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Living and Actual Income of Smallholder Tea Farmers in Malawi – Using a Fast-Track Method for Model Calculations

Working Paper

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Abstract

An earned income that provides a decent standard of living and an existence in dignity is recognized as a fundamental human right by the United Nations. However, many people in developing countries still fail to reach this so-called living income, often even if they are working fulltime. In this paper, we will take a closer look on self-employed smallholder tea farmers in Malawi. At first, we established three benchmarks for smallholder tea farmers. One of them is derived from a living wage study for an area where the Malawian tea sector is concentrated, conducted by Richard and Martha Anker (2014). For the other two we used the World Bank's Poverty Line of 3.1 USD-PPP and Extreme Poverty Line of 1.9 USD-PPP. We further propose to set the benchmark derived from Anker and Anker (2016) as the upper bar. In case of absence of this benchmark the World Bank Poverty Line of 3.1 USD-PPP can be used instead whereas the World Bank Extreme Poverty Line of 1.9 USD-PPP can be set as the lower bar. Any income which is below the lower bar would not be recognized as a living income and cannot be seen as sustainable. If the income lies in the corridor in-between the lower and upper bar it is in transition to the living income. If the income is equal to or higher than the upper bar, this should be recognized as a living income and be regarded as a sustainable situation. In a next step, we calculate the actual income of a simplified but typical smallholder tea farm based on gross margin analysis of tea, maize and pigeon peas. For this, we distinguished between part-time and full time farm operation. Finally, we compare both actual and living income and present measures which could close this gap. Therefore, we created two scenarios in which the living income benchmark can be reached. One of our major findings is that a typical smallholder tea farmer's income currently lies significantly below the living income benchmark even if the farm size is big enough to be operated in full time. The productivity and the tea price are important leverages to increase the tea farmers' income to the level of our derived living income benchmark. This would entail a productivity increase by about 33% and a price rise by 22% which appears realistic. All in all, the modeling of different scenarios can contribute to identifying appropriate development measures which help smallholder tea farmers to increase their income.

Contents

List of Tables and Figures

Abbreviations

GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
MKW	Malawi Kwacha
PPP	Purchasing Power Parity
USD	United States Dollar

1. Introduction

The concept of an income that ensures a decent standard of living is recognized as a fundamental human right by the United Nations' Universal Declaration of Human Rights in Article 23, Paragraph 3 that says "*everyone who works has the right to just and favourable remuneration ensuring for himself and his family an existence worthy of human dignity.*" Also, the Sustainable Development Goal No. 8 of the United Nations' Agenda 2030 targets on decent working conditions for all women and men.

However, a large share of people in developing countries still fail to achieve an income which would provide them with a decent standard of living and an existence in dignity. Both hired workers and smallholder farmers are facing these problems. Therefore, there is growing interest among many actors along the supply chain in understanding if especially smallholder farmers are actually earning a "living income" or, if not, what could be done to get them there. In order to analyze the gap between the actual and the living income it is necessary to determine a living income benchmark and to calculate the actual income of a smallholder farmers' household. Finally, one can compare both income levels and develop solutions to close the gap if the living income is not reached. To facilitate this process, we developed a "Fast-Track Method" to calculate the actual income. For determining the living income benchmarks, we used two methods. One of the living income benchmarks was derived from the living wage benchmark for a hired tea worker in Malawi developed by Richard and Martha Anker.[1] For the other living income benchmark the World Bank's Poverty Line and Extreme Poverty Line serve as a proxy.

This report will show how we calculated the actual income of a typical Malawian smallholder tea farmer household who operate their farm either in part-time or full time. Moreover, it will show how we derived a living income benchmark for the tea sector. Finally, it will come up with different strategies to close the gap between their actual income and the income that would be necessary to provide them with a decent standard of living – the living income.

This work is part of the Strategic Alliance *Towards a Living Wage and Living Income for Tea Farmers in East Africa* between GIZ develoPPP.de and six international tea companies which are represented by the Ethical Tea Partnership. Also, it contributes to the work of the *Malawi Tea 2020 Revitalization Programme Working Towards a Competitive Tea Industry with Living Wages & Living Incomes* which is a partnership between tea producers, traders, packers and retailers as well as Malawian government organizations, development organizations, certification schemes, civil society actors and trade unions of the tea sector.

[1] See Annex I.

2. Methodology

In this chapter, we will present the methodology of comparing the actual income of a smallholder farm to the income level that would provide the household with a decent standard of living. Two drafts of our analysis had been shared with and presented in two verification webinars, amongst others with Martha and Richard Anker, the University of Malawi, Dr. Levison Chiwaula and colleagues, and Prof. Dr. Hermann Waibel from the University of Hannover.[2] At first it is necessary to determine the household and farm composition of the considered farmers in a certain region. As a second step, one has to come up with a living income benchmark that is able to cover the costs for food, housing, education, health and for other essential expenses plus a margin for unexpected events for every person in the household. In a third step, one has to calculate the actual income of the smallholder household according to gross margin data. As a fourth and last step, one can compare the actual to the living income and develop solutions to close this gap.

2.1 Determining Household and Farm Composition

As a first step, it is necessary to determine the typical household and farm composition of the target group. To understand how a typical tea farm in Malawi looks like, data on farm composition, household size and farm size were obtained through focus group discussions, workshops in Malawi with professionals in this field as well as from the National Statistical Office of Malawi. From the collected data, we concluded that an average smallholder tea farm in Malawi consists of five household members. Specifically, our model household consists of two adults, one adolescent, one small child and a baby. The age structure of the household is important for defining especially the food consumption needs of the household. In the tea growing areas of Malawi, the tea farms are typically operated in part-time because of land shortages. In the **part-time** model the farmer cultivates tea, maize and pigeon peas on an area of 0.6 ha, which is the average farm size according to focus group discussions. Tea is grown on 0.4 ha whereas maize and pigeon peas grow on the same plot of 0.2 ha in a relay system, in which maize is cultivated at the onset of the rainy season followed by pigeon peas in the same year. This leads to a labor absorption of 43.3% because the available land allows the 1.59 work force units to work only 169.48 days per year. However, there are some bigger smallholder farms that are able to operate in full time which means working in total 391.8 days per year or more. That is why we also established a **full-time** model. In this model, an area of at least 1.39 ha is required on which the farmer cultivates tea, maize and pigeon peas. In this case tea is grown on 0.92 ha whereas maize and pigeon peas grow on the same plot of 0.46 ha in a relay system because we increased the land allocation proportionally. The available family labor is now absorbed by 100%. For this model, we assumed that the work is distributed

[2] However, any mistakes remain on our side; for further explanations, see Annex II for changes we made after the verification.

smoothly around the year even if in Malawi tea and other agricultural crops have different labor requirements depending on rainy and dry seasons.

2.2 Deriving a Living Income Benchmark

In a first step, it is essential to establish a living income benchmark for the specific sector and region under consideration, which in this case is the smallholder tea sector in Malawi. In particular, we derived three benchmarks. The first living income benchmark we derived from the living wage benchmark for Malawian tea workers developed by Richard and Martha Anker (Anker, M. and Anker, R. 2014). It includes costs for food, housing, education, health and for other essential expenses plus a margin for unexpected events. For this, we took the benchmark that covers the cost for a decent standard of living for a family of five from the updated living wage study by Richard and Martha Anker from July 2016. This amounts to 1,132,257 MKW per year. If we assume that one household member works full time and another one dedicates 59% of his/her work time to productive work it will lead us to a work force of 1.59 people per household. Moreover, from the living wage study we know that a full-time tea worker is assumed to work 276 days per year. However, in our calculations we had to reduce the number of workdays by dividing this number by 1.12 which lead us to 246.43 work days per year because a tea farmer cannot make use of paid leave and sick days as this is possible for a worker employed on a tea estate. If we now divide **1,132,257 MKW** by 1.59 and by 246.42 we will get to the amount that one work force has to earn per day in order to reach a living income. The result is that an income of **2,889 MKW** per one work force per work day is needed to provide a household of five with a decent standard of living. If we then divide our initial value of 1,132,257 MKW by 365 days of the year and the number of household members of 5 it will lead us to the amount that has to be available for each household member per day of the year to assure a decent standard of living. In other words, a decent standard of living can be reached if the costs of **620.41 MKW** per household member per day can be covered. If converted into US-Dollar Purchasing Power Parity (USD-PPP) the living income benchmark will be **3.23 USD-PPP** per day per person.[3] In fact, we used the World Bank Poverty Line of **3.1 USD-PPP** and the World Bank's Extreme Poverty Line of **1.90 USD-PPP** as secondary (proxy) benchmarks. Since the former nearly equals the benchmark we derived from Anker and Anker (2016) we shall use this one as the **"upper bar"** and the latter, the World Bank Extreme Poverty Line, as the **"lower bar"** corridor of transition from a sustainable to a non-sustainable income. Both World Bank Poverty Lines may be used as fast-track proxy living income benchmarks if detailed living income studies are too expensive or too time-consuming. A fourth line, a **national poverty line**, should be considered as well as a possible lower bar line. However, in our case, we did not find a national poverty line for Malawi. The World Bank Extreme Poverty line translates into **1,699.66 MKW** that needs to be earned per workday by 1

[3] See Annex I for detailed calculations.

workforce. In other words, **364.91 MKW** are the costs for each household member per day that have to be covered to reach the World Bank's Extreme Poverty Line.[4] Table 1 shows the two living income benchmarks in USD-PPP and Malawi Kwacha.

Table 1: Living Income Benchmarks

	Costs per person per day in USD-PPP	Costs per person per day in MKW	Income that needs to be earned by one workforce per workday in MKW
Living Income Benchmark derived from Anker and Anker (2016)	**3.23**	**620.41**	**2889.71**
World Bank Poverty Line	**3.10**	**595.38**	**2773.15**
World Bank Extreme Poverty Line	**1.90**	**364.91**	**1699.66**

2.3 Deriving the Actual Income

As a next step, we look at the **actual income** of the target group. To calculate the actual income of a smallholder farm household data on costs and revenues of the production of the respective crops has to be collected. In this case, the data on the gross margin of tea had been obtained through focus group discussions and workshops in Malawi with professionals in this field. Additionally, we got crop budget data on maize and pigeon peas from the Malawian Ministry of Agriculture and counterchecked them with agricultural experts. Data on input, output and prices refer to roughly July 2016 enabling us to compare our work to the update of the living wage for the tea sector by Richard and Martha Anker for the same period.

After doing the gross margin analysis of tea, maize and pigeon peas we derived the aggregated income from farming per each day of the year and per household member. This enables us to compare it to the living income benchmark as well as to the World Bank Extreme Poverty Line which are defined as income per person per day. As mentioned before we established a part-time and a full-time farm model that represent typical smallholder tea farms in Malawi.

[4] See Annex I for detailed calculations.

In the **part-time** farm model the income per capita amounts to **146.15 MKW** whereas in the **full-time** farm model the income per capita amounts to **337.86 MKW**. This will serve as the starting point for the following discussion.

In a fourth and last step, it is now possible to **compare the actual income to the living income benchmarks**. This allows us to examine why there is a gap between the actual and the living income level and to work through models on solutions of what could be done to close this gap. In the following we present different model calculations that would take the actual income of an average smallholder tea farmer to the level of a living income.

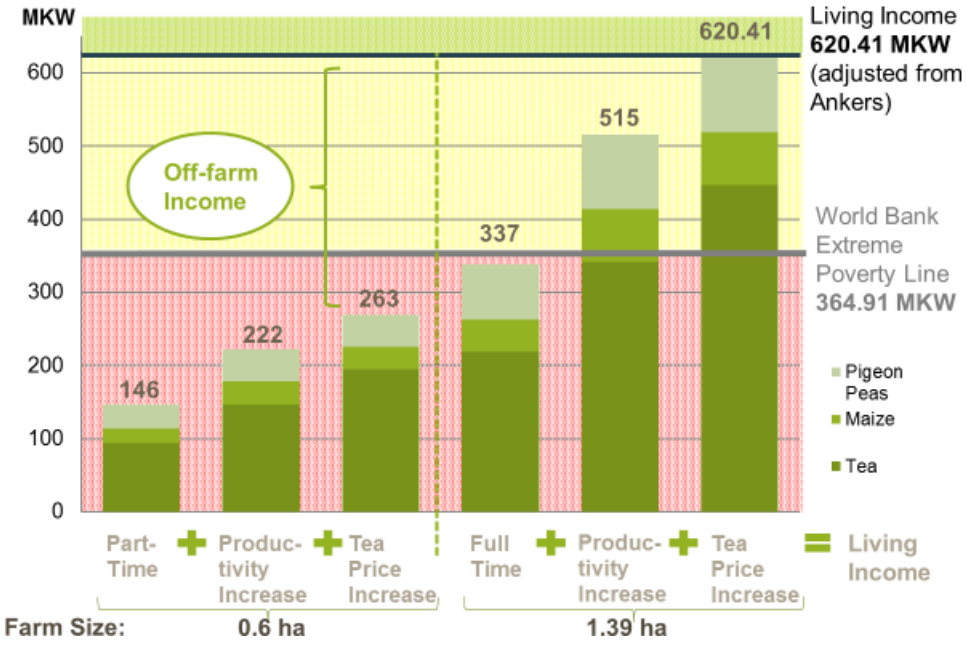
3. From an Average Smallholder Tea Farm to Reaching a Living Income

Now, the actual income can be compared to the income that is necessary to provide the household with a decent standard of living. In the **part-time farm** model the actual income per person per day adds up to **146.15 MKW** which is far from the living income benchmark (620.41 MKW) and the World Bank Extreme Poverty Line (364.91 MKW). However, it has to be considered that there is a family labor absorption of 43.3% only and therefore, full employment is not possible on a farm of 0.6 ha. Or, in other words, in this model 66.7% of the labor force is unemployed. If we would attempt to reach the living income benchmark for this household, the price (or alternatively the productivity) of tea would need to be increased by the factor 3.97 (from a price of 97.3 to 385.8 MKW/kg green leaf or alternatively by a productivity increase from 7,500 to 29,739 kg/ha green leaf). Such an increase in price or productivity is not realistic at all. Moreover, it would not be fair to expect the buyer to make up the cost of unemployment. The part-time farmer should therefore look for off-farm income opportunities after increasing the productivity of all crops and making use of an increased tea price.

In order to develop a more realistic approach to reach the living income benchmark we also established a **full time-farm** model which can be seen in Figure 1. In this model, the available household labor is completely absorbed and there is no unemployment. This is only possible with a farm size of 1.39 ha in which the plots of all three crops have expanded proportionally from the part-time model. Now, the income increases to **337.86 MKW** per person per day which is still below the 620.41 MKW and 364.91 MKW living income benchmarks derived from the Ankers and the World Bank's Extreme Poverty Line respectively. As a first measure to close the gap we suggest to **increase the productivity of all crops by 33%**, which we assume to be realistic in the medium-term with capacity building and the application of good agricultural practices. After this, the available income rises to **515 MKW**. However, this is still not enough to reach the living income benchmark derived from the Ankers' methodology. As a second measure, we advocate for a **tea price increase by 22%** (from 97.3 to 118.1 MKW/kg green leaf) which we assume to be acceptable for tea buyers and consumers. This measure would be necessary for the tea

farm household in order to cover the cost for a decent standard of living of **620.41 MKW** per person per day which is the equivalent to a living income.

Figure 1: Part-time and Full Time Farm Models – How to Reach the Living Income

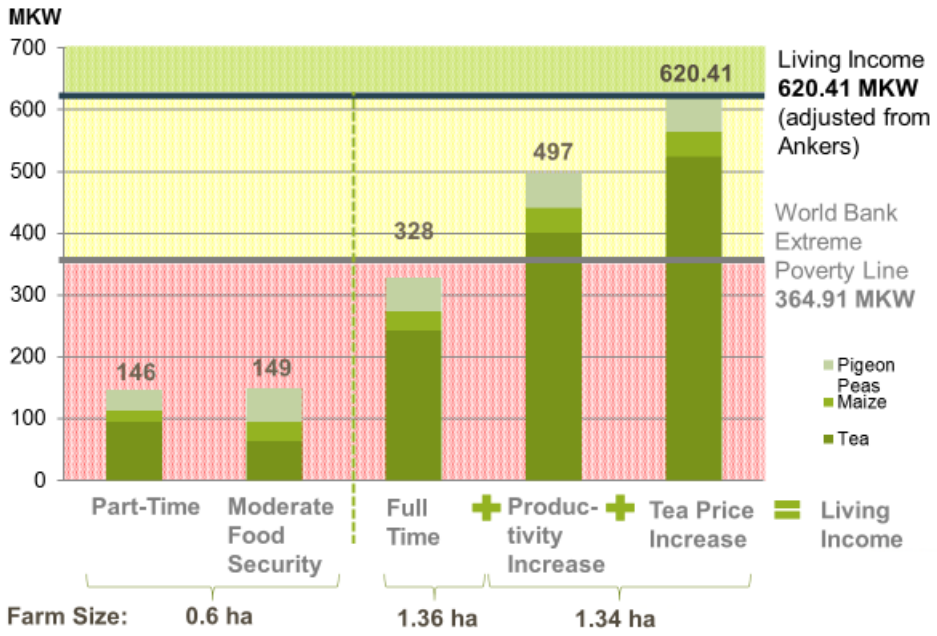


To minimize the risk of food insecurity and hunger we developed another model which we call the **Moderate Food Security Model.** Under the given circumstances in the part-time model the yields of maize and pigeon peas are not sufficient to sustain a family of five according to international food and nutrition requirement standards. They only cover about five months of food security within a year.[5] During the rest of the year they have to buy foodstuff from the revenues gained from tea. Therefore, we created a model in which the household is **food secure** in at least 10 out of 12 months of the year in terms of calorie and protein intake. In order to provide enough food for the entire family, the area for cultivating maize and pigeon peas has now to be increased from 0.2 ha to 0.33 ha. Consequently, the remaining area for cultivating tea decreases from 0.4 ha to 0.27 ha. As a result, the income increases slightly to **149.05 MKW** per person per day as one can see in Figure 2 due to shifts in land allocation per crop and relatively cheap production cost of pigeon peas. However, in order to arrive at a somehow fair price we assume again that the farm is operated in full time which in this case requires a farm size of 1.36 ha. This leads to an income of 328.11 MKW per person per day and is still quite far from an equivalent of the Ankers' living income benchmark. In another step, again, we assumed it to be realistic to **increase the productivity of all crops by 33%**. Since the productivity of all crops increases, the needed area for the cultivation of maize and pigeon peas in order to reach a level of moderate food

[5] See Annex I for detailed calculations.

security decreases and leaves more space for the cultivation of tea. The total area required now is 1.34 ha. As a last measure, we let the **tea price increase by 22%** to raise the farm's income. Finally, the available income per person per day will equal the living income benchmark of **620.41 MKW.**

Figure 2: Moderate Food Security Model – How to Reach the Living Income



4. Challenges and Conclusions

Our model calculations show that with limited data, actual and living incomes can be determined and models can be constructed to show the impacts of different measures on the livelihood of smallholder tea farm households in Malawi. Also, it becomes clear what it takes for a smallholder tea farm to reach a living income.

With regard to the benchmarks, we propose to apply an upper and lower bar corridor of sustainability. This shall mean that any income reached which is above the upper bar is clearly understood as a sustainable living income, whereas any income that is below the lower bar cannot be considered as sustainable and is therefore not a living income. Thus, there emerges a "corridor" of transition from an unsustainable income to a living income, or, from unsustainability to sustainability considering the economic and social dimension of sustainability. As the upper bar, we propose the Ankers Living Income benchmark or - if the Ankers Living Benchmark is not available or cannot be made available - the World Bank Poverty Line of 3.1 USD-PPP. As the lower bar, we propose to take the World Bank Poverty Line of 1.9 USD-PPP or, if available, the national poverty line.

When studying the actual income situation in Malawi our major finding is that both living income benchmarks of **2,889 MKW** and **1,699 MKW**, derived from the Ankers' methodology and from the World Bank Extreme Poverty Line respectively, and the corresponding costs that have to be covered per household member per day of **620.41 MKW** and **364.91 MKW** respectively, are higher than the incomes that are actually generated by either part-time or full time farming under the prevailing conditions of productivity and prices in the Malawian tea sector.

In the part-time model, it would take an unrealistic productivity increase and a tea price increase to raise the farm's income so that it matches the living income benchmark. The land size is simply too small and cannot absorb the available family work force. Further, the creation of off-farm income opportunities is necessary to come substantially closer to the living income benchmarks. In the full-time model, a boost of productivity by 33% of all crops as well as a hike of the tea price by 22% is essential for the smallholder tea farmer to reach a living income and provide himself and his family with a decent standard of living. For example, sustainable procurement and consumption practices on the consumer side could help to achieve this goal. Another important finding is that food security considerations have an important impact on the remaining area that is available for cultivating tea. Taking food security considerations into account means an extension of the area for food crops which in turn leaves less space for growing tea. Consequently, the income is slightly higher than in the part-time model. In this case, too, full time farming, an increase of the productivity and the tea price is required to combine food security with reaching the living income benchmark. Additionally, we recommend the creation of a

home garden which could serve as an important source for vitamins and minerals to ensure a sufficient nutritional security as well. However, we have not yet considered this option in our models.
One of the major challenges of all our models is the assumption of a smooth income situation throughout the year as well as over the years which is often not the case. In reality, there are, for example, extreme weather conditions which strongly influence the work on the farm as well as the yields. Besides, alternative off-farm income opportunities are not considered in our calculations which will play a crucial role in achieving a living income.

All in all, the modeling of different scenarios shows the influence of possible leverages to lift the smallholders' income to a living income level and therefore serves to identify development measures for smallholder tea farmers.

Annex I

1. Gross Margin Data

   The data for the gross margin analysis refers to July 2016 and was obtained through focus group discussions and the Malawian Ministry of Agriculture.

2. Farm Composition and Household Composition

   The data on a simplified farm composition and the crops cultivated was obtained through focus group discussions, later confirmed by a secondary data review of the University of Malawi (Dr. L. Chiwaula and colleagues). The data on household composition was obtained through secondary data of the Malawian National Statistical Office, University of Malawi and Martha and Richard Anker.

3. Living Wage Data

   We derived the living income from the updated living wage study for tea workers in Malawi of July 2016 calculated by Martha and Richard Anker (see Anker, M. and Anker, R. 2016).

4. Deriving the Living Income Benchmark

   Income that a family of five needs per year: 1,132,257 MKW.

   Income that needs to be earned by 1 workforce unit per workday:

   $1{,}132{,}257 : 1.59 : 246.42 \ = 2{,}889.71\ MKW$

   Costs that need to be covered per household member per day:

   $\frac{2{,}889.71\ MKW \times 1.59 \times 246.43}{(365 \times 5)} = 620.41 MKW$

5. Purchasing Power Parity Adjustment

   The World Bank so far provides only the PPP for Malawian Kwacha for 2015 which is 172.42 MKW/USD-PPP. However, one should adjust it to July 2016 because Malawi has a high volatility in its inflation rate. On average, the inflation in Malawi is 25% p.a (see Anker, M and Anker, R. 2016). The inflation rate for the US Dollar is usually around 2% p.a. as indicated by World Bank. Therefore, we multiplied 172.42 MKW/USD-PPP with the ratio of the inflation rate of Malawi to the inflation rate of the US until the end of June 2016 (1.125/1.01).

   $172.42 * \frac{1.125}{1.01} = 192.06$ MKW/USD-PPP

6. World Bank Poverty Lines

   World Bank Extreme Poverty Line for Malawi is 1.90 USD-PPP.

   Costs that need to be covered per household member per day:

   $1.90\ USD - PPP\ \times 192.06\ MKW = \ 364.91\ MKW$

Deriving the income that needs to be earned by 1 workforce unit per workday to reach the extreme poverty line:

$$\frac{(364.91MKW \times 5 \times 365)}{(246.43 \times 1.59)} = 1{,}699.66 \text{ MKW}$$

The same method can also be applied to the World Bank Poverty Line of 3.10$ PPP which translates into 595.38 MKW. This implies that 1 workforce unit has to earn 2,773.15 MKW per workday.

7. Exchange Rates

   Exchange Rates on 1st July 2016: 1 USD = 692.441 MKW, 1 EUR = 768.873 MKW.

8. Food and Nutrition Data

   Data on food and nutrition requirements we took from Anker, M. and Anker, R. (2014), World Bank and Deutsche Gesellschaft für Ernährung assuming a requirement of 2364 kcal energy and 43g protein per person per day of household of five persons.

9. Food Security

   In the moderate food security model, we assume a food security to be realistic in 10 out 12 months per year which translates into 83.33%.

Annex II

Modifications/confirmations after the first and second round of verification:

1. A household size of 5 persons was used instead of initially 6.
2. A total farm size of a simplified typical tea smallholder farm of about 0.6 ha with 0.4 ha tea and 0.2 ha maize and pigeon pea was confirmed.
3. The Purchasing Power Parity of Private Consumption of Malawi was used.
4. The Purchasing Power Parity of Malawi was adjusted to 192.06 MKW/USD-PPP to represent the value of July 2016.
5. The annual inflation rate of Malawi was adjusted to ~25% per year since there is a high volatility during the year according to Anker and Anker (2016).
6. The calorie intake per household member was set to 2364 kcal per day according to Anker and Anker (2014).
7. The living income benchmark was derived from 1,132,257 MKW which a household of five needs to cover the costs for a decent standard of living according to the calculations of Martha and Richard Anker from July 2016.

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