

## **‘Fair’ Prices**

### **Peasants and the possibilities of a Living Income**

**(including a case study of Burkina Faso)**



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Cover photo: Grain storage in Burkina Faso

Photo by author

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## Abbreviations

AFWA	Asia Floor Wage Alliance
CFAF	Franc CFA, the currency used in West-Africa
CREA	Center for Reflection, Education and Action
ETI	Ethical Trading Initiative
FAO	Food and Agriculture Organization
FAOBF	Food and Agriculture Organization Burkina Faso
ILO	International Labour Organization
INTERFAIS	International Food Aid Information System
MARH	Ministère de l’Agriculture, de l’Hydraulique et des Ressources Halieutiques du Burkina Faso
LI	Living Income
LW	Living Wage
NGO	Non-Governmental Organization
SAI	Social Accountability International
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UP	Unité de Production (Production Unit)
WFP	World Food Programme
WHO	World Health Organization

## ***Summary***

After a brief discussion of the main approaches to the concept of the 'Living Wage' (LW), a methodology is developed how to apply this concept to the case of peasants.

Since peasants do not receive a wage, the Living Wage definition is adapted to that of a 'Living Income' (LI). A peasant should earn sufficient to pay seasonal workers and family members a Living Wage for the time they work, while himself earning a Living Income. The Living Income is the sum of the Living Wages for all workers involved, plus an additional percentage to enable investments to raise production in time.

Instead of taking market prices as point of reference, the Living Income approach for peasants is a method to calculate what producer prices should be, given the size of the area and existing production methods, in order to be able to earn a Living Income. These prices may be different from market prices that often are not equilibrium prices, because of food aid, subsidies on imports, power positions of market parties etc.

Comparison of the prices needed for a Living Income with actual market prices may lead to a further reflection on the prevailing price system for food crops, and to questions about the long-term food security and development prospects of the country, and of peasants especially.

A calculation of prices needed to achieve a Living Income and the differences with market prices is worked out for a case in Burkina Faso.

## ***Preface***

This paper is the result of a combination of two different fields of study I have been engaged in, namely rural development and food aid, and 'fair trade'.

In 2003 I did a mission for DAWS (Dutch Association of World Shops) in India on 'Fair Trade'. This raised my interest in the subject of 'fair' prices and wages and resulted in a publication in 'Economic and Political Weekly' (EPW) "'Fair' Prices and Wages " in 2004.

In the eighties and nineties I have worked with WFP, FAO and the Dutch Ministry of Foreign Affairs as a staff-member.

In 2005/06 I did a study for the Dutch Ministry of Foreign Affairs in Burkina Faso on the effects of structural food aid in the form of local purchase and sales of rice on rural development. This was followed by an article in "Development in Practice" 'How to strengthen the development effectiveness of local purchase for food aid' in 2011. In that paper I suggested that small farmers could be paid a higher price for their products sold to, among others, WFP, a 'fair' price.

The present paper makes concrete how such a 'fair' price could be calculated, without disturbing local markets, and result in more development and higher food production.

I am grateful for comments I received from Prof. Sukhpal Singh and Ms. Marjolein de Bruin of Agri-ProFocus on an earlier draft, and for Dr. Joy Manné for editing the text.

Of course all errors and shortcomings are my own.

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## ***Introduction***

Food security is high on the international agenda. Food security in rural areas depends on supply and demand of food and ability to pay. Not all food, however, goes through official markets. Many peasants feed themselves from their own production and barter without involving any market. Only the surplus is sold in the market in order to generate some cash income for daily needs. This does not mean that these farmers do not have an important role in the food supply, only that much of their produce is not valued at market prices. Of the money received for their sales, often a large part is used later in the year to purchase food at a higher price.

One of the reasons that people leave the rural areas for the cities, is the poverty and lack of food security in the rural areas. Poverty is widespread and food security is low, especially among agricultural labourers and peasants. Next to the need to feed themselves and their family, they also have to provide for other expenses such as schooling for the children and medical costs.

Besides having to provide for these daily costs, the farmer also needs funds to make small investments, like the purchase of a hoe, a spade and the purchase of seeds. Micro credits are not always available to them.

The liberal Nobel prize winner 2001 Stiglitz gives in his book 'The Price of Inequality' a number of reasons why lack of possibilities are a hindrance not only to the people concerned, but also to society as a whole. Among his arguments are the facts that malnourished workers are less productive and that hunger and inadequate nutrition impede learning (Stiglitz).

For the quantities the farmer takes to the market, he has to accept prevailing market prices, prices he cannot influence because of his limited supply. Market prices are influenced by many factors out of reach of the marginal farmer. Prices often are centrally fixed by the central government, or influenced by international factors, like subsidies on food production in other countries that export their produce to this country, monopolies or oligopolies of large traders and producers, food aid etc.

On basis of prevailing market prices, it can be calculated in any region how large an area a farmer should exploit in order to earn a living. This approach can be reversed however, by asking at what level prices should be in order to have the small producer earn a decent living, given the size of the area to be exploited. These prices can be calculated, taking as point of departure the minimum an average family should have to lead a decent life. This will lead to a minimum level of prices the farmer should receive for his crops. These calculated prices can then be compared with actual market prices.

The next question is whether actual market prices reflect equilibrium prices. When market prices do not equal theoretical equilibrium it is useful to compare market and equilibrium prices and analyse its causes. This can be a useful factor for policy decisions.

In the following chapters this approach will be explained more in detail and a concrete case is analysed as well, Boucle du Mouhoun in Burkina Faso.

The advantage of this approach for policy makers is that it provides them with a tool to analyse the effects of agricultural policies on both food security and rural development. It is always difficult to find a balance between the interests of different groups in the society. An example of this is the need for farmers to receive a good price for their crops and the need for the rest of the population to have

affordable food prices. The approach can serve as a support to policy makers in their analysis of the effects of the importation of subsidized food, food aid and other price distortions at the local market.

World Food Programme (WFP) and NGO's that purchase food locally can use the results of the calculations to determine the minimum price peasants should receive in case of local purchase.

The approach is meant to be applied to peasants producing for the local market. It is not suitable in its present form with regard to food and cash crops meant for export markets.

The remainder of this paper is structured as follows: first it is discussed how to define and calculate a reasonable minimum income. The Living Wage approached as applied in industry is discussed and will serve as a basis for a desired minimum income for the rural people. The following part explains how this concept could be used in an approach to calculate prices of agricultural products that can sustain the producers.

Emphasis is laid on peasants who cannot influence market prices. Such an approach requires looking beyond traditional concepts of supply and demand in perfect markets that lead to optimum prices. In reality perfect markets exist only sometimes in some places. The world market as well as the majority of the developing world is characterised by imperfect agricultural markets and therefore suboptimal market prices.

First a theoretical framework will be introduced. Based on the necessity of at least a Living Wage for all workers involved, prices can be calculated that would be necessary for the needed income to be obtained. These calculated prices will be called 'fair' prices and can be calculated for different crops. The total of the income that would be obtained if 'fair' prices are paid, is compared with the income obtained with actual market prices. Where a gap exists between 'fair' prices and actual market prices, reasons for this gap should be analysed and policies (re)formulated.

A lot of data is needed to make the necessary calculations. For this reason a field-study demonstrates how to deal with these obstacles in practice and to make the necessary calculations based on partial information. It is shown that although information is scattered and not easy to be found, enough essential information can be found to make the necessary calculations.

Practitioners who wish to see the practical application of the approach only, may prefer to skip the first chapters and proceed immediately to the discussion of the case.

## ***Living Wage***

In order to determine what the minimum amount is a worker should receive to sustain him/herself as well as his/her family<sup>1</sup>, the concept of a Living Wage has been developed. There are several definitions of 'Living Wage' that mainly differ on details. Some of these definitions are:

*SA8000*<sup>2</sup>: "A "living wage" means one that enables workers, for their labor during a standard workweek, to support half the basic needs of an average-sized family, based on local prices near the workplace" and "A company shall pay a living wage for a standard work week (i.e., no more than 48 hours per week or less if set at a lower level by national law) and workers shall earn that sum without working overtime. Basic needs include essential expenses such as food, clean water, clothes, shelter, transport, education and a discretionary income, as well as the workers' costs for legally required social benefits (e.g. health care, medical insurance, unemployment insurance, retirement plan, etc.)" (SA8000).

In The *Ethical Trading Initiative (ETI) 1998 Living wage formula* a living wage is to be earned over a maximum working week of 48 hours and basic needs are defined as housing, energy, nutrition, clothing, health care, education, potable water, childcare, transportation and savings, though the possibility of including further need categories (e.g. entertainment, vacation, paid family leave, retirement, life insurance and personal liability insurance) is floated (Steele).

From the ETI Base code: Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmark standards, whichever is higher. In any event wages should always be enough to meet basic needs and to provide some discretionary income. (ETI Base code)

The International Labour Organization (ILO) has included living wage as a human right in several major Declarations (Anker).

ILO considers two factors very important, namely a. that the level of a minimum wage should be set high enough to be considered as decent, and b. that social partners should be involved in decision-making. This implies a negotiations approach with a decent wage as minimum (ILO).

So all these three approaches of ETI, SA8000 and ILO mention a fixed minimum income.

It should be realized that 'Living' Wages may be different from national legal minimum wages. These minimum wages often are the result of political negotiations in which the interests of the workers may be subjected to other interests that may be considered to be more in the national interest.

In order to calculate a Living Wage two main formulas are used namely the 1998 Living Wage Summit formula and the SA8000 formula. To be able to use either of these formulas a large quantity of data about basic needs has to be assembled. Basic needs include essential expenses such as food, clean water, clothes, shelter, transport, education and a discretionary income. It is evident that the collection of these data requires a lot of time, knowledge and effort.

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<sup>1</sup> In the text the peasant is referred to as he, though there are many cases, especially in Africa, where a woman is head of the family.

<sup>2</sup> Social Accountability International (SAI) is a non-governmental, multi-stakeholder organization whose mission is to advance the human rights of workers around the world (SAI)

In order to solve this problem, some organizations have found a short-cut. Examples of this are ILO, CREA, Asia Floor Wage Alliance (AFWA) and World of Good that are using PPPs (Purchasing Power Parity in US\$). The PPP\$ rate is the number of units of domestic currency that are necessary to obtain a purchasing power that is equivalent to \$1 in the United States. Wage rates are converted to \$ US in terms of purchasing power (ILO, AFWA, CREA, World of Good).

The advantage of the PPPs method is that it allows for a rapid comparison of income worldwide. The disadvantage is that PPPs come available only years later and that it does not take into account regional and country specific differences (e.g. in food habits). For that reason in this paper preference is given to the ETI and SA8000 approaches, because they try to represent the actual situation closest.

*The 1998 ETI Living Wage Summit formula*

This formula calculates the living wage from the cost of basic needs per person, multiplied by average household size, then divided by the average number of earners per household, with an allowance for savings added on (Steele):

$$\frac{\text{Average household size} \times \text{cost of basic needs per person}}{\text{Average number of adult earners per household}} + \text{savings (set at 10\% of income)}$$

*The SA8000 formula*

The SA8000 formula is a variant on the 1998 ETI Living Wage Summit formula. It splits the basic needs measure into two components, a measure of food costs per person, multiplied by the ratio of average total household expenditure to average household food expenditure in the country in question. It also makes the assumption of two earners per household by multiplying by half the average household size, rather than combining the two averages (household size and number of adult earners) (SA8000):

$$[\text{Basic food basket} \times (1 / \% \text{ of avg. household expenditure spent on food}) \times (0.5 \times \text{avg. household size}) \times 1.1]$$

In both of these formulas there is reference to household size and adult earners per household.

These formulas do not take into account provisions provided by the employer, such as free housing, medical insurance, retirement schemes etc. These provisions should be calculated though and may be deducted from the calculated Living Wage of the workers involved.

The SA8000 formula uses a relationship food : non-food costs (extrapolated market approach). This is possible but attention should be paid to the fact that this relationship will be different from one place and group to another, so when applied it should be with great care that a correct relationship is taken.

It is possible to combine both formulas into the following formula:

$$\frac{\text{Average household size} \times (\text{cost of food} + \text{cost of non-food per person})}{\text{Average number of adult earners per household}} + \text{savings (set at 10\% of income)}$$

Whereby:

- The local average household size (which can be different from a standard family) and the average number of adult earners per household are used
- The sum of the weights of its members is calculated by valuing adults as 1, and persons aged under 18 as 0.5
- For the adult earners both men and women are calculated as 1<sup>3</sup>. Children between 14 - 18 years may be calculated as 0.5<sup>4</sup>.
- Where the non-food component cannot easily be determined, the extrapolated approach with percentages adapted to local circumstances can be used
- For the food component a norm of 2400 kcal/day could be used
- Deduct all provisions provided

To determine the food basket different approaches use different calculations for the kcal/day, ranging from 2100 to 3000 kcal/day. The World Health Organization (WHO) has developed guidelines that the average calorie supply of workers in the least developed countries that is needed to perform a full day of medium-heavy work is 2400/kcal/day. For heavy physical work this can be raised (see a list prepared by FAO for energy costs of activities). (FAO)

Household size is not dominant in every country. All kinds of other forms of living and sharing together exist. Therefore the term 'household' should be interpreted in a wider sense so as to imply where needed, extended families as well.

It could be considered unreasonable that in regions where families have many children the Living Wage is higher than in regions where families are smaller, but it should be kept in mind that, apart from the fact that more people must be fed, children often are a protection for old age because of the absence of retirement provisions. Better retirement provisions will ultimately lead to fewer children and so to a lower Living Wage.

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<sup>3</sup> Productivity of men and women in agriculture can be different, as is the case between two people of the same sex. In this approach the Living Wage that people should earn is independent of their productivity. What counts here is that everyone who works full time should earn a Living Wage at least

<sup>4</sup> It is everywhere usual that children during peak periods work with their parents on the farm, during their school holidays, after school hours etc. therefore they cannot be left out, but not valued as adult full-time workers either.

It should be noted that it is not always necessary to do an extensive research to obtain the necessary data. Often a lot of data are available and there are a number of possible sources through which the necessary data can be obtained. These are first of all the national governments, universities and research institutes, as well as different organizations of the United Nations (FAO, UNICEF, UNDP, WFP etc.), ILO and the World Bank can provide much information. Embassies too, who because of their role in the monitoring and execution of development projects are in possession of a lot of information.

### ***How to apply the Living Wage formula to the agricultural sector***

As mentioned above, the Living Wage concept has been mainly applied to the industrial sector. What has to change for it to be applied in agriculture?

In industry, a Living Wage can be paid only when demand for the product equals supply at a certain price. When prices are higher, higher wages can be paid, but when prices are too low it is in the long run impossible to pay Living Wage unless production methods change positively. In agriculture this is not different. Productivity in agriculture can be raised by modern techniques and tools. Especially at the level of the poorest farmers, the peasants, the degree of mechanization is very low and often the work is done with inefficient material. This occurs in spite of the fact that the farmers are aware that better equipment exists. Their problem often is that they cannot afford the purchase of this equipment, seed, fertilizer etc. In order to raise production, farmers must have means to invest. In order to invest, the farmer must have sufficient cash income to feed himself and his family, and to put money aside to make the necessary investments. In order to earn such an income with a production that can only be raised when the necessary investments are made, market prices must attain a certain level.

In order to be able to pay a Living Wage to wage-workers as well as to family members, the revenue of the farm must be calculated. In the case of a large farm with agricultural labourers who work all year round, the revenues of the farm must be sufficient to pay the wages. In the case of part-time workers and family members / owners who do other jobs during the year as well, the revenue should be sufficient to pay the Living Wage for the hours they work for the farm.

Therefore we first have to look at the income generated at the farm. That means first of all revenue minus production and storage and marketing costs. This is calculated at actual market prices. At what price does the producer sell and how many costs has he made for his production?

Auto-consumption should be taken into consideration as well, since especially marginal farmers use a large part of their produce for own consumption. The products the family consumes should be valued at market prices, even though they are not traded.

Production costs are measured by real expenses.

Income is measured by the prices paid for the products in the market plus auto-consumption. Income minus production costs should be sufficient to pay a Living wage to each worker.

We have to ask ourselves now how much money the farm should generate to yield Living Wages<sup>5</sup> if all adult workers work all year, full-time at the farm. This implies calculations as to what crop should be produced with given production methods on a certain type of land in a certain climate to optimise revenues. Revenues not only depend on physical produce, but also on market prices. Quantity produced \* price per unit – production costs - marketing and storage costs = revenue. Here it is mentioned quantity and not quantity sold only because auto-consumption has to be taken into consideration as well.

Let us take a simple example of a plot of land of 1 ha, with only one crop, say millet.

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<sup>5</sup> For factory workers who have their own plot additionally to their job, the calculation in its present form does not apply

### *Equation I*

The revenues are:  $X = (a-y) - s$

Where:

X = total revenue

a = revenue at market price for millet

y = production costs millet

s = marketing and storage costs

Production costs include depreciation costs on investments.

In order to be able to earn a Living Wage (LW), the following must be true:

$$LW \geq X$$

$X = (a-y) - s$  is a real equation in the sense that it is always true. X changes according to changes in the other parameters.

$LW \geq X$  is something different. Here a subjective element is introduced and  $LW \geq X$  is not necessarily always the case. LW may be higher or lower than X. X is a certain amount and may be, or may be not, equal to LW.

This implies that 1 ha with this market price should be enough to earn a Living Wage. Should he have 2 ha. though, the market price that is needed may be different.

This means that we will have to adjust the equation in order to take into account the size of the farm.

### *Equation II*

$$X = \{(a*b*c) - (y*c)\} - (s*c)$$

Where:

X = total revenue

a = Market price for millet per ha

b = production of millet per ha

c = size of the farm in ha

y = production costs millet per ha

s = marketing and storage costs per ha

Let's now consider the same example of a plot of land of 1 ha, now with two crops, say millet and sorghum. This leads to:

### *Equation III*

$$X = \{(a * b * e) - (y * e) + (d * f * g) - (z * g)\} - \{s * (e + g)\}$$

Where:

X = total revenue

a = Market price for millet per ha

b = production of millet per ha

e = part of the farm in ha used to produce millet

y = production costs millet per ha

s = marketing and storage costs per ha

d = market price sorghum

f = production of sorghum per ha

g = part of the farm in ha used to produce sorghum

z = production costs sorghum per ha

This means that, exploiting a fixed amount of land using given production methods, in order to arrive at a total revenue that equals the Living Wage, either prices must attain a certain level or other crops should be produced for which market prices are higher. In the long run production methods that lead to higher yields may be introduced, but to do so the farmer first needs funds so that he can invest.

This is the case when the producer works alone. In that case we can say that the residue should be at least equal to the Living Wage. But what if others are employed as well?

When there is question of hired labour, these costs are to be included in the production costs as actual expenses made by the employer. When, apart from net wages paid to the labourer, amounts have to be paid to pension funds, taxes etc., these should be included as well.

In the case of his or her own or family labour however, things are different because no amount is paid as wage but the farmer has to wait for the revenue of his produce to see what he has effectively earned. The calculation for family members' salaries for working hours should be equal to the wages per hour paid to hired labour (which in all cases should be corresponding with Living Wages for daily work during the whole year).

In reality marginal farmers live not only of their crops; they also have alternative sources of income (working as a day labourer etc). The equation then becomes

### *Equation IV*

$$X = \{(a * b * e) - (y * e) + (d * f * g) - (z * g)\} - \{s * (e + g)\} + (q - h)$$

Where:

q = income from other sources

h = expenditure made to obtain this additional income

Decisions regarding which crops to grow in a certain year are routine considerations for farmers who have that choice. It is more complicated for those farmers who do not have that choice, because of climatic conditions and soil structure. It is more complicated for those farmers who, because of climatic conditions and structure of the soil, do not have a choice between different crops. One example of this are farmers in Sahelian countries who have the choice between millet and sorghum and, if they are lucky, maize as well. With their production fixed at the end of the growing season, they completely depend on the price they receive for their crops. These market prices are under strong pressure from food imports, whether from the same type of food or a substitute. So the crops mentioned before, millet and sorghum, can be replaced by rice which is easier to prepare. The urban population, when given the choice between rice and millet or sorghum for equal prices, will make the choice for rice. This is what happens in Sahelian countries and that is not because the local rice is competitive, but because rice is imported whether in the form of food aid or at subsidised prices. From a political point of view this is quite understandable: there is nothing that authorities fear as much as riots in the cities because of high food prices. But for the farmers this subsidized food means that market prices for their crops are lower than would be the case if no food were imported.

We have started this paper with an overview of the two most common ways of calculating Living Wages followed by a third, an adapted Living Wage formula. Now whichever formula is used, the outcome of those calculations must be compared with production costs. Using the equations above it is possible to calculate a price for the products for which the producer will be able to generate enough revenue for a Living Wage. This calculated price will be called a 'fair' price. The different 'fair' prices must lead to a total revenue that has to be equal or more than the calculated Living Wage.

With this calculation we arrive at the Living Wage each worker should at the minimum receive for his work. At the level of the farm as an enterprise we return to the obligation of a firm to pay Living Wages. At farm level, however, not only do wages have to be earned, but also enough surplus money to cover necessary investments.

Therefore the amount to be paid on Living Wages should be raised by another 10% at the level of the firm to be able to invest in small equipment (hoe, shovel etc.) and seeds as well. This way we arrive at the amount needed to guarantee a Living Income.

### ***'Fair' prices and market prices***

When, be it due to food aid, subsidized food imports or other factors, market conditions make it impossible for the producer to earn a Living Wage at actual market prices, interventions may be needed. As shown above 'fair' prices are calculated prices that involve certain ethics, namely that people should earn enough by their work to live on. Market prices are determined in a way that is completely different than how Living Wage prices are calculated. Market prices are usually determined by supply and demand. In conditions of perfect competition this will result in an equilibrium price. It is well known, however, that there are many market distortions (power positions of market parties, import and export interests, other government policies) that cause many market prices not to reflect equilibrium prices.

Small farmers suffer from many market and institutional problems. This means that they have higher transaction costs and don't get as good a price for their produce as larger farmers do – even though, according to Sukhpal Singh, in India at least, they are just as productive as larger farms per unit area, and sometimes more so (Singh).

In order to make a good comparison it should first be analysed what the theoretical market prices of the different products would be in case of perfect competition. Only when subsidised imports and monopoly and monopsony positions on the markets are excluded, can real prices can be compared. When these market distortions cannot not be repaired, other measures could be considered such as ending regular food aid and subsidized imports, or giving a premium to farmers, the same way as is common in western countries.

Instead of higher producer prices or premiums, it is also possible to raise income levels by the creation of alternative employment in the rural areas. After all, the Living Wage is calculated not only on the basis of agricultural sales, but on other income as well.

There is always a limit to the prices, namely the willingness of the consumers to pay. If 'fair' prices for the products appear to be too high even when there are no market distortions, there will be no demand and it would be better for the producer to look for other ways to earn a living.

Planners too should ask themselves how to continue at that point. At a certain point it must be concluded that this way it is impossible to earn a Living Income so alternatives should be looked for.

## **Case-study: Peasants in Boucle du Mouhoun, Burkina Faso**

### **1. Calculation of a Living Wage**

We will now consider a simple example. In Boucle du Mouhoun in Burkina Faso farmers grow maize, millet and sorghum as food products and cotton for cash income. This example will show that even in a situation where many relevant data are lacking, it is possible to arrive at satisfactory outcomes and that way gain important insight.

The following definitions will be used:

For peasants we will use Frank Ellis' definition: *Peasants are households which derive their livelihoods mainly from agriculture, utilise mainly family labour in farm production, and are characterised by partial engagement in input and output markets which are often imperfect or incomplete* (Ellis).

*'Fair' prices are the prices that result where X equals the total of Living Wages at the farm plus 10% investment costs.*

We will calculate the Living Wage and the corresponding fair prices for the crops for several cases. This because much depends on the data used and that can be different when using different sources. Besides there are several possibilities with regard how to use the data, so the weight given in the analysis to different items is important. Take for example the number of family members and the relative weight given to them in the analysis. In our case data are found about the family size but data about farm size are known for UP's only.

For use in calculations those data have to be adapted to be able to fit. This means that it is good to make calculations for several, different, cases and the user can choose what data and assumptions he thinks are most appropriate and use the outcome of the calculations based on those assumptions. The outcome of the calculations using different sources and interpretations will lead to outcomes that may be quite different from one another, showing the importance of a good choice of the parameters to use.

Let us start by taking the poverty line as basis for our calculations. Here we are faced with the problem that, although the methodology for how the poverty line has been established, namely on basis of costs of food and non-food is known<sup>6</sup>, different poverty lines exist, namely a national poverty

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<sup>6</sup> From World Bank Report No. 29743-BUR: **Box 4: How is the Official Poverty Line Computed?**

"INSD constructs a poverty line using the "cost of basic needs" approach, in three steps:

First, the food component of the poverty line is estimated by valuing a set of food items providing the recommended intake of 2283 calories per capita per day at the prices prevailing during the survey. The food items used by INSD consist of four staples most consumed by the households in Burkina Faso, namely sorghum, millet, com and rice. A standard conversion table is used to determine the caloric content of each Kg of product. The composition of this food basket reflects the share of these four staples in the consumption of the households for each survey, and thus changes from survey to survey. The basket is evaluated at the prices of the four staples prevailing in Ouagadougou markets at the time of the survey. Second, the non-food component is equal to the non-food expenditures observed for the households whose food consumption is close to the food poverty line estimated above. The ratio of non-food to food consumption is estimated for each household. Then, the share of non-food consumption in the total poverty line is chosen to be the share reported by those households whose food consumption is close to the value of the food poverty line (for instance,  $\pm 1$  percent). The ratio obtained thus far is multiplied by the food poverty line to get the non-food component of the poverty line. In other words if the typical household near the food poverty line consumes food and non-food items of about equal value, the non-food component would be set equivalent to the food poverty line. The official poverty line then is determined as the sum of the food and non-food components."

line of CFAF<sup>7</sup> 72,110, a rural poverty line of CFAF 71,737 and an urban poverty line of CFAF 73,557 (data INSD in World Bank 2005).

For our calculations it seems appropriate to take the rural poverty line<sup>8</sup> as point of departure because our case is about the rural areas of Burkina Faso, Boucle du Mouhoun. This rural poverty line has been calculated at CFAF 71,737.

The next step is to look at the average size of the family to calculate the Living Wage.

According to the Burkina Faso household survey, 2003 – SARPN the average household size in 2003 was 6,4 (SARPN).

ONAPAD estimates average household size in Boucle du Mouhoun at 7,8<sup>9</sup> (ONAPAD). Since ONAPAD figures relate to Boucle du Mouhoun only, while the SARPN data are the average for the whole of Burkina Faso, it seems preferable to use for our calculations the data provided by ONAPAD, so an average household size in Boucle du Mouhoun of 7,8.

In the case of African households the wife works as much on the land as the husband. Also children are involved in agricultural activities in their spare time. Therefore both men and women between the age of 18 and 60 are valued as 1, and persons from 14 to 18 years as 0.5.

Akresh counts a number of 10.6 per household (Number of Members per Household 10.6, Number of Wives per Household 1.5, Children Under Age 18 per Household 3.6, Children Above Age 18 per Household 3.2 and Number of Additional Other Members per Household 1.3) (Akresh 2005), whereas ONAPAD counts 7,8 household members (ONAPAD 2004). Unfortunately ONAPAD provides no details about the composition of the households.

If the percentages would be equal in both cases, we can use the data to calculate the following composition of households in Boucle du Mouhoun:

Number of Members per Household 7.8

Head of the household 1

Number of Wives per Household 1.1

Number of Children Under Age 18 per Household 2.6

Number of Children Above Age 18 per Household 2.3

Number of Additional Other Members per Household 0.9

Total comes at 7,9 because of round-offs.

Since we do not know the number of children between 15 and 18 years of age, we will not include a figure for them in the calculations.

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<sup>7</sup> FCFA stands for Franc CFA, the currency used in West-Africa. It has affixed exchange rate to the Euro: 100 FCFA = 0.152449 EUR

<sup>8</sup> The high seasonality of prices of the main staples, especially during the lean period, contributes to the fluctuation of the nominal poverty line, and generates dramatic swings in the share of food in total household consumption from one survey to the other.

<sup>9</sup> A possible explanation for these large families given by ONAPAD is that an important part of the heads of the households is polygame (33,6%).

So we may estimate the number of wage earners at  $1 + 1.1 + 2.3 = 4,4$ <sup>10</sup>, and the size of the household at  $1+1.1+2.6/2+2.3+0.9 = 6,6$ .

*Average household size x (cost of food + cost of non-food per person)*

\_\_\_\_\_ + savings (set at 10% of income)

*Average number of adult earners per household*

When applied to the formula of the Living Wage, we get:

$(6,6 * 71.737) / 4,4 + (10\% * 107606) = 118.366$  FCFA as amount for the Living Wage per adult worker in Boucle du Mouhoun in Burkina Faso.

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<sup>10</sup> Reality is often more complicated than this. Besides that African men may have more than one spouse, there often is a close cooperation between several households (brothers, sisters, parents) so that it is preferable to look at the Unit of Production and the Unit of Consumption to make a better calculation. For this example this would lead too far however.

## 2. Calculation of a 'fair' price

Our case is an area in Boucle du Mouhoun, Burkina Faso, that can be exploited of 4.4 and 6.8 ha (the average area under cultivation) where sorghum, millet and maize are grown. As additional cash income cotton is produced.

Let us start with one product, maize. After that we will make the same calculation for millet and sorghum. This will give the equilibrium price should the peasant produce one crop only and be dependent on that crop only to achieve a Living Wage. We assume that all adult workers work all year full-time at the farm.

Later on other income will be added (cotton).

### Maize

Maize is cultivated either on a terrain that requires fertilisation or on the same plot where previously cotton was grown. As the cotton was fertilised the maize doesn't require further fertilisation.

There are four cases to be distinguished with regard to the way the work is done:

1. With Plough, no fertilizer
2. With Plough, fertilizer used
3. With Tractor, no fertilizer
4. With Tractor, fertilizer used

Production per ha

Fertilizer applied                      4500kg/ha

No fertilizer applied                      3000 kg/ha

(Source: MARH)

Table I : Maize production costs in FCFA/ha

<b>Maize</b>		FCFA	FCFA
<i>costs with tractor</i>		with fertilizer	without fertilizer
Clearing	10 man-days at 750 FCFA a day (500 F salary + 250 F food)	7500	7500
Stump removal	10 man-days at 750 FCFA a day (500 F salary + 250 F food)	7500	
Labour	with tractor	25.000	25.000
Seeding and shelving	5 man-days	3750	3750
Hoeing and weeding	with tractor 12500*2	25000	25000
Earthing up	with tractor	25000	25000
Harvesting	10 man-days	7.500	7.500
Packaging, handling, transport	Packaging 10,000, transport 10,000, handling 2,500, man-days 2,500	25000	25000

Fertilizing	150 kg NPK (150*225) and 100 kg urea (100*215)	55250	
	Total	181500	118750

<i>costs with plough</i>		with fertilizer	without fertilizer
Clearing	10 man-days at 750 FCFA a day (500 F salary + 250 F food)	7500	7500
Stump removal	10 man-days at 750 FCFA a day (500 F salary + 250 F food)	7500	
Labour	with plough	12000	12000
Seeding and shelving	5 man-days	3750	3750
Hoeing and weeding	with plough 6000*2	12000	12000
Earthing up	with plough	12000	12000
Harvesting	10 man-days	7.500	7.500
Packaging, handling, transport	Packaging 10,000, transport 10,000, handling 2,500, man-days 2,500	25000	25000
Fertilizing	150 kg NPK (150*225) and 100 kg urea (100*215)	55250	
	Total	142500	79750

(Source: MARH)

Thus costs of production and production per ha. are known. The Living Wage per adult worker for an average family of 7,8 persons has been calculated above. This means that a family of 4,4 should receive  $4,4 * 118.366 = 520.811$  FCFA as income for the produce. At the level of the firm (household) this amount should be raised by another 10% to have some additional income for small investments (hoe, shovel etc.) as well, so total income of the household should amount to  $520.811 + 10\% * 520.811 = 572.892$  FCFA in order to achieve a Living Income.

What can be calculated now is the price the producer should receive for his produce in order to obtain a Living Income when producing maize only.

Separate prices should be calculated for each of the 4 cases:

- a. i. tractor and fertilizer
- ii. tractor, no fertilizer
- b. i. plough and fertilizer
- ii. plough, no fertilizer

For sake of analysis we distinguish three cases of peasants. One group does not commercialise food, a second group that does commercialize part of its produce and a third group that has a larger

surface to work and commercializes part of its produce as well. All groups, however, may produce and sell cotton. The groups are defined according to the findings of the research done by TASIM/AO<sup>11</sup>

1. A group that does not commercialise food and has an average of 2,8 ha. at its disposal, and
2. A group that commercializes part of its produce has an average of 4,4 ha. at its disposal, and
3. A group that commercializes part of its produce and has an average of 6,8 ha. at its disposal.

The first group with an average of 2,8 ha does produce food but that is mainly for auto-consumption and barter. They are outside the marketing system for food products (not for cotton) and therefore market prices of cereals don't affect them much. For our analysis of cereal market prices we leave them therefore out and concentrate on those peasants that commercialise (part of) their produce. So we will discuss peasants with an average of 4,4 ha and peasants with an average of 6,8 ha at their disposal.

#### 1. The case of 4,4 ha

Table II : Maize production costs and production in kg for 4.4 ha

Maize	Cost/ha (FCFA)	Cost 4.4 ha (FCFA)	Production/ha (kg)	Production 4.4 ha (kg)
tractor and fertilizer	181500	798600	4500	19800
tractor, no fertilizer	118750	522500	3000	13200
plough and fertilizer	142500	627000	4500	19800
plough, no fertilizer	79750	350900	3000	13200

In the case of a tractor plus fertilizer 19.800 kg must be equal to 798.600 (costs) + 572.892 (household income needed) in order to achieve a fair price (Living Wage for each worker plus investment costs) for the producer. This means a price to the producer of  $(798.600 + 572.892) / 19.800 = 69,27$  FCFA/kg.

This way we get the following 'fair' prices for different cases:

Table III : 'Fair' price in case of 4.4 ha maize only

'Fair' price (FCFA)	
tractor and fertilizer	69,27 FCFA/kg
tractor, no fertilizer	82,98 FCFA/kg
plough and fertilizer	60,60 FCFA/kg
plough, no fertilizer	69,98 FCFA/kg

<sup>11</sup> Unfortunately TASIM/AO provides data at U.P. (production unit) only. UP's do not necessarily coincide with families. By lack of data at family level the data for UP's are used in the calculations.

## 2. The case of 6.8 ha

Table IV : Maize production costs and production in kg for 6,8 ha

	Cost/ha (FCFA)	Cost 6,8 ha (FCFA)	Production/ha (kg)	Production 6,8 ha (kg)
tractor and fertilizer	181500	1234200	4500	30600
tractor, no fertilizer	118750	807500	3000	20400
plough and fertilizer	142500	969000	4500	30600
plough, no fertilizer	79750	542300	3000	20400

Leading to the following 'fair' prices:

Table V : 'Fair' price in case of 6.8 ha maize only

'Fair' price (FCFA)	
tractor and fertilizer	59,06 FCFA/kg
tractor, no fertilizer	67,67 FCFA/kg
plough and fertilizer	50,39 FCFA/kg
plough, no fertilizer	54,67 FCFA/kg

These are the prices the producer on a plot of 4.4, respectively 6.8 ha. should receive if he only cultivated maize.

What becomes clear from these two cases, is the importance of estimating accurately the average number of ha. under production. Like all data used in the calculations, it is very important to look for the right data for the region for which the calculations are made since results depend on assumptions.

### *Millet*

Millet is grown on ground that has been used for cotton before, therefore fertilizer has been applied already.

Here follow 4 cases, with tractor/ plough and with use of local / improved seeds.

Table VI : Millet production costs and production in kg for 4,4 and 6,8 ha

Millet	Cost/ha (FCFA)	Cost 4.4 ha (FCFA)	Cost 6,8 ha	Production/ha (kg)	Production 4.4 ha (kg)	Production 6,8 ha (kg)
tractor and local variety	118750	522500	807500	1000	4400	6800
tractor and improved variety	122250	537900	831300	1500	6600	10200
plough and local variety	79750	350900	542300	1000	4400	6800
plough and improved variety	83250	366300	566100	1500	6600	10200

(Source production and production costs /ha : MARH, seed price/ha FAOBF)

Table VII : 'Fair' price in case of 4.4 and 6.8 ha millet only

Millet	no additional income	
	4,4 ha	6,8 ha
Fair' price (FCFA)	248,95	218,32
tractor and local variety	168,30	147,88
tractor and improved variety	209,95	179,32
plough and local variety	142,30	121,88
plough and improved variety		

These are the prices the producer on a plot of 4.4 or 6.8 ha. should receive if he only cultivated millet.

Should he produce both maize and millet, production in kg of each crop will diminish, but with these prices total income will remain the same.

For the case of sorghum the same way of reasoning can be applied.

### *Sorghum*

For the production of sorghum no fertilizer is used

As in the case of millet, there is a difference in the use of local and improved seeds.

So here as well, we can distinguish four cases:

1. Plough, local seeds
2. Plough, improved seeds
3. Tractor, local seeds
4. Tractor, improved seeds

Table VIII : Sorghum production costs and production in kg for 4,4 and 6,8 ha

	Cost/ha (FCFA)	Cost 4.4 ha (FCFA)	Cost 6,8 ha	Production/ha (kg)	Production 4.4 ha (kg)	Production 6,8 ha (kg)
tractor and local variety	126250	555500	858500	1200	5280	8160
tractor and improved variety	130750	575300	889100	1700	7480	11560
plough and local variety	87250	383900	593300	1200	5280	8160
plough and improved variety	91750	403700	623900	1700	7480	11560

(Source production and production costs /ha : MARH, Seed price/ha FAOBF)

Table IX : 'Fair' price in case of 4.4 and 6.8 ha sorghum only

Fair' price (FCFA)	4,4 ha	6,8 ha
tractor and local variety	213,71	175,42
tractor and improved variety	153,50	126,47
plough and local variety	181,21	142,92
plough and improved variety	130,56	103,53

Should the peasant produce maize, millet and sorghum, total production in kg of all three crops will diminish, but with these prices total income will remain the same.

Fortunately peasants are not dependant of these food crops only; in Boucle du Mouhoun also much cotton is produced.

Suppose net household income of the cultivation of cotton amounts to 200.000 FCFA. Then again the equilibrium prices will change, because net income to be derived from these food crops may be less. In the formula for calculating the equilibrium price an amount of 572.892 FCFA has been used (Living Wage for each worker plus investment costs) in order to achieve a fair price.

Now we can diminish the 572.892 FCFA with the 200.000 received from other sources, the amount then to be used in the formula becomes 372.892.

This has the following effects on the equilibrium prices:

Table X : 'Fair' prices in case of 4.4 and 6.8 ha with and without additional income

<b>Maize</b>	no additional income		with additional income from cotton	
	4,4 ha	6,8 ha	4,4 ha	6,8 ha
Fair' price (FCFA)				
tractor and fertilizer	69,27	59,06	59,17	52,52
tractor, no fertilizer	82,98	67,67	67,83	57,86
plough and fertilizer	60,60	50,39	50,50	43,85
plough, no fertilizer	69,98	54,67	54,83	44,86

<b>Millet</b>	no additional income		with additional income from cotton	
	4,4 ha	6,8 ha	4,4 ha	6,8 ha
Fair' price (FCFA)				
tractor and local variety	248,95	218,32	203,50	173,59
tractor and improved variety	168,30	147,88	138,00	118,06
plough and local variety	209,95	179,32	164,50	134,59
plough and improved variety	142,30	121,88	112,00	92,06

Sorghum	no additional income		with additional income from cotton	
	4,4 ha	6,8 ha	4,4 ha	6,8 ha
Fair' price (FCFA)	213,71	175,42	175,83	150,91
tractor and local variety	153,50	126,47	126,76	109,17
tractor and improved variety	181,21	142,92	143,33	118,41
plough and local variety	130,56	103,53	103,82	86,23
plough and improved variety				

There are a number of conclusions that can be drawn from these figures.

Maize: when we compare the use of tractor and plough, it appears that at this stage of development the use of a tractor is more costly than the use of the plough. The use of fertilizer raises the income, both in the case of tractor as in the case of plough.

Millet: the use of improved seed gives a higher return than the use of local seed. Although the plough has the least costs, the use of tractor and improved variety gives a higher net return than plough and local variety. Plough and improved variety are the best option at this stage. It appears necessary for the peasant to be able to invest in improved seeds. The majority of farmers in Boucle du Mouhoun use their own seed which they produce themselves (McKnight). However, availability of improved seeds is as important as its price.

Sorghum: here the same applies as in the case of millet.

After calculating 'fair' prices for three products, we may examine the case where the peasant grows all three crops during the year, on let's assume 1,2 ha millet, 1,1 ha sorghum and 1,1 ha maize. Total 4,4 ha. The total income the peasant derives from it with 'fair' prices equals the amount of Living Income he has to earn.

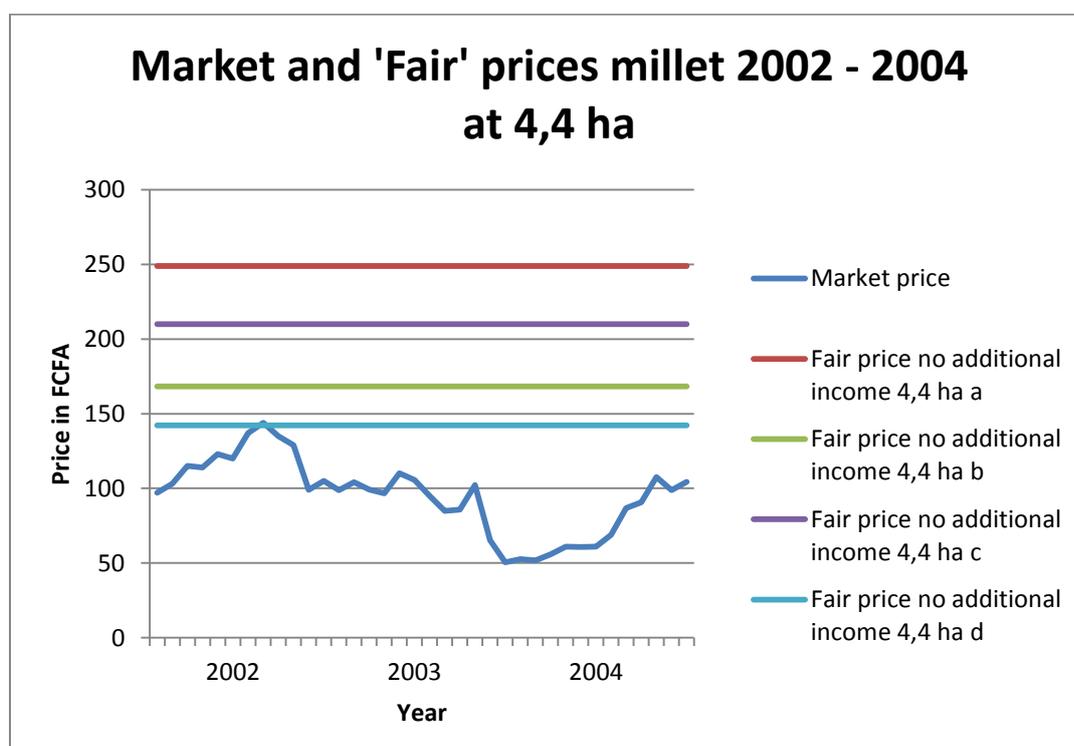
Comparison of these 'fair' prices with market prices will give an indication in what markets interventions will be more or less necessary and possible. In the next section this is done for millet. The same can be done for other products as well.

### 3 Comparison of 'fair' prices with market prices

Now that we have arrived at the minimum level that prices of several products should reach in order to have a flourishing rural sector, we can compare these figures with the actual producer prices.

The next graph shows average producer prices in the Boucle du Mouhoun for millet during the period 2002 – 2004, compared with the calculated fair price for an area of 4,4 ha in case of no additional income for the four cases: a. tractor and local variety, b. tractor and improved seeds, c. plough and local variety, and d. plough and improved seeds.

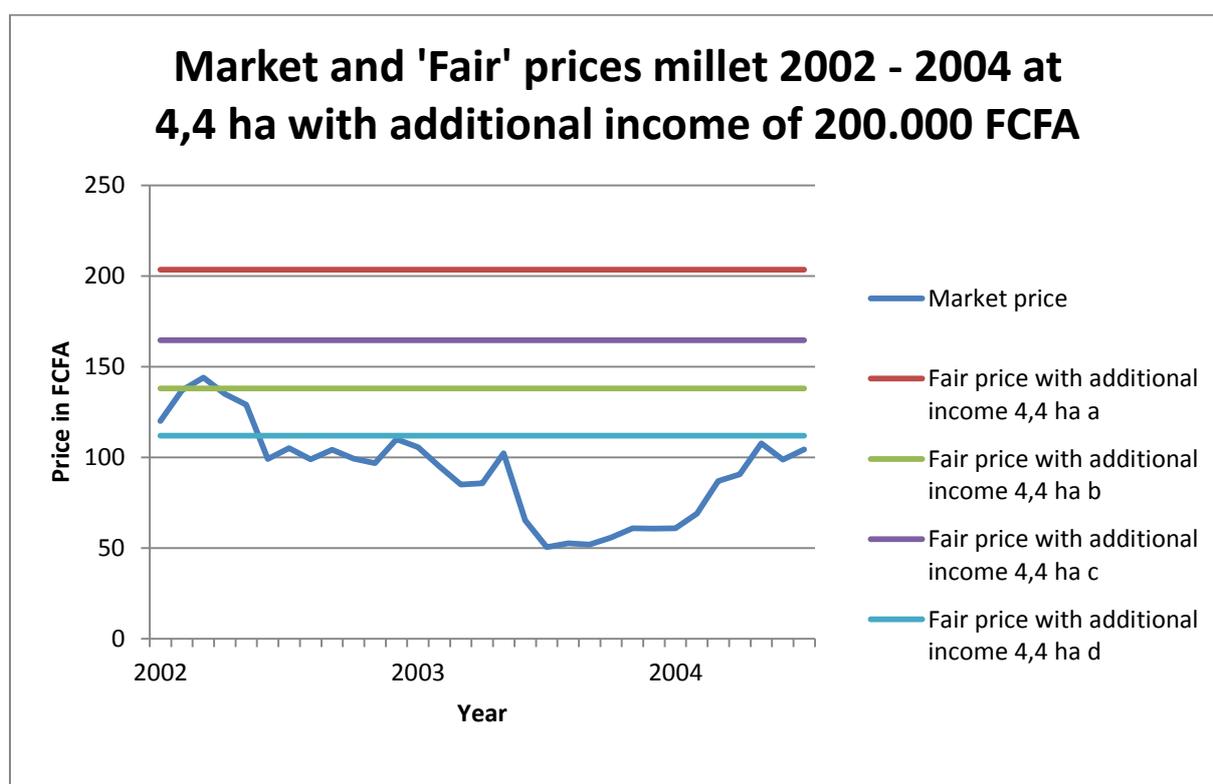
Graph I : Market prices and 'fair' prices 2002 – 2004, the case of 4,4 ha with millet only



Market prices in the period 2002 – 2004 were lower than all 'fair' prices calculated, which implies that in these circumstances it is not possible for the peasant to obtain a Living Income. Only in August 2002 market price was slightly higher than the 'fair' price in the case of plough and improved seeds (144 versus 142,30 FCFA).

Graph II shows the same prices but now with an additional income of the peasant of 200.000 FCFA.

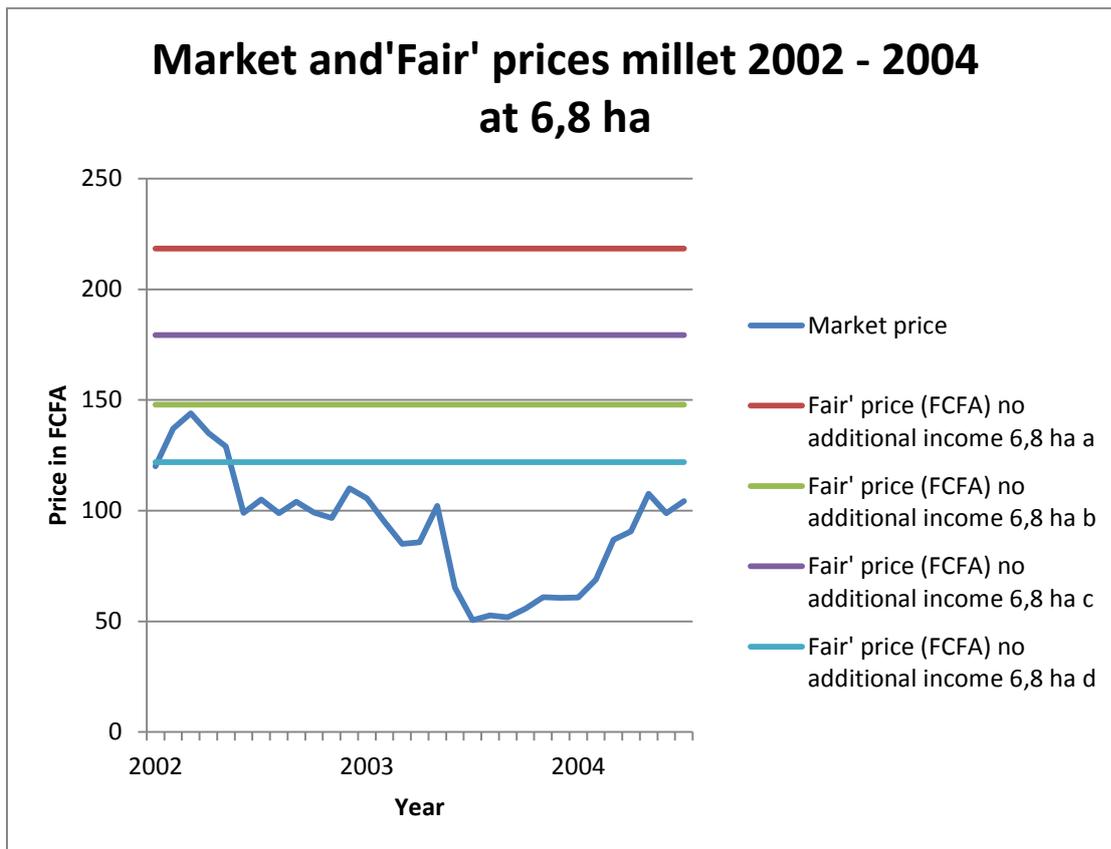
Graph II : Market prices and 'fair' prices 2002 – 2004, the case of 4,4 ha with millet plus additional income



Here the market price in 2002 surpassed the 'fair' price with additional income for the case plough and improved seeds, and even in July and August 2002 the 'fair' price with additional income for the case tractor and improved seeds. This shows the need for peasants to invest and to be able to purchase improved seeds. The use of a tractor remains inferior to use of the plough.

The next two graphs shows the same but then for an area of 6.8 ha.

Graph III : Market prices and 'fair' prices 2002 – 2004, the case of 6.8 ha with millet only



Here, like in the example of 4.4 ha where the peasant has an additional income of 200.000 FCFA, the market price in 2002 surpassed the 'fair' price for the case plough and improved seeds, and in this case almost touches the 'fair' price for the case tractor and improved seeds. So let's now have a look what happens if the peasant has 6.8 ha and an additional income of 200.000 FCFA as well. This is shown in graph IV.

Graph IV : Market prices and 'fair' prices 2002 – 2004, the case of 6.8 ha with millet plus additional income



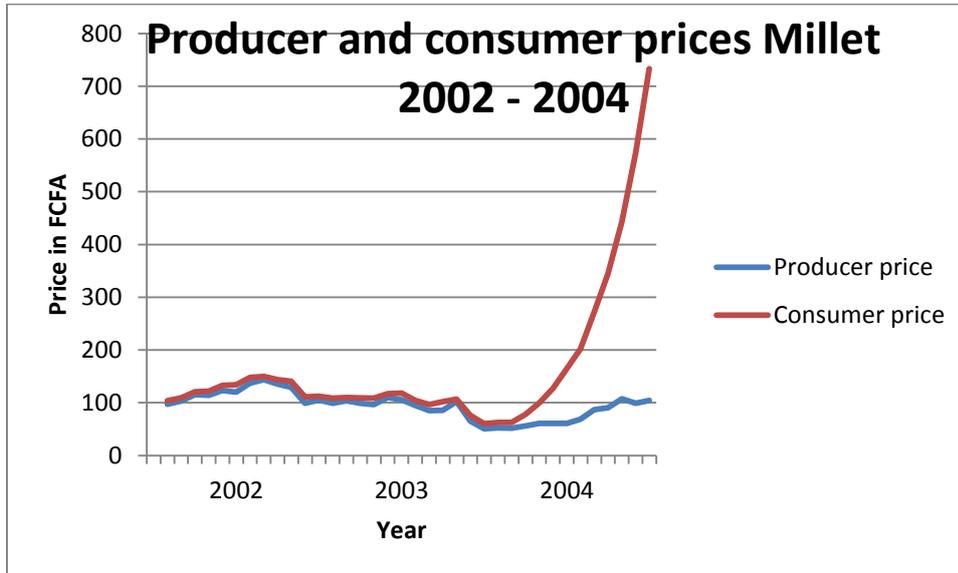
In this case the market price surpasses the 'fair' price for plough and improved seeds in 2002 and the first half of 2003 while at the end of 2003 it falls below that price and remains lower until the end of 2004. First half of 2002 the market price also surpasses the 'fair' price for the case of tractor and improved seeds and even during the period July – September slightly surpasses the 'fair' price for the case of plough and local variety.

These different cases lead to the conclusion that we must be very careful in our assessment of the local situation: what is the real situation of our target group. Any wrong assessment will lead to wrong conclusions. So detailed knowledge of the area is required.

#### 4 Are market prices in Burkina Faso equilibrium prices?

Now we turn to the question whether market prices reflect equilibrium prices. The next graph shows the difference between producer prices and consumer prices of millet during the period 2002 – 2004. Usually there is no great difference between producer and consumer prices. In years of national deficits however, the gap tends to widen as shown in the next graph (Graph V).

Graph V : Producer and consumer prices of millet 2002 – 2004 in Boucle du Mouhoun



Source: calculation on basis of data from MARH

It should be noted that these are prices at Dedougou in Boucle du Mouhoun, so in the centre of the production area. This clearly shows that in extreme circumstances we cannot speak of a well-functioning market and price setting.

Reasons why markets do not function optimally in other years as well, are given in a paper in Development in Practice:

*“ There are price distortions because of gifts of rice (USA and Japan), food aid and food imports. Imported rice often has benefited from export subsidies in the originating countries, like Thailand, the world’s greatest exporter of rice (26 per cent of world exports during 1995–2001) and India. EU import restrictions have led to fewer imports by the EU and therefore more exports to other countries. The imports of rice and food aid have led to less internal demand for local grown cereals and has a negative price effect on these grains, and on the income of the producers. Data from WFP Interfais show that food aid in kind during the period 2001/02–2004/05 to Burkina Faso was on average 36.493 MT a year, of which 30.469 MT cereals (WFP Interfais n.d., [www.wfp.org/interfais](http://www.wfp.org/interfais)).*

*. The market is influenced by regional imports and exports. Burkina is, depending on the harvest, both an importer and exporter of maize. Imports of maize are mainly from Ivory Coast and Ghana. The main export market is Niger.*

*. To this we can add the case of ‘distress sales’<sup>12</sup>.”(Bronkhorst 2011).*

<sup>12</sup> If the producer needs money now and cannot wait till harvest time (for medical expenses, taxes etc), the trader purchases the crop when it is still growing in the fields, and advances the farmer the money. His rates of interest are very high. For the farmer these are ‘distress sales’; he knows he loses on it but needs the money so desperately that he has to sell.

Among the cereals imported is rice. It replaces the small local rice production and serves as replacement for millet and sorghum, especially in the cities. Rice is there often preferred because it takes less time to prepare.

The fact that Burkina as a country has a surplus of food but regions where there is a structural deficit, enables WFP to purchase locally for its structural food aid programs in deficit areas of the country. This is a very positive action by WFP that counterbalances the foreign food aid given by several organizations.

The differences between the actual producer prices and the prices that are needed to guarantee a decent minimum income pose a great challenge to policy makers within the government as well with foreign organisations.

## ***Conclusions***

To solve the problem of agricultural income being too low to be able to cover the peasant's and his family's basic needs, as well as to supply some funds to invest, it is important that the farmer gets sufficient revenue from his work. The Living Wage concept as developed by several organisations, can be used to this purpose.

In order to apply the concept to the agricultural sector, production costs must be known. With the amount required for a Living Income and production costs known, 'fair' prices can be calculated that the peasant needs to receive for his crops.

When these 'fair' prices are determined, these can be compared with actual market prices. Comparison of these prices will show whether the peasant will be able to survive in the long run in a decent way, and be able to make the minimum necessary investments.

When market prices are lower than 'fair' prices, the reasons for this should be analysed. On the basis of those results policies can be formulated. Possibilities include removal of market distortions (such as subsidized food imports, food aid that is sold on the market, power positions in the marketing chain) that have a negative effect on market prices of agricultural products, as well as by providing infrastructure, giving income- or production subsidies or by creating more remunerative employment in the rural areas.

Use of the Living Wage concept in the agricultural context is not easy and requires a lot of work, but it can be done even when little information is available, as shown in the Burkina Faso case.

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