

# PURCHASE FOR PROGRESS MONITORING & EVALUATION BASELINE SAMPLING STRATEGY



Prepared by World Food Programme and  
Management Systems International



# Table of Contents

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. PURCHASE FOR PROGRESS.....</b>	<b>1</b>
Local and Regional Procurement .....	2
Purchase for Progress.....	2
Monitoring and Evaluation of P4P .....	3
<b>3. SAMPLING REQUIREMENTS FOR P4P MONITORING AND EVALUATION.....</b>	<b>4</b>
Impact Assessment.....	4
Data Collection Plan.....	5
A Note on Selecting Participating Farmer Organizations .....	6
The Timing of Data Collection .....	7
<b>4. SELECTING SAMPLES .....</b>	<b>7</b>
Farmer Organizations .....	7
i. Selecting the P4P Farmer Organizations .....	8
ii. Selecting the Non-P4P Farmer Organizations.....	8
Farmers.....	10
i. Selecting the P4P Farmers.....	11
ii. Selecting the Non-P4P Farmers .....	13
iii. Determining Sample Size.....	13
Traders.....	14
<b>5. ADDITIONAL AND SUPPLEMENTARY RESOURCES .....</b>	<b>15</b>

# 1. INTRODUCTION

The Purchase for Progress monitoring and evaluation system must support standard performance monitoring of P4P activities as well as evaluation and impact assessment. Accomplishing these objectives, and particularly impact assessment, requires specific approaches to data collection including specifying how, when, and from whom data are collected. This manual describes how to implement the baseline rounds of the three primary data collection tools of the M&E system (i.e., the surveys of farmer organizations, smallholder farmers, and traders).

The manual focuses on providing the practical guidance and detailed instructions necessary to collect the primary baseline data required to fulfill the monitoring and evaluation objectives of P4P. It complements other M&E system reports that provide greater detail on the rationale for the impact assessment approach and sampling strategy. Section 2 provides the context for the remainder of the manual by briefly reviewing Purchase for Progress. The third section describes the data collection and sampling requirements of the monitoring and evaluation system and provides the rationale for the detailed data collection processes described in the fourth section (i.e., the intended targets of the data collection efforts and the sampling strategy). The fourth section, comprising the bulk of the manual, describes in step-by-step detail how to define sampling frames, determine sample sizes, and select samples for baseline surveys of farmer organizations, smallholder farmers, and traders.

The specific implementation of P4P varies across countries. In some cases, these variations have implications for the sampling strategy and sample selection. The strategy and specific procedures described here, however, are general enough that they will apply to most countries.

## 2. PURCHASE FOR PROGRESS

Purchase for progress is a five-year pilot project of the World Food Programme. In general, it aims to learn how the organization can best use its market presence in developing countries to increase incomes and livelihoods of smallholder/low income farmers by increasing their production of staple commodities and enhancing their access to markets in which to sell their surpluses.

More specifically, WFP is buying an increasing amount of the food it needs to meet its requirements from within the countries or regions in which it distributes food. This “local and regional procurement” (LRP) has several benefits over international food purchases. These include: 1) local prices are often lower than international prices because of lower transportation costs. This allows WFP to buy more food with a given amount of resources, 2) food is often available more quickly when purchased from within the country or region in which it is needed, and 3) food procured locally is often more suited to local tastes than food procured from outside the country or region.

Since WFP is committed to buying food locally in the countries or regions in which it works, it seeks to learn how it can do so in a manner that most benefits smallholder farmers. Purchase for Progress is a five-year pilot project that will test alternative ways to enhance the benefits to smallholder/low income farmers associated with WFP’s procurement. The remainder of this section briefly describes how WFP procures locally and regionally now (LRP) and how P4P differs from LRP. The comparison effectively illustrates how P4P is expected to work and provides the foundation for understanding the design of the monitoring and evaluation system.

## Local and Regional Procurement

WFP has been buying in the countries or regions in which it distributes food for decades. However, it has structured that procurement largely through existing markets. That is, WFP buys largely from traders with sufficient capacity to deliver large quantities of high quality commodities to specified locations on time and bagged and marked to WFP specifications. To ensure contract performance, WFP generally requires substantial performance bonds of its suppliers.

Because smallholder farmers often produce a majority of the staple commodities in developing countries, most of the commodities WFP buys through LRP probably comes from smallholder farmers. There are many reasons, however, that smallholder farmers do not fare particularly well in existing markets. For example:

- Smallholder farmers generally suffer from low productivity. They often lack access to inputs, technical assistance, reliable markets, or credit that would encourage or facilitate investment in agricultural production.
- Smallholder farmers are often geographically isolated from markets. They live in remote areas, far from market centers, with poor transportation infrastructure that may be completely impassible during some seasons. They also produce small quantities that cannot be efficiently transported to existing markets.
- Many smallholder farmers need cash at harvest time and cannot afford – nor do they often have the storage capacity – to hold their commodities for sale later in the season when prices are generally higher. To exacerbate the situation, commodities sold soon after harvest are often high in moisture and prices are discounted to reflect the need for buyers to dry the commodity.

In this environment, many smallholders access markets by selling to a segment of the trading sector that specializes in buying relatively small quantities directly from smallholder farmers, often at or near the farm gate. These traders provide a valuable market access service to smallholder farmers. They aggregate a sufficient quantity of commodities to transport efficiently, they often perform some initial quality control functions, they transport commodities to market centers, and they usually pay immediately in cash.

Even though these traders provide market access to smallholder farmers, the terms are often not particularly favorable to the farmer. Because traders know more about the market, collude on pricing, and rarely provide meaningful competition, farmers are often price takers and have little power to negotiate prices. These conditions also mean the prices are generally quite low.

The standard LRP approach creates few incentives to change this market structure and provide any particular benefits to smallholder farmers. In countries where WFP's presence in the market is large, it is possible that WFP's procurement created markets for smallholder produce where none existed before but this hypothesis has yet to be empirically tested.

## Purchase for Progress

Purchase for Progress is a WFP initiative to learn how to structure its procurement specifically to maximize benefits to smallholder/low income farmers. Throughout the five-year pilot, WFP will test various methods for increasing smallholder production and market access, share best practices with

other agricultural market stakeholders, and ultimately transform its local procurement to be more smallholder friendly. In very general terms, P4P is expected to increase smallholder farmer income in the following way:

- During the P4P pilot, 21 WFP country offices will commit to channeling a portion of their local procurement through smallholder farmer organizations.
- This commitment will leverage and catalyze increased support from agricultural development partners aimed at increasing smallholder production and market access through the farmer organizations. Sustained market engagement will provide the incentive for smallholder farmers to invest in agriculture.
- WFP will monitor the entire process to learn what works best to engage smallholder farmers in markets, to increase their productivity, and to increase their incomes and livelihoods. As it seeks to improve smallholder welfare, WFP must also ensure that procuring through P4P does not create undue risk to its food pipeline and does not affect prices in ways that could impact the food security of vulnerable populations.

To procure under P4P, WFP will test a number of modalities that address some of the constraints that farmer organizations face in accessing markets. These include modified competitive tendering, direct contracting, and contracting for risk reduction. Ideally, the choice of modality will depend on the needs of a particular farmer organization with the aim of ultimately building sufficient capacity that farmer organizations can participate in competitive tenders with WFP and others.

## Monitoring and Evaluation of P4P

The above discussion implies that a monitoring and evaluation system for P4P needs to collect data from three main actors – farmer organizations, smallholder farmers, and traders. The table below reviews some of the monitoring objectives for each group and presents several illustrative indicator concepts. The indicator concepts are not indicators, nor are they exhaustive, but they provide a flavor of the type of data the monitoring and evaluation system is designed to collect.

Selected P4P Monitoring and Evaluation Components		
Target group for data collection	Monitoring objectives	Illustrative indicator topics
Farmer organizations	Learn whether farmer organizations have increased capacity to aggregate and sell their smallholder members' commodities.	Organizational & marketing capacity, services provided, facilities/capacity, sales, contract performance, market access
Smallholder farmers	Learn whether smallholder farmers are increasing production, have better market access, and have improved incomes and livelihoods.	Agricultural production, household income, food security, wealth/assets, household information
Traders	Learn whether P4P is affecting trading sector.	Marketing margins, purchases from smallholders, purchases from farmer organizations

The monitoring and evaluation system also focuses on impact assessment and this requirement dictates much of the sampling strategy. See the companion reports (i.e., the P4P Logframe and Final Monitoring and Evaluation Report for more detail about the monitoring and evaluation system for P4P.

### **3. SAMPLING REQUIREMENTS FOR P4P MONITORING AND EVALUATION**

The P4P Monitoring and Evaluation (M&E) System serves three functions. First, it provides a framework and specifies data collection and analyses procedures for monitoring project performance. Second, it must facilitate evaluation and impact assessment. Most importantly, and encompassing the other two functions, it must support the critical learning objective of P4P.

These functions dictate, to some degree, the types of data that are collected and from whom they are collected. From a performance monitoring perspective, the M&E system must collect data from a variety of actors engaged in, or potentially affected by, P4P. These include farmer organizations, smallholder/low income farmers, and traders. Furthermore, in order to understand whether conditions are changing, the system must establish baselines for these groups, and then collect data to monitor change over time.

The impact assessment function adds another requirement. The M&E system must not only assess whether conditions for those participating in P4P have changed, it must also collect data to determine what *would have happened to these groups if P4P had not occurred*. This counterfactual is usually constructed by collecting data from groups that are not affected by P4P and comparing how these groups fare over time relative to the P4P groups.

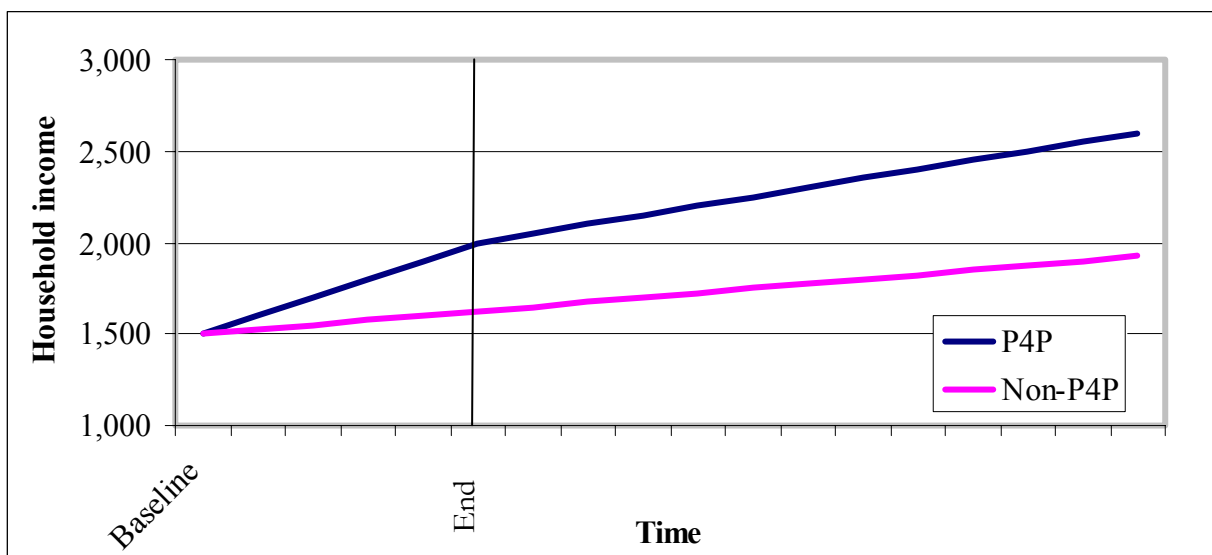
This manual focuses entirely on baseline data collection. Additional reports outline data collection procedures for ongoing monitoring and evaluation. Issues of impact assessment and sampling are relevant to both the baseline and monitoring. This report therefore addresses the topics of impact assessment and sampling, but only to the extent necessary to guide baseline data collection.

The remainder of this section provides a brief background to baseline data collection requirements. It first briefly reviews an impact assessment approach with a focus on explaining the baseline data collection requirements of impact assessment. It then describes sampling and analysis plans to support M&E objectives and links these to the implications for baseline data collection. It concludes with notes on selecting specific targets for data collection and on the timing of data collection for specific groups of P4P actors.

#### **Impact Assessment**

Impact assessment is the process of estimating the impact of an activity or project. Rigorous impact assessment requires more than just comparing outcomes before and after a project. After all, there are many factors other than those associated with a particular project that could affect outcomes. For example, one intended impact of P4P is to increase the incomes of smallholder farmer households. An impact assessment approach that compares household incomes at the beginning of P4P to those at the end runs the risk of falsely attributing an increase in incomes to P4P that could really be due to other factors (e.g., general economic growth).

The appropriate perspective for impact assessment is to compare outcomes with the project to *what outcomes would have been without the project*. The figure below illustrates this concept of impact.



The figure illustrates hypothetical changes in household income over time. The “P4P” line represents household income for households participating in P4P. The “Non-P4P” line represents the counterfactual (i.e., what incomes would have been without P4P). If P4P is successful, we might expect that income would increase between the baseline (start of the project) and the end of the project and that they would increase faster than they would have without P4P. If P4P impacts are sustainable, we might reasonably expect that incomes would continue to rise after the project ends and that they would continue to rise faster than they would have without P4P. The measure (in this case monetary) of the project’s impact is the area between the two graph lines. The figure also illustrates that impact may not end with the project. In this illustration, P4P participants continue to experience impacts beyond the end of the project.

The measurement challenge of impact assessment is establishing the counterfactual (i.e., the “non-P4P” line in the illustration). This is typically accomplished by selecting a population that is as similar as possible to the population affected by the project, except that it is not affected by the project. If the two populations are identical in all other respects, then measured differences between the two populations can reasonably be attributed to the project.

The impact assessment plan for P4P employs this “comparison group” approach. The following section describes how to select the comparison groups.

## Data Collection Plan

The impact assessment approach described above has several implications for data collection. In particular:

- Impact assessment requires two comparison groups – the P4P and non-P4P groups,
- It is necessary to establish baselines for both the P4P and non-P4P groups, and

- The M&E system needs to collect data periodically to assess change in outcomes relative to the baselines.

The P4P monitoring and evaluation system does not anticipate rigorous impact assessment for traders. Therefore, these requirements apply only to the surveys of farmer organizations and smallholder/low income farmers. The table below summarizes anticipated impact assessment analyses and associated sampling requirements for the baselines on which this manual focuses.

Summary of Baseline Data Collection Plan			
Target group	Sampling requirements		Expected impact assessment analysis
	P4P group	Non-P4P group	
Farmer organizations	Yes	Yes	Compare groups to assess impacts on outcomes such as market access, organizational capacity, sales of commodities, ability to aggregate commodities from members, etc.
Smallholder farmers	Yes	Yes	Compare groups to assess impacts on outcomes such as incomes, food security, agricultural production, etc.
Traders	No distinction		Traders do not directly participate in P4P. It is therefore difficult to identify P4P and non-P4P groups. Analyses will examine whether the trading environment in general is changing over time.

The preceding table briefly summarizes a basic plan for baseline data collection. The monitoring and evaluation report for P4P provides the rationale for the plan as well as additional detail about data collection for the entire M&E process.

## A Note on Selecting Participating Farmer Organizations

The impact assessment approach (i.e., the comparison group approach) highlights the issue of how country offices select farmer organizations with which to work and the implications of the selection process for impact assessment. The P4P proposal to the Bill and Melinda Gates Foundation describes a programme that increases smallholder farmer incomes by (1) increasing production of staple commodities, (2) increasing access to markets for smallholder farmers, and (3) increasing the prices at which smallholder farmers sell their produce. The first of these, increased production, is probably the most important pathway to increased incomes.

When selecting farmer organizations with which to engage under P4P, country offices need to carefully consider whether the selected organizations have the potential to deliver these outcomes (i.e., increased production, improved market access, or increased prices). For example, if a country office chooses to work with mature farmer organizations that have already enhanced members' productivity, developed marketing capacity, and are accessing higher value markets, then the potential for measurable impact is small. On the other hand, P4P sets specific annual targets for procurement under activity 1 (modified competitive tendering) which will likely dictate the inclusion of a number of "advanced" farmer organizations early in the pilot.



It is critical that country offices clearly articulate what P4P is, what WFP brings to the table, and how P4P is expected to produce outcomes. It may be a useful mental exercise to ask whether WFP would reasonably expect to observe different outcomes between the P4P and Non-P4P groups over the course of the five-year pilot project. This thought process should help tighten up the rationale for how P4P is implemented, how participating farmer organizations are selected, what activities are needed, and what impacts are reasonably expected.

## The Timing of Data Collection

The P4P monitoring and evaluation system collects primary data from three groups: farmer organizations, smallholder farmers, and traders. Furthermore, it describes selecting samples of smallholder farmers from among the membership of farmer organizations. The timing of data collection from these groups, however, may be very different. Specific guidance on the timing of baseline data collection includes:

- Collect baseline data from farmer organizations that are participating in P4P before P4P activities begin with an organization. Since a country office may begin working with new organizations at any time throughout the five-year pilot, baseline data collection for farmer organizations could conceivably occur at any time and may not be at the same time for all organizations, at least during the phase of P4P when WFP is adding new organizations.
- Make every effort to identify the entire sampling frame for non-P4P farmer organizations at the beginning of the pilot and conduct the entire non-P4P baseline at one time.
- The timing of the smallholder farmer survey is critical. The instrument is specifically designed to be administered at the end of the primary harvest and marketing season when most of the selling decisions have been made and most sales consummated. Select the baseline samples of both P4P and non-P4P smallholder farmers from the sampling frames of farmer organizations (P4P and non-P4P, respectively) that are available at the time of the smallholder baseline. Note that this timing may not coincide with the timing of the farmer organization baseline data collection. It also implies that the sampling frame of P4P smallholder farmers may change over time as new farmer organizations begin to participate in P4P.
- The timing of data collection for traders is not critical and country offices may administer it when convenient. However, it will likely be easier to find traders in the field buying from smallholder farmers at particular times of the marketing season.

## 4. SELECTING SAMPLES

This section provides specific guidance on selecting the targets for primary data collection for the P4P monitoring and evaluation baseline. The three sub-sections below describe the process for selecting samples of P4P and non-P4P farmer organizations, farmers, and traders, respectively. Each of the three sub-sections defines the relevant sampling frame (i.e., the population from which the sample should be selected) and then describes the process for selecting the samples.

### Farmer Organizations

The data collection plan for farmer organizations requires collecting data from two comparison groups: 1) organizations that are participating in P4P and 2) those that are not participating in P4P.

The sampling strategy dictates that non-participating organizations be as similar to participating organizations as possible in order to control for factors outside of P4P that may affect outcomes. The remainder of this section describes how to define sampling frames and then how to select samples from within the sampling frames for the two farmer organization comparison groups.

A clear understanding of the targets of the data collection is required in order to define sampling frames. In the case of farmer organizations, the targets may not be immediately obvious. Many countries have different layers of farmer organizations.<sup>1</sup> For example, a national-level organization may consist of smaller organizations that may operate in specific regions or focus on specific crops. These smaller organizations may, in turn, contain smaller organizations or clubs consisting of a relatively small number of individual farmers. The structure of farmer organizations varies considerably across countries, but the appropriate level for data collection will usually be the organizations that are collecting commodities from farmer members and marketing, or facilitating the marketing, of those commodities. This will also likely be the level at which WFP ultimately purchases.

The appropriate level of farmer organization for data collection is the level at which WFP will ultimately purchase because this is the level at which organizations collect a sufficient quantity of commodities to attract larger buyers and engage with broader markets.

### **i. Selecting the P4P Farmer Organizations**

No sampling is required for farmer organizations that are participating in P4P. Administer the baseline data collection instrument to each participating farmer organization as it becomes engaged with P4P. Participation will usually mean that WFP has committed to supporting the farmer organization through P4P and is collaborating with supply-side partners to strengthen the organization's capacities to engage in markets or increase agricultural production for their smallholder farmer members.

### **ii. Selecting the Non-P4P Farmer Organizations**

The requirements of impact assessment cited above dictate that the sampling frame for non-P4P farmer organizations consists of organizations that *are similar to participating farmer organizations in every respect except participation in P4P*. In practice, however, it is generally not possible to select groups that are this similar. Furthermore, since country offices will usually have to define the two sampling frames (i.e., P4P and non-P4P) before they begin extensive work with the organizations; they will often lack the detailed data necessary to determine similarity. In this setting, it is best to identify the characteristics of organizations that are likely to most affect outcomes and strive to select groups that are similar in terms of these factors. In this case those factors include agricultural production, marketing, household livelihoods, etc. The general criteria below expand on some of these factors. Using this list of factors as a guide, country offices will have to use their judgment based on their experience and knowledge to select a set of non-participating farmer organizations that are as similar

---

<sup>1</sup> Throughout this manual, and in most other M&E reports, the term “farmer organization” refers to a generic farmer organization and not to a specific layer of the hierarchy. Some countries, however, use the term “farmer organization” to refer to a specific layer of the hierarchy. Take care not to confuse the generic use of the term in the M&E documentation with a specific meaning of the term in a given country setting.

to participating organizations as possible in terms of these criteria. The key characteristics of farmer organizations that should be used to determine “similarity” include:

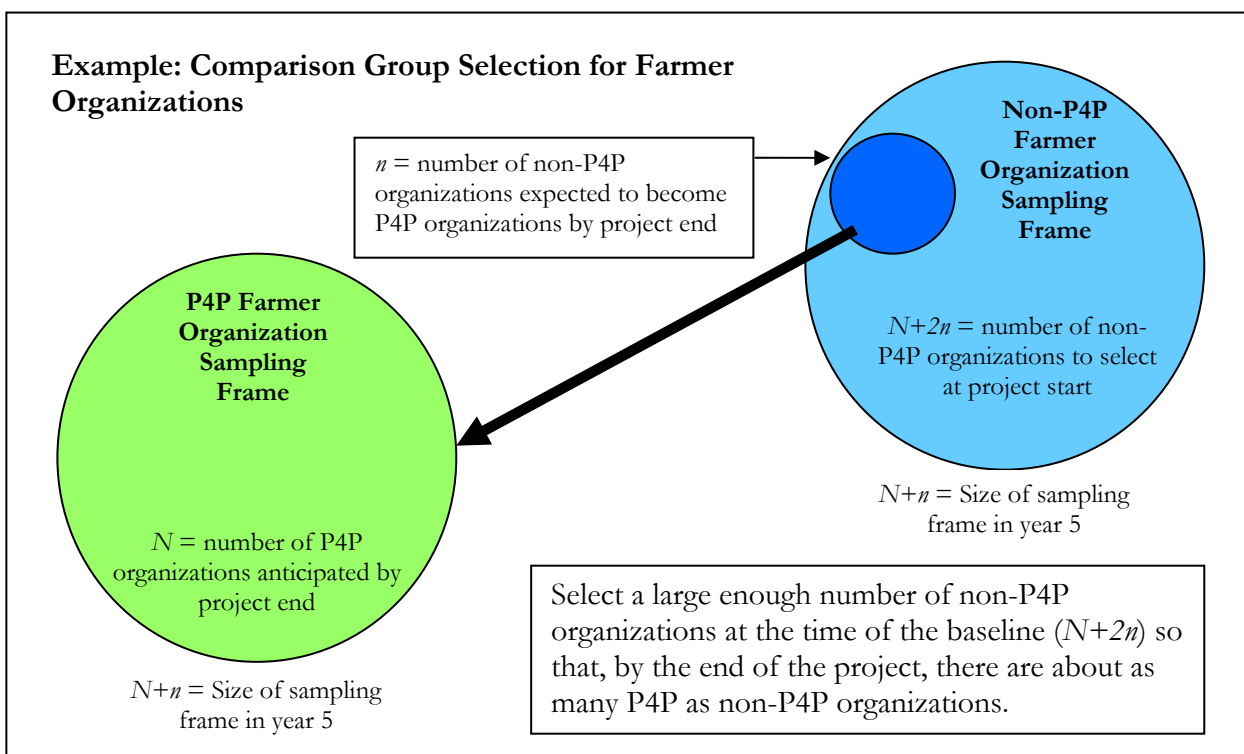
- Weather, soils, and other location-specific conditions that affect agricultural production,
- The staple and cash crops cultivated,
- Agricultural practices (i.e., mechanization, use of inputs, cultivation and cropping patterns, etc.),
- Access to markets for staple commodities and cash crops. Consider not only physical access (e.g., distance to markets, road conditions, etc.), but also factors such as access to organizations, facilities, or services that make it easier to market commodities (e.g., access to a warehouse, access to credit, the marketing assistance of a farmer organization, or other assistance providers, etc.),
- Similar socioeconomic characteristics, and
- Similar number and gender composition of members.

Geographic proximity may be a good proxy for many of these criteria, and in general, farmer organizations that are close to the P4P organizations are likely to provide a suitable pool of potential non-P4P farmer organizations from which to select the non-P4P sampling frame. If P4P will work with farmer organizations from a number of different regions within the country, then select a similar number of non-P4P organizations from each region.

*Example: If P4P will work with 5 farmer organizations in region A, 12 organizations in region B, and 3 organizations in region C, then try to select a similar number of non-P4P organizations in each region.*

Depending on the individual situation, it may be most efficient for country office to focus first on selecting similar organizations within the regions where P4P groups are located. Then, apply the other criteria (i.e., non location-specific factors such as socioeconomics, farmer organization characteristics, market access, etc.) to the organizations within the region to fine-tune the selection.

It is important that country offices draw samples of non-P4P groups (and smallholder farmers within those organizations) from the same sampling frame at each data collection point (i.e., baseline, monitoring, mid-term and final evaluations). However, as P4P programmes expand, it is possible that some non-P4P organizations become P4P organizations over time. Although it may be difficult to anticipate the specific organizations that will begin to participate in P4P over time, country offices need to define a large enough non-P4P sampling frame at the outset so that a sufficient number of organizations remain as non-P4P organizations at the end of the five year pilot. As a general rule, there should be about as many non-P4P farmer organizations as there are (or will be by the end of the project) P4P organizations. If there is a chance that some of the non-P4P farmer organizations will become P4P organizations over time, then select a sufficient number of non-P4P organizations initially so that by the end of the project, the numbers of remaining non-P4P organizations is close to the number of P4P organizations. The example below illustrates how to determine the size of the non-P4P farmer organization sampling frame.



## Farmers

This section describes how to select samples of P4P smallholder farmer households and non-P4P smallholder farmer households.

The data collection plan for farmers also specifies collecting data from two comparison groups: 1) farmers who are participating in P4P and 2) farmers who are not participating in P4P. The easiest way to select these samples is to choose from among the membership of P4P farmer organizations and non-P4P farmer organizations, respectively. That is:

- Select P4P smallholder farmer households to which to administer the data collection instrument from among all smallholder farmer households who are members of P4P farmer organizations.
- Select non-P4P smallholder farmer households to which to administer the data collection instrument from among all smallholder farmer households who are members of the non-P4P farmer organizations.

The unit of observation for the survey of farmers is *smallholder farmer households*. It is therefore important to identify and select only smallholder farmers (as opposed to larger farmers) and to avoid selecting more than one person from a given smallholder farmer household.

It will not be possible to find all the households selected for interviews and some may refuse to participate. To account for this non-response, it is necessary to select a larger number of smallholder farmers for interviews than the minimum number of completed interviews required. Non-response rates are difficult to predict but non-response is likely to be greater issue for non-P4P farmers than for P4P farmers. To account for non-response, country offices should select an initial sample that is about 20 percent larger than the required number of completed interviews. As mentioned in the

discussion of sampling for farmer organizations, there may be a hierarchy of organizations. It is possible in some countries that the level of farmer organization from which WFP collects baseline data may not be the appropriate level from which to select the smallholder farmer sample. For example, if the level of farmer organization that markets commodities is a level that has smaller organizations rather than individual smallholder farmers as members, then the smallholder farmer sample must be selected from among the member organizations of the organizations from which the country office collects farmer organization baseline data.

## **i. Selecting the P4P Farmers**

The sampling frame for P4P farmers is all smallholder farmer *households* with at least one household member registered as a member of a P4P participating farmer organization. Follow the procedures described below to select the sample:

1. Compile a list of all farmer members of farmer organizations that are participating in P4P. If the participating farmer organizations are umbrella organizations whose members are smaller organizations rather than individual farmers, then the list should contain the farmer members of the lowest level/unit of sub-organization. The point is that this list should be a list of farm *households*, not farmer organizations.
2. The sampling frame is *smallholder* farmers. To identify smallholder farmers, use a definition consistent with the specific country circumstances that is in common use in the country for purposes of agricultural data collection and reporting. If an accepted definition of smallholder farmer does not exist, then use the definition adopted by the Bill and Melinda Gates Foundation – *a farm household cultivating less than two hectares of land*.
3. When it is possible to identify smallholder farmers from farmer organization records, then the list (sampling frame) should contain only smallholder farmers. In this case, also keep a record of the number of farmer organization members who did not satisfy the smallholder criterion.
  - a. For this case, select a sample of smallholder farmers of the desired size from the list of smallholder farmers. Select a sample of sufficient size to allow for replacements for households that are not available, impossible to locate, or refuse to be interviewed.
4. When farmer organization records are not adequate to identify smallholder farmers (i.e., they do not contain data on the amount of land cultivated), then the list will contain all farmer members of participating farmer organizations, smallholder and otherwise.
  - a. When it is not possible to identify smallholder farmers prior to the interview, then use the screening questions at the beginning of the data collection instrument to screen out farmers who do not satisfy the smallholder criterion. Make sure to select a sample of sufficient size to allow for replacements for households that do not satisfy the smallholder criterion, are not available, impossible to locate, or refuse to be interviewed. *In this case, instruct enumerators to keep careful track of the number of households that do not satisfy the smallholder criterion for each farmer organization. This will be important information to estimate the proportion of the farmer organization's membership that are smallholders.*

5. Select the samples of the required size using one of the following methods:
  - a. **Simple random sample** – the preferred approach is to select a simple random sample from among the smallholder farmer households that are members of all participating farmer organizations.
    - i. If the country office has an electronic (i.e., spreadsheet or database) list of smallholder farmer members of P4P farmer organizations, then select a random sample in the following way:
      1. Create a new blank field (column) in the spreadsheet or database,
      2. Use a random number generator formula (i.e., RAND() in Excel) to fill the field with random numbers,
      3. Convert the random numbers to values (i.e., select the entire column, select Edit -> Copy to copy the column, select Edit -> Paste Special and select “Values” to convert the random number formulas to values),
      4. Sort the entire spreadsheet or database on the random number field,
      5. Select the first  $n$  names from the sorted list where  $n$  is the desired sample size (accounting for anticipated non-response).
    - ii. Since the sampling frame is households, not individuals, make sure that the final sample does not contain multiple members of a single household. If you detect duplicate households on the list, delete one of the entries and replace it with another household selected at random (i.e., the next organization member on the randomly sorted list). Then check the list again to ensure that the replacement entries do not duplicate an existing household.
    - iii. If the list is not electronic, then devise a random procedure for selecting names from hard copy lists.

*Example: Assign a page number to each page of the hard copy and a unique number to each name on the page. Then use a random number generator or table (see <http://stattrek.com/Tables/Random.aspx> for an online random number generator and tables) to randomly select two numbers – the first determines the page and the second determines the name on that page. If a random procedure is not feasible, then use a sequential approach and select every  $n^{\text{th}}$  name from the list where  $n$  is the number of names on the list divided by the desired sample size ( $n/\text{sample size}$ ). Remove names from the list from duplicate households and replace with new names.*

- b. **Clustered sample** – If the participating farmer organizations are so geographically dispersed that it is not logistically feasible to visit them all during the data collection process, then it may be necessary to cluster the sample. To select a clustered sample:
  - i. Randomly select a number of participating farmer organizations that is feasible to visit. The smallholder members of these farmer organizations then become the sampling frame.

- ii. Use the random sampling methods described above to select a random sample of the desired size from this sampling frame.
6. Transfer the information on each selected farm household into the pre-filled fields of the “Group Information” and “Identifying Information” sections at the beginning of the baseline data collection instrument.

## ii. Selecting the Non-P4P Farmers

The sampling frame for non-P4P farmers is smallholder farmer households with at least one household member registered as a member of a farmer organization that is *as similar as possible to participating farmer organizations except for participation in P4P*. The preceding section on “Selecting Non-P4P Farmer Organizations” describes how to select a sample of these farmer organizations. Once the non-P4P farmer organizations are selected, use the procedures outlined above under “Selecting a Sample of P4P Farmers” to compile a list of smallholder farmers from within those organizations and select a random sample of non-P4P farmers.

## iii. Determining Sample Size

Sample size is only relevant for the surveys of smallholder farmers. In general, the required sample size depends on (1) the level of confidence (margin of error) desired for results, (2) the size of the population of interest, and (3) the variation within the population in the variables of interest (sometimes referred to as response distribution). The monitoring and evaluation system needs to be able to identify relatively small changes in some variables (i.e., household income). The margin of error should, therefore, be small enough to identify relatively small differences in such variables between the P4P and the non-P4P farmers. Use the formula below to calculate the sample size. Alternatively, refer to <http://www.raosoft.com/samplesize.html> for an automated sample size calculator. In either case, set the sample size parameters at the following levels: margin of error of five percent; a confidence level 95 percent; a response distribution of 50 percent; and the population size estimate.

$$\text{sample size} = \frac{rd(1-rd)\text{popsize}}{rd(1-rd) + ((me/c)^2(\text{popsize}-1))}$$

where: sample size = the sample size required for the desired margin of error and population size

c = confidence level z score (95% = 1.96)

popsize = the size of the population of interest

me = the desired margin of error (i.e., 5% = 0.05)

rd = response distribution (50% = 0.5)

*Example: If there are 12,000 smallholder farmer households who are all members of P4P farmer organizations, then the sample size required for a five percent margin of error is 372 households.*

$$372 = \frac{0.5(1-0.5) \times 12,000}{0.5(1-0.5) + ((0.05/1.96)^2 (12,000-1))}$$

## Traders

The trader survey is not intended to collect statistically relevant data on traders. Instead, it is to gather information to understand factors such as:

- how traders operate, and particularly how they buy from smallholder farmers,
- challenges and constraints to marketing agricultural commodities,
- how typical marketing chains available to smallholder farmers function,
- how marketing chains change over time, and
- the relationship between smallholder farmers and traders and how that changes over time.

Answering these questions does not require a statistically valid sample. Furthermore, it is not feasible in many countries to compile a comprehensive list of traders from which to sample.

Instead, country offices are encouraged to identify a range of types of traders to interview. The number of interviews only needs to be large enough to generate a good general understanding of the trader segment. In most contexts, interviews with 10 to 15 traders of each type should be sufficient. It may prove difficult to categorize traders by type or role as was the case when the data collection instruments were pretested in several countries. It will be necessary in each country to determine the structure of the trader segment and select a representative sample of traders for interviews.

Because comprehensive lists of traders rarely exist, country offices may have to be creative to identify a range of traders to interview. Strategies employed or explored during the pretest included:

- Going in to the field to find those traders who buy directly from smallholder farmers, either directly at the farm gate or from depots or shops set up in villages and trading centers. These may include:
  - itinerate traders who camp in a village for a few weeks during the harvest season,
  - village residents who trade in commodities and buy at a shop, depot, or collection point located in or near the village,
  - local shopkeepers or other businesspeople who purchase commodities, either for cash or in exchange for goods, or
  - itinerate or local traders who buy and sell at a local market.

In any case, the individuals buying commodities in these settings may be employees or agents of a larger trading business. If so, they can provide contact information for their employers, thereby providing links to some traders at the next level in the chain. The trader data collection instrument provides for this situation by asking employees or agents for contact information for their employers.



- Visiting large traders who are often located in the larger cities and may sell directly to WFP. Interview these traders and also ask for contact information for the trader(s) from whom they buy.
- Ask district or village agricultural agents, farmer organization staff, or smallholder farmers about traders working in specific geographic areas.
- Some countries require traders to be registered and, in these cases, it may be possible to obtain lists (not necessarily complete because of the informal sector) of traders registered at the national or local levels.
- Traders associations may also provide contacts for traders.

## **5. ADDITIONAL AND SUPPLEMENTARY RESOURCES**

- Sample Size Calculator: <http://www.raosoft.com/samplesize.html>
- Random Number Generator and Tables: <http://stattrek.com/Tables/Random.aspx>
- M&E Principle and Terminology: <http://www.uneval.org/> ( refer to United Nations Evaluation Group of which the World Food Programme is a member.)