Appendix 9: METHODOLOGY

These are some further considerations I took into consideration in the methodology.

3.1. Selection of the Study Area

The study was conducted in the Dehbala District of Nangarhar Province Afghanistan. The district was selected for the following reasons:

1. Two villages were purposively selected for wheat from the Dehbala district. These villages were selected due to the fact that wheat is the major crop of this area and the villages were easily accessible.
2. Personally, I belong to this district and these villages were also selected due to security reasons because insurgency is increasing day by day in Afghanistan. I feel no threat to conduct survey in my own district and having no photos during the survey because of the restrictive and sensitive society in rural areas of Afghanistan.
3. Being a supervisor in this survey then I have four additional staff as assistants who also helped me during survey and they belong to these villages. Among these two are working with NGOs and two are studying in the Agricultural Faculty of Nangarhar University. So, they are used with local conditions and to this kind of research because all of them having agriculture qualification.

3.2. Data Sources

The research has a quantitative and qualitative data. The primary data was collected through survey while the secondary data was collected through different literature searches and confirm through talking with people, personal interviews, telephone surveys, and mail communication.

3.3. Sampling of Interviewees (Respondents) and Data Collection

Samples of fifty four wheat farmers from the two villages of Dehbala district were purposively selected. The decision about the sample size of the target population that of wheat farmers was based on factors such as: time available, budget and necessary degree of precision. From the District Agriculture office of the district it was found that there are 270 farmers respectively. Therefore probability sampling method was used that in probability samples, each member of the population has a known non-zero probability of being selected. Probability method like simple random sampling was used to select 54 sampled farmers out of 270 wheat farmers at the rate of 20 percent.

Data was collected by using a structured questionnaire. The questionnaires were filled through person to person (face to face) interview. Pre-tested of the questionnaires were done with few interviews to save both time and effort. Pretesting during survey helped me in determining the time it takes to administer, process and also helped in clearing some confusion and skipped some questions which were not relevant to the situation and not useful but not removed from the questionnaire that time because I have already printed the questionnaire in Jalalabad city and no printing facilities were available in the district to develop the final questionnaire.

Moreover, a literature search involves reviewing all readily available materials. These include district profiles, ministry of Agriculture information, Afghanistan Statistical Yearbook 2008-09, relevant trade publications, newspapers, magazines, annual report, on-line data bases and any other published materials including national and international sources. It is inexpensive method of gathering information.

3.4. Analytical Framework: The Policy Analysis Matrix (PAM)

Applied economists use a variety of techniques to measure competitiveness and policy effects. Trade economists (e.g., Corden 1966) generally use Domestic Resource Cost (DRC), Nominal and Effective Protection Coefficients (NPC and EPC), while project appraisal economists (e.g., Gittinger 1982) typically use Social Benefit-Cost (SBC) Ratio. Agricultural trade specialists (e.g., Josling 1973) have developed new indicators such as Producer Subsidy Equivalent (PSE) and Subsidy Ratio to Producers (SRP). Recently, several studies have used Policy Analysis Matrix (PAM) that relates the above parameters of comparative advantage and policy effects (Masters 1991, Masters and Winter-Nelson 1995, Khan 1997 Khan 2001, Khan 2002 and Khan 2004). The Policy Analysis Matrix used to determine competitiveness, comparative advantage and policy effects on wheat production in Dehbala district of Nangarhar Province compare with wheat production of other countries. Policy Analysis Matrix is a tool for assessing comparative advantage and to find efficiency and competitiveness. The central purpose of PAM analysis is to measure the impact of government policy on the private profitability of agricultural systems and on the efficiency of resource use. The PAM is a matrix of costs and revenue structures and consists of two accounting identities below in Table 3.2. The policy analysis matrix is a product of two accounting identities, one defining profitability as the difference between revenues and costs and the other measuring the effects of divergences (distorting policies and market failures) as the difference between observed values and efficiency values.

Table.3.2. The Structure of Policy Analysis Matrix

Budget Items	**Market Prices**	**Opportunity Costs**	**Effects of policy transfer (Divergences)**
Revenue	A	F	K
Labor costs	B	G	L
Capital costs	C	H	M
Tradable input costs	D	I	N
Profits	E	J	O

Source: Monke and Pearson (1989).

Net Private Profitability: E = A – (B+C+D)
Net Social Profitability: J = F- (G+H+I)
Output Transfers, K = (A - F)
Labor Market Distortions L, = (B - G)
Capital Market Distortions M, = (C - H)
Other inputs Transfers N, = (D - I)
Total Policy Effects O, = (E - J) = (K - L - M - N) = NPP- NSP

3.3.2.1 Private Profitability

The data entered in the first column of the table 3.2 provide a measure of private profitability (E), defined as the difference between observed revenue (A) and costs (B+C+D) valued at market prices (the observed market prices). The calculation of private profitability measures the competitiveness of the agricultural system, given current technologies, prices for inputs and outputs and policy transfers.

3.3.2.2 Social Profitability

The second column of the table 3.2 calculates the social profitability that reflects social opportunity costs. It is defined as the difference between revenue and costs of domestic factors and tradable inputs priced at social opportunity cost (social values). Social profitability measure efficiency and comparative advantage of the agricultural systems.

A country has a comparative advantage in producing a commodity when NSP > 0 and it uses its resources efficiently at their shadow prices. Conversely, if the NSP is negative NSP < 0 then the production of the commodity will not be socially profitable, hence the country does not have comparative advantage.

3.3.2.3 Policy Effects / Divergences

The last column of the table 3.2 estimates the difference between the first and second column. It is concerned with the difference between private and social valuation of revenue, costs and profit. For each entry in the matrix, any divergence between the observed private (actual market) price and the estimated social price must be explained by the effects of policy or the existence of market failures. Distorting policies leads to an inefficient use of resources that enhance the divergence. The efficient polices offsetting the effects of market failures generate greater income and thus correct divergence by reducing difference between private and social valuations.

Using the elements in Table 3.2, the PAM framework has the flexibility to generate more conventional measures of comparative advantage and indicators of policy effects that are independent of measurement units and scale of operation to facilitate comparisons among different commodities (Monke and Pearson, 1989) which are as follows:

1. *Domestic Resource Costs Ratio (DRC) = (G + H)/(F - I)*
2. *Social Benefit-Cost Ratio (SCB) = F/(G + H + I)*
3. *Nominal Protection Coefficient (NPC) = A/F*
4. *Effective Protection Coefficient (EPC) = (A - D)/ (F - I)*
5. *Percentage Producer Subsidy Equivalent (PSE) = O/A*
6. *Subsidy Ratio to Producers (SRP) =O/F*

3.3.2.4 Domestic Resource Cost Ratio (DRC)

The DRC ratio measures an activity's contribution to national income and thus comparative advantage by quantifying the opportunity costs of domestic resources used in per unit of tradable value added of that activity, both measured at social prices in local currency. In the PAM context, DRC = (G + H)/(F - I). In this ratio, G and H are costs of (non tradable) domestic factors (i.e., land, labor and capital) while F is revenue and I are the costs of the tradable inputs of the activity. The difference (F-I) is tradable value added of the activity when everything is valued at social opportunity cost.

If DRC is less than unity then a country has a comparative advantage in an activity and contributes to national welfare and If DRC is greater than unity then it suggests the inefficiency of a country in producing that particular commodity.

3.3.2.5 Social Benefit-Cost Ratio (SBC)

The Social Benefit-Cost ratio is another measure of relative and comparative advantage efficiency. In the PAM context, SCB = F/(G + H + I), where F is the revenue both valued at social prices and G, H, I are the costs of tradable and non tradable inputs**.**

If SCB is greater than unity then a country is an efficient producer of a commodity while SCB less than one suggest that production of that commodity is not profitable for the country.

3.3.2.6 Nominal Protection Coefficient (NPC)

Indicators of policy analysis can be generated directly from the elements in PAM. The simplest indicator of policy analysis is the Nominal Protection Coefficient (NPC), the ratio of domestic to border prices for given product. Using entries in Table 3.2, the ratio, NPC = A/F, is formulated very easily, where A is domestic price and F is border price of a given commodity**.** NPC +ve but less than unity means that its marginal social benefits exceed costs and there is +ve incentives to expand the production. As an indicator of policy effects, an NPC lower than one means that production of a particular commodity is taxed either because of market failure or government intervention. Conversely, an NPC greater than unity suggests inefficiency of a country in producing that particular commodity and that the price is heavily affected by government policies or other factors. NPC = 1, indicates neutral structure of protection where the domestic price is equal to the border price.

3.3.2.7 Effective Protection Coefficient (EPC)

The EPC can be defined as the ratio of distorted tradable valued added at market prices to its undistorted value priced at border prices. Using PAM elements, EPC = (A - D)/ (F - I). The entries A and D are revenue and tradable inputs costs valued at market prices while the elements F and I are revenue and tradable inputs costs valued at social prices. Thus the ratio of the difference between A and D (distorted tradable value added) and F and I (undistorted tradable value added) is EPC. Using the border price as the reference price, an EPC greater than unity implies price protection and positive incentives to the domestic producer of that commodity while the opposite is true when the EPC is positive but less than unity.

3.3.2.8 Producer Subsidy Equivalent (PSE)

The Producers Subsidy equivalent (PSE) and Subsidy Ratio to Producer (SRP) analysis is used to gauge the government intervention for certain crop. The percentage PSE is defined as the ratio of total PSE to revenue valued at market prices. The ratio, PSE = O/ A, is derived very easily from the matrix, where O is total policy transfers and A is revenue at market price Similarly the SRP uses the same information as percentage PSE, but it has an advantage of being equivalent measure like NPC and EPC. The SRP can be obtained directly from PAM Table 3.2 by picking up the relevant elements of the matrix. In the PAM notation, SRP can be written as SRP=O/F, where O is net policy transfers to producers and F is revenue from the activity valued at social opportunity costs prices. The negative values of PSEs and SRPs indicate overall transfer from producer to consumer and tax payers while the positive values of PSEs and SRPs indicate the overall transfer from consumer to producer.