.8%	1	1	1	100%	10%
	CD	100	8.5%	8	8	8	100%	8%
	OHOF	61	5.2%	5	5	5	100%	8%
	SIS	810	68.6%	61	64	63	98%	8%
	Total	1180	100.0%	89	94	93	99%	8%
NBG	BK							
	BG							
	CC							
	CD	40	7.4%	6	6	6	100%	15%
	OHOF	104	19.1%	16	16	16	100%	15%
	SIS	400	73.5%	60	63	63	100%	16%
	Total	544	100.0%	82	85	85	100%	16%
BGR	BK							
	BG	300	32.8%	29	30	29	97%	10%
	CC							
	CD							
	OHOF	67	7.3%	6	7	7	100%	10%
	SIS	548	59.9%	52	55	55	100%	10%
	Total	915	100.0%	87	92	91	99%	10%
TGL	BK							
	BG	120	15.4%	13	14	14	100%	12%
	CC							
	CD							
	OHOF							

	SIS	657	84.6%	73	78	76	97%	12%
	Total	777	100.0%	86	92	90	98%	12%
GZP	BK							
	BG	60	15%	11	12	12	100%	20%
	CC							
	CD							
	OHOF	22	5%	4	4	4	100%	18%
	SIS	325	80%	62	65	65	100%	20%
	Total	407	100%	78	81	81	100%	20%
NOG	BK							
	BG							
	CC							
	CD							
	OHOF	37	5.8%	5	5	5	100%	14%
	SIS	600	94.2%	79	83	83	100%	14%
	Total	637	100.0%	84	88	88	100%	14%
GPG	BK							
	BG	619	43.2%	39	41	41	100%	7%
	CC							
	CD	20	1.4%	1	1	1	100%	5%
	OHOF	126	8.8%	8	8	8	100%	6%
	SIS	667	46.6%	42	44	44	100%	7%
	Total	1432	100.0%	90	94	94	100%	7%
HBG	BK	10	1.4%	1	1	1	100%	10%
	BG	54	7.6%	6	7	7	100%	13%
	CC							
	CD	125	17.6%	15	16	16	100%	13%
	OHOF	21	3.0%	3	3	3	100%	14%
	SIS	500	70.4%	60	63	62	98%	12%
	Total	710	100.0%	85	90	89	99%	13%
SRG	BK							
	BG	39	19.3%	13	13	13	100%	33%
	CC							
	CD							
	OHOF	18	8.9%	6	6	6	100%	33%
	SIS	145	71.8%	47	49	49	100%	34%
	Total	202	100.0%	65	68	68	100%	34%
All	**BK**	**48**	**0.3%**	**5**	**5**	**5**	**100%**	**10%**
	BG	**2,278**	**14.3%**	**229**	**240**	**238**	**99%**	**10%**
	CC	**34**	**0.2%**	**4**	**4**	**4**	**100%**	**12%**
	CD	**660**	**4.1%**	**66**	**69**	**69**	**100%**	**10%**
	OHOF	**758**	**4.8%**	**90**	**95**	**95**	**100%**	**13%**
	SIS	**12,164**	**76.3%**	**1234**	**1297**	**1286**	**99%**	**11%**
	Total	**15,942**	**100.0%**	**1628**	**1,710**	**1,697**	**99%**	**11%**

Confidence Interval 10
Confidence Level 95%

Table 17. Household investment (in Tk.) in urban food production activities by package and poverty status

Scheme	Poverty status	Households	Percentage	Average Culture duration (months)	Initial additional investment (Tk)- Average	Average running cost	UPPR budget/ project grant (Tk)		Total Investment (Tk) -average	Investment (Tk per month) -average
						Mean	Mean	Per capita budget percentage		
BK	E	4	80	8	177	217	5,148	80	5,542	755
	P	1	20	3	200	0	5,150	20	5,350	1,783
	Total	5	100	7	181	173	5,149	100	5,503	960
BG	E	204	86	10	697	820	4,776	86	6,293	800
	P	34	14	17	1,454	312	5,000	14	6,766	404
	Total	238	100	11	805	748	4,808	100	6,361	743
Catfish	E	3	75	5	158	193	3,188	75	3,540	946
	P	1	25	3	225	32	5,665	25	5,922	1,974
	Total	4	100	4	175	153	3,808	100	4,136	1,203
CD	E	31	45	11	212	309	2,547	45	3,068	432
	P	38	55	12	135	236	1,666	55	2,037	304
	Total	69	100	12	170	269	2,062	100	2,500	362
OHOF	E	46	48	11	1,325	1,803	5,000	48	8,128	1,013
	P	49	52	10	2,065	1,582	4,989	52	8,635	1,301
	Total	95	100	11	1,707	1,689	4,994	100	8,390	1,162
SIS	E	640	50	9	71	21	176	50	269	49
	N	21	2	7	91	9	190	2	290	65
	P	625	49	8	122	38	163	49	323	58
	Total	1,286	100	9	96	29	170	100	295	54
Total	**E**	**928**	**55**	**9**	**276**	**296**	**1,537**	**55**	**2,109**	**281**
	N	**21**	**1**	**7**	**91**	**9**	**190**	**1**	**290**	**65**
	P	**748**	**44**	**9**	**311**	**162**	**789**	**44**	**1,262**	**173**
	Total	**1,697**	**100**	**9**	**289**	**233**	**1,191**	**100**	**1,713**	**230**

Table 18. Average monthly household production (kg/household/month) by package, poverty status and item

Package	Poverty Status	Culture durat. in months		Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E	8	4																	0.2	4					0.2	4
	P	3	1																	0.0	1					0.0	1
	Total	7	5																	0.2	5					0.2	5
BG	E	10	204	27.7	38	2.4	23	1.9	85	1.8	85	3.7	102	1.3	5	9.3	9	7.8	2							9.4	204
	P	17	34	4.9	7	1.3	15	1.2	15	1.4	14	1.3	5	11.6	7	4.9	4	5.8	2							6.1	34
	Total	11	238	24.1	45	1.9	38	1.8	100	1.7	99	3.6	107	7.3	12	7.9	13	6.8	4							8.9	238
Catfish	E	5	3															1.3	3							1.3	3
	P	3	1															1.7	1							1.7	1
	Total	4	4															1.4	4							1.4	4
CD	E	11	31	9.6	29	0.5	2	0.8	4	0.9	4							3.3	14			1.5	4			11.0	31
	P	12	38	5.1	33	0.5	4	0.2	2	0.1	2							1.3	23			0.1	2			5.3	38
	Total	12	69	7.2	62	0.5	6	0.6	6	0.7	6							2.0	37			1.1	6			7.8	69
OHOF	E	11	46	8.2	41	1.5	17	1.7	40	2.1	38	2.9	23	0.2	1	6.8	3	8.4	5			7.0	15	2.1	6	16.4	46
	P	10	49	6.6	45	1.4	19	1.6	43	2.0	44	3.3	32	0.5	1	6.4	4	5.6	4			7.1	14	1.6	10	15.3	49
	Total	11	95	7.4	86	1.5	36	1.6	83	2.0	82	3.2	55	0.3	2	6.6	7	7.2	9			7.0	29	1.8	16	15.9	95
SIS	E	9	640	4.4	535	1.3	89	0.7	296	0.8	223											6.0	82	1.3	10	5.2	640
	N	7	21	5.8	19	1.2	4	1.6	10	1.3	7											11.5	10	0.8	1	12.2	21
	P	8	625	5.7	565	1.7	92	1.1	246	1.0	210											6.8	133	4.6	14	7.7	625
	Total	9	1,286	5.1	1,119	1.5	185	0.9	552	0.9	440											6.7	225	3.1	25	6.6	1,286
Total	**E**	**9**	**928**	**6.2**	**643**	**1.5**	**131**	**1.0**	**425**	**1.2**	**350**	**3.6**	**125**	**1.1**	**6**	**8.7**	**12**	**4.5**	**24**	**0.2**	**4**	**6.0**	**101**	**1.6**	**16**	**6.9**	**928**
	N	**7**	**21**	**5.8**	**19**	**1.2**	**4**	**1.6**	**10**	**1.3**	**7**											**11.5**	**10**	**0.8**	**1**	**12.2**	**21**
	P	**9**	**748**	**5.7**	**650**	**1.6**	**130**	**1.2**	**306**	**1.2**	**270**	**3.1**	**37**	**10.2**	**8**	**5.7**	**8**	**2.2**	**30**	**0.0**	**1**	**6.7**	**149**	**3.3**	**24**	**8.0**	**748**
	Total	**9**	**1,697**	**6.0**	**1,312**	**1.5**	**265**	**1.1**	**741**	**1.2**	**627**	**3.5**	**162**	**6.3**	**14**	**7.5**	**20**	**3.2**	**54**	**0.2**	**5**	**6.6**	**260**	**2.6**	**41**	**7.4**	**1,697**

Table 19. Average monthly household consumption (kg/household/month) by package, poverty status and item

Package	Poverty Status	Culture durat. in months		Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E	8	4																	0.1	4					0.1	4
	P	3	1																	0.0	1					0.0	1
	Total	7	5																	0.1	5					0.1	5
BG	E	10	204	3.6	38	0.2	23	0.3	85	0.5	85	0.1	102	1.1	5			0.6	2							1.1	204
	P	17	34	2.1	7	0.4	15	0.4	15	0.3	14	0.0	5	1.5	7			1.4	2							1.3	34
	Total	11	238	3.3	45	0.3	38	0.3	100	0.5	99	0.1	107	1.3	12			1.0	4							1.1	238
Catfish	E	5	3															0.8	3							0.8	3
	P	3	1															1.7	1							1.7	1
	Total	4	4															1.0	4							1.0	4
CD	E	11	31	3.1	29	0.3	2	0.1	4	0.2	4							1.5	14			0.2	4			3.7	31
	P	12	38	2.1	33	0.3	4	0.1	2	0.1	2							0.6	23			0.1	2			2.2	38
	Total	12	69	2.6	62	0.3	6	0.1	6	0.2	6							0.9	37			0.2	6			2.9	69
OHOF	E	11	46	5.2	41	0.4	17	0.4	40	0.5	38	0.0	23	0.2	1			1.2	5			2.9	15	0.5	6	6.7	46
	P	10	49	4.3	45	0.2	19	0.4	43	0.7	44	0.0	32	0.5	1			1.8	4			3.0	14	0.7	10	6.2	49
	Total	11	95	4.7	86	0.3	36	0.4	83	0.6	82	0.0	55	0.3	2			1.4	9			2.9	29	0.6	16	6.4	95
SIS	E	9	640	3.2	535	0.1	89	0.2	296	0.3	223											3.3	82	0.6	10	3.3	640
	N	7	21	4.3	19	0.3	4	0.4	10	0.6	7											4.3	10	0.5	1	6.4	21
	P	8	625	3.7	565	0.2	92	0.3	246	0.5	210											2.2	133	0.8	14	4.1	625
	Total	9	1,286	3.4	1,119	0.2	185	0.2	552	0.4	440											2.7	225	0.7	25	3.7	1,286
Total	**E**	**9**	**928**	**3.3**	**643**	**0.2**	**131**	**0.2**	**425**	**0.4**	**350**	**0.1**	**125**	**0.9**	**6**			**1.3**	**24**	**0.1**	**4**	**3.1**	**101**	**0.6**	**16**	**3.0**	**928**
	N	**7**	**21**	**4.3**	**19**	**0.3**	**4**	**0.4**	**10**	**0.6**	**7**											**4.3**	**10**	**0.5**	**1**	**6.4**	**21**
	P	**9**	**748**	**3.6**	**650**	**0.2**	**130**	**0.3**	**306**	**0.5**	**270**	**0.0**	**37**	**1.4**	**8**			**0.8**	**30**	**0.0**	**1**	**2.3**	**149**	**0.8**	**24**	**4.0**	**748**
	Total	**9**	**1,697**	**3.5**	**1,312**	**0.2**	**265**	**0.3**	**741**	**0.4**	**627**	**0.0**	**162**	**1.2**	**14**			**1.0**	**54**	**0.1**	**5**	**2.7**	**260**	**0.7**	**41**	**3.5**	**1,697**

Table 20. Average percentage of household consumption by package, poverty status and item

Package	Poverty Status	Culture durat. in months		Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E	8	4																	39	4					39	4
	P	3	1																	0	1					0	1
	Total	7	5																	39	5					39	5
BG	E	10	204	13	38	9	23	16	85	30	85	2	102	82	5			8	2							12	204
	P	17	34	42	7	32	15	31	15	24	14	0	5	13	7			25	2							21	34
	Total	11	238	14	45	15	38	18	100	29	99	2	107	18	12			15	4							13	238
Catfish	E	5	3															60	3							60	3
	P	3	1															100	1							100	1
	Total	4	4															72	4							72	4
CD	E	11	31	32	29	50	2	16	4	22	4							45	14			14	4			33	31
	P	12	38	42	33	50	4	47	2	38	2							46	23			100	2			42	38
	Total	12	69	36	62	50	6	19	6	23	6							45	37			17	6			37	69
OHOF	E	11	46	64	41	24	17	25	40	26	38	0	23	100	1			14	5			41	15	24	6	41	46
	P	10	49	65	45	14	19	26	43	35	44	0.3	32	100	1			32	4			42	14	46	10	40	49
	Total	11	95	64	86	19	36	25	83	30	82	0.2	55	100	2			20	9			42	29	37	16	41	95
SIS	E	9	640	73	535	10	89	24	296	39	223											55	82	46	10	63	640
	N	7	21	73	19	26	4	26	10	45	7											37	10	67	1	52	21
	P	8	625	64	565	13	92	31	246	44	210											33	133	18	14	53	625
	Total	9	1,286	68	1,119	12	185	28	552	42	440											41	225	23	25	57	1,286
Total	**E**	**9**	**928**	**53**	**643**	**12**	**131**	**21**	**425**	**33**	**350**	**2**	**125**	**82**	**6**			**28**	**24**	**39**	**4**	**52**	**101**	**36**	**16**	**43**	**928**
	N	**7**	**21**	**73**	**19**	**26**	**4**	**26**	**10**	**45**	**7**											**37**	**10**	**67**	**1**	**52**	**21**
	P	**9**	**748**	**63**	**650**	**16**	**130**	**30**	**306**	**40**	**270**	**0.3**	**37**	**14**	**8**			**39**	**30**	**0**	**1**	**34**	**149**	**24**	**24**	**50**	**748**
	Total	**9**	**1,697**	**58**	**1,312**	**14**	**265**	**25**	**741**	**36**	**627**	**1**	**162**	**19**	**14**			**32**	**54**	**39**	**5**	**41**	**260**	**27**	**41**	**47**	**1,697**

Table 21. Average monthly household sale (kg/household/month) by package, poverty status and item

Package	Poverty Status	Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E																	0.1	4					0.1	4
	P																	0.0	1					0.0	1
	Total																	0.1	5					0.1	5
BG	E	24.1	38	2	23	1.6	85	1.3	85	3.7	102	0.2	5	9.3	9	7.1	2							8.2	204
	P	2.8	7	1	15	0.8	15	1.0	14	1.3	5	10.1	7	4.9	4	4.3	2							4.8	34
	Total	20.8	45	2	38	1.5	100	1.2	99	3.6	107	6.0	12	7.9	13	5.7	4							7.8	238
Catfish	E															0.5	3							0.5	3
	P															0.0	1							0.0	1
	Total															0.4	4							0.4	4
CD	E	6.5	29	0.3	2	0.7	4	0.7	4							1.8	14			1.3	4			7.3	31
	P	3.0	33	0.3	4	0.1	2	0.1	2							0.7	23			0.0	2			3.0	38
	Total	4.6	62	0.3	6	0.5	6	0.5	6							1.1	37			0.9	6			5.0	69
OHOF	E	3.0	41	1	17	1.3	40	1.5	38	2.9	23		1	6.8	3	7.3	5			4.1	15	1.6	6	9.7	46
	P	2.3	45	1	19	1.2	43	1.3	44	3.3	32		1	6.4	4	3.8	4			4.1	14	0.8	10	9.1	49
	Total	2.6	86	1	36	1.2	83	1.4	82	3.2	55		2	6.6	7	5.7	9			4.1	29	1.1	16	9.4	95
SIS	E	1.2	535	1	89	0.5	296	0.5	223											2.7	82	0.7	10	1.9	640
	N	1.6	19	1	4	1.2	10	0.7	7											7.2	10	0.3	1	5.8	21
	P	2.0	565	1	92	0.8	246	0.6	210											4.5	133	3.8	14	3.6	625
	Total	1.6	1,119	1	185	0.6	552	0.5	440											4.0	225	2.4	25	2.8	1,286
Total	**E**	2.9	643	1	131	0.8	425	0.8	350	3.5	125	0.2	6	8.7	12	3.2	24	0.1	4	2.9	101	1.0	16	3.9	928
	N	1.6	19	1	4	1.2	10	0.7	7											7.2	10	0.3	1	5.8	21
	P	2.1	650	1	130	0.8	306	0.7	270	3.0	37	8.8	8	5.7	8	1.3	30	0.0	1	4.4	149	2.5	24	4.0	748
	Total	2.5	1,312	1	265	0.8	741	0.8	627	3.4	162	5.1	14	7.5	20	2.2	54	0.1	5	3.9	260	1.9	41	3.9	1,697

Table 22. Average monthly household sale value (Tk./hh/month) by package, poverty status and item

Package	Poverty Status	Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E																	52	4					52	4
	P																	0	1					0	1
	Total																	42	5					42	5
BG	E	482	38	258	23	238	85	106	85	1,471	102	12	5	2,416	9	892	2							1,113	204
	P	57	7	102	15	120	15	86	14	538	5	506	7	1,277	4	543	2							511	34
	Total	416	45	197	38	221	100	103	99	1,427	107	300	12	2,065	13	718	4							1,027	238
Catfish	E															65	3							65	3
	P															0	1							0	1
	Total															49	4							49	4
CD	E	130	29	30	2	105	4	60	4							229	14			66	4			257	31
	P	60	33	30	4	15	2	7	2							85	23			0	2			108	38
	Total	93	62	30	6	75	6	42	6							140	37			44	6			175	69
OHOF	E	60	41	140	17	190	40	130	38	1,172	23	0	1	1,777	3	906	5			206	15	155	6	1,265	46
	P	46	45	144	19	178	43	108	44	1,326	32	0	1	1,671	4	478	4			204	14	85	10	1,468	49
	Total	53	86	142	36	184	83	118	82	1,261	55	0	2	1,716	7	716	9			205	29	111	16	1,370	95
SIS	E	24	535	145	89	80	296	43	223											136	82	70	10	110	640
	N	31	19	111	4	175	10	62	7											361	10	25	1	326	21
	P	41	565	176	92	113	246	48	210											226	133	376	14	180	625
	Total	32	1,119	160	185	96	552	46	440											200	225	240	25	148	1,286
Total	**E**	**58**	**643**	**162**	**131**	**122**	**425**	**68**	**350**	**1,416**	**125**	**10**	**6**	**2,256**	**12**	**405**	**24**	**52**	**4**	**144**	**101**	**102**	**16**	**393**	**928**
	N	**31**	**19**	**111**	**4**	**175**	**10**	**62**	**7**											**361**	**10**	**25**	**1**	**326**	**21**
	P	**42**	**650**	**158**	**130**	**122**	**306**	**59**	**270**	**1,219**	**37**	**442**	**8**	**1,474**	**8**	**165**	**30**	**0**	**1**	**221**	**149**	**255**	**24**	**275**	**748**
	Total	**50**	**1,312**	**160**	**265**	**123**	**741**	**64**	**627**	**1,371**	**162**	**257**	**14**	**1,943**	**20**	**272**	**54**	**42**	**5**	**197**	**260**	**189**	**41**	**340**	**1,697**

Sale value of individual items calculated as follows:

Average price per kg (in BDT)											
Veg	**Duck**	**Chicken**	**Eggs**	**Goat**	**Milk**	**Beef**	**Fish**	**Honey**	**Mushroom**	**Fruits**	**Others**
20	120	150	84	400	50	260	125	350	200	50	100

Table 23. Average household member calorie intake (Kcal/person/month) by package, poverty status and item

Package	Poverty Status	Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E																								
	P																								
	Total																	7.2	4					7.2	4
BG	E	40.5	35	4.2	10	5.1	44	7.7	78	11.2	6	5.6	5			10.6	1							23.4	102
	P	21.6	7	3.5	15	3.3	14	4.7	13			7.8	7			12.2	2							13.0	30
	Total	37.3	42	3.7	25	4.6	58	7.3	91	11.2	6	6.9	12			11.7	3							21.1	132
Catfish	E															9.9	2							9.9	2
	P															14.1	1							14.1	1
	Total															11.3	3							11.3	3
CD	E	34.9	27	2.1	2	1.1	4	2.7	4							17.6	10			1.2	4			39.4	29
	P	22.3	33	2.1	4	0.7	2	0.7	2							6.4	18			0.7	2			23.3	37
	Total	28.0	60	2.1	6	1.0	6	2.0	6							10.4	28			1.0	6			30.4	66
OHOF	E	54.4	41	4.5	12	5.2	27	7.6	36			0.9	1			24.7	2			18.9	13	10.5	3	68.8	44
	P	46.4	44	3.2	10	5.0	30	9.8	41	3.4	1	2.7	1			60.4	1			18.2	13	11.0	7	62.6	48
	Total	50.3	85	3.9	22	5.1	57	8.7	77	3.4	1	1.8	2			36.6	3			18.6	26	10.8	10	65.6	92
SIS	E	34.7	513	3.7	26	3.3	127	5.2	191											22.2	69	9.0	7	35.8	584
	N	44.7	19	3.6	3	4.8	7	9.3	6											27.3	9	5.2	1	60.0	20
	P	39.8	544	4.6	38	4.9	140	6.9	185											14.2	119	13.8	9	43.8	585
	Total	37.5	1,076	4.2	67	4.2	274	6.1	382											17.6	197	11.3	17	40.1	1,189
Total	**E**	36.4	616	3.9	50	3.9	202	6.1	309	11.2	6	4.8	6			17.1	15	7.2	4	20.7	86	9.4	10	36.0	765
	N	44.7	19	3.6	3	4.8	7	9.3	6											27.3	9	5.2	1	60.0	20
	P	39.1	628	4.0	67	4.8	186	7.2	241	3.4	1	7.2	8			9.7	22			14.4	134	12.6	16	42.6	701
	Total	37.9	1,263	4.0	120	4.3	395	6.6	556	10.0	7	6.2	14			12.7	37	7.2	4	17.3	229	11.1	27	39.4	1,486

Table 24. Average household member protein intake (gl/person/day) by package, poverty status and item

Package	Poverty Status	Vegetable		Duck		Chicken		Eggs		Goat		Milk		Beef		Fish		Honey		Fruits		Others		Overall	
		Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value	Mean	n-value
BK	E																	0.002	4					0.002	4
	P																								
	Total																	0.002	4					0.002	4
BG	E	1.67	35	0.98	10	1.19	44	0.44	78	2.05	6	0.26	5			1.85	1							1.67	102
	P	0.89	7	0.81	15	0.77	14	0.27	13			0.37	7			2.14	2							1.32	30
	Total	1.54	42	0.88	25	1.09	58	0.42	91	2.05	6	0.33	12			2.04	3							1.59	132
Catfish	E															1.72	2							1.72	2
	P															2.46	1							2.46	1
	Total															1.97	3							1.97	3
CD	E	1.44	27	0.50	2	0.26	4	0.15	4							3.08	10			0.04	4			2.50	29
	P	0.92	33	0.50	4	0.17	2	0.04	2							1.11	18			0.02	2			1.43	37
	Total	1.15	60	0.50	6	0.23	6	0.12	6							1.82	28			0.04	6			1.90	66
OHOF	E	2.24	41	1.06	12	1.23	27	0.43	36			0.04	1			4.32	2			0.66	13	0.43	3	3.91	44
	P	1.91	44	0.76	10	1.17	30	0.56	41	0.62	1	0.13	1			10.56	1			0.64	13	0.45	7	3.59	48
	Total	2.07	85	0.93	22	1.20	57	0.50	77	0.62	1	0.08	2			6.40	3			0.65	26	0.45	10	3.75	92
SIS	E	1.43	513	0.87	26	0.78	127	0.30	191											0.78	69	0.37	7	1.66	584
	N	1.84	19	0.85	3	1.13	7	0.53	6											0.95	9	0.22	1	2.87	20
	P	1.64	544	1.08	38	1.16	140	0.39	185											0.50	119	0.57	9	2.11	585
	Total	1.54	1,076	0.99	67	0.98	274	0.35	382											0.62	197	0.47	17	1.90	1,189
Total	**E**	**1.50**	**616**	**0.93**	**50**	**0.92**	**202**	**0.35**	**309**	**2.05**	**6**	**0.23**	**6**			**2.98**	**15**	**0.002**	**4**	**0.73**	**86**	**0.39**	**10**	**1.81**	**765**
	N	**1.84**	**19**	**0.85**	**3**	**1.13**	**7**	**0.53**	**6**											**0.95**	**9**	**0.22**	**1**	**2.87**	**20**
	P	**1.61**	**628**	**0.94**	**67**	**1.13**	**186**	**0.41**	**241**	**0.62**	**1**	**0.34**	**8**			**1.70**	**22**			**0.51**	**134**	**0.52**	**16**	**2.14**	**701**
	Total	**1.56**	**1,263**	**0.93**	**120**	**1.02**	**395**	**0.38**	**556**	**1.85**	**7**	**0.29**	**14**			**2.22**	**37**	**0.002**	**4**	**0.61**	**229**	**0.46**	**27**	**1.98**	**1,486**

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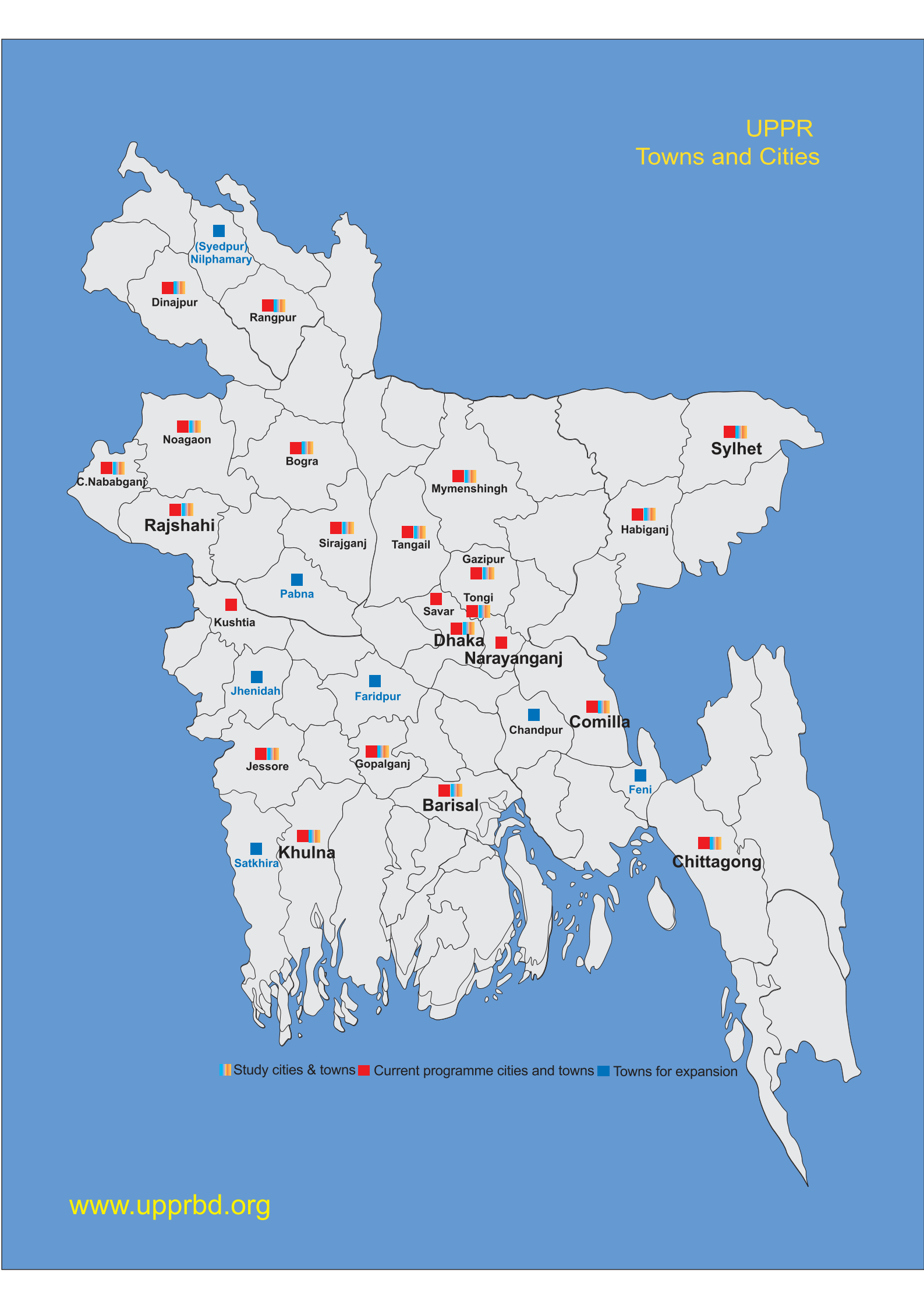
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