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ANALYTICAL TOOLS

Module 024

# WinDASI Exercise

## NGAMO 4 - Starting a Coffee Plantation in a Phased Mode

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# WinDASI Exercise

## NGAMO 4 - Starting a Coffee Plantation in a Phased Mode

by

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for the

Food and Agriculture Organization of the United Nations, FAO


**About EASYPol**
EASYPol is a an on-line, interactive multilingual repository of downloadable resource materials for capacity development in policy making for food, agriculture and rural development. The EASYPol home page is available at: ***www.fao.org/tc/easypol***.
EASYPol has been developed and is maintained by the Agricultural Policy Support Service, FAO.

**Acknowledgements**

This module draws upon the TCAS publication: WinDASI User Manual, Training Materials for Agricultural Planning, 43 FAO - Rome 2000, whose main contributors are Carlo Cappi, who is also the main designer of the computer software, and Lorenzo Giovanni Bellù. The author would like to acknowledge with thanks the contribution of Francesca Petrina, who volunteered for reviewing the first draft of this module and to all the others who contributed in different ways to this final version. The WinDASI software was developed by Laurent Cazalet and Gilles Cappella under the supervision of Mahmoud Allaya at the "Institut Agronomique Méditerraneén de Montpellier (IAM-M)-France.

# Table of contents

# 1 SUMMARY

This module presents NGAMO 4, a practical step-by-step exercise in Cost Benefit Analysis (CBA) of investment projects, to be run with the WinDASI software. (The word NGAMO comes from the name of the zone of the original project that was located in Myanmar). The goal of this exercise is to analyze the financial viability of a coffee farm newly established in a phased mode, i.e. in different phases, and then to analyze overall viability of a zone with 250 farms joining the project in a phased mode.

In this exercise two farm plans are used, no major constraints on input availability and output commercialization appear and the without scenario is set equal to zero. The analyst is required to determine the input and output flows, their discounted flows, verify net benefits and calculate the relative project indicators (NPV, IRR, and Benefit/Cost Ratio).

# 2 INTRODUCTION

## Objectives

The main objective of this module is to allow the user to practice using the software by analyzing a real project (although simplified). In this exercise you are guided thorough a path, from the background of the exercise to its solution. Figure A below provides a synoptic view of the steps of the NGAMO2 exercise.

## Target audience

This module targets current or future project analysts in the public administration or in Non-Governmental Organizations (NGOs), professional organizations, consulting firms willing to enhance their expertise in financial and economic analyses of agricultural investment projects.

## Required background

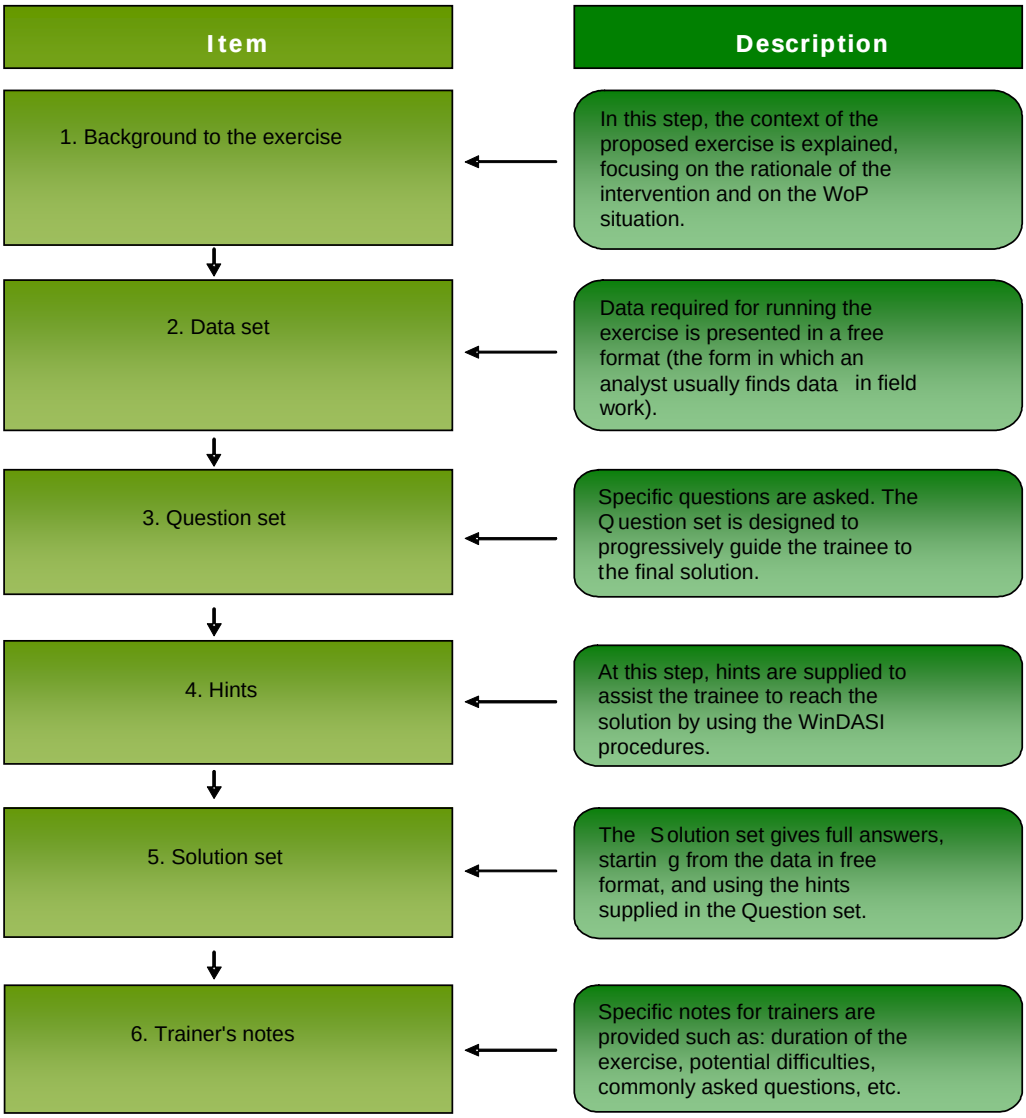
In order to fully understand the content of this module the user must be familiar with:

- concepts of project cycle management;
- concepts of project financial analysis;
- concepts of project economic analysis.

In addition, the user must have downloaded and installed the WinDASI software.

To find relevant material in the areas above, the reader can follow the links to other EASYPol modules included in the text or in the footnotes[1], a set of linked EASYPol modules is reported in a section at the end of this document.

**Figure 1: Structure of the NGAMO Exercises**




[1] EASYPol hyperlinks are shown in blue, as follows :
a) training paths are shown in **underlined bold**;
b) other EASYPol modules or complementary EASYPol materials are in ***bold underlined italics***;
c) links to the glossary are in **bold**; and
d) external links are in *italics*

## 3 BACKGROUND TO THE EXERCISE

The project formulation mission in the NGAMO region has, among its tasks, to formulate a proposal for actions to improve the living conditions of farmers in the uplands. The formulation mission decided that it would be suitable to develop coffee production on some marginal land, which would need clearing, as it was currently not being used for any productive purpose. About 250 farmers will be involved in the development project, each planting about 1 ha of coffee and all applying the same production technology. The project will leave the other activities of the farmers unchanged and therefore constitute an additional source of income for them.

As implementing a coffee plantation is labour intensive, in order to avoid any conflict with the other cultures in terms of labour availability, both introduction of the coffee plantation for each farmer and the participation of the farmers in the project will be phased. If the designed phasing schedules are respected, no major constraints on input availability and output commercialization should emerge.

Of course, one of the tasks of the formulation team is to analyze the impact of the envisaged project on the farmers of the zone. To accomplish this, the analysts decide to model the coffee activity on one hectare, collecting inputs, outputs and investments, as reported below. The results at farm level, calculated on the basis of the phasing schedule for planting, will then be used to investigate the overall impact of the project, by aggregation, taking into consideration the number of farmers involved in the project and the schedule for phasing their involvement in the project. In addition, as the land to be used under coffee is currently unused for productive purposes, and therefore with no significant opportunity cost for its use, the analysts decide to model the without-project (WoP) scenario as zero, i.e., the whole Net Benefits of the coffee activity are considered as additional Net Benefits to the farmers.

## 4 DATA SET

Tables 1 to 3 provide the data needed to be able to assess the financial viability to the farmers that join the coffee project.
The prices of inputs and outputs for the coffee activities, reported in Table 1, are assumed to remain constant for the duration of the project, both with (WiP) and without (WoP) project scenarios.

**Table 1: Prices of the inputs and outputs**

| Item | Code | Year | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6-15 |
| Seedlings (Units) | SEEDLING | 800.0 | - | - | - | - | - |
| Workforce (man/days) | LABOUR | 82.0 | 64.0 | 52.0 | 68.0 | 80.0 | 92.0 |
| Fertiliser (Kg) | FERTIL | 160.0 | 320.0 | 500.0 | 640.0 | 800.0 | 800.0 |
| Yield Coffee (Kg) | COFFEE | - | - | - | 150.0 | 250.0 | 400.0 |

**Table 2: Inputs and outputs per hectare of coffee: COFF.A**

| Item | Code | Price (Francs per unit) |
|---|---|---|
| Coffee Seedlings (Units) | SEEDLING | 1.00 |
| Workforce (man/days) | LABOUR | 7.00 |
| Fertiliser (Kg) | FERTIL | 0.80 |
| Coffee Grain (Kg) | COFFEE | 10.00 |

**Table 3: Schedule of the coffee activity at farm level (plan COFF-FARM) and involvement of the farmers of the zone (zone PROJECT)**

| Item | Years | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6-15 |
| Hectares planted by year at farm level | 0.2 | 0.3 | 0.5 | - | - | - |
| Farmers joining the project by year | 100.0 | 150.0 | - | - | - | - |

## 5 QUESTION SET

The project analyst is faced with the following questions:

### 5.1 Main questions

i. Analyze the input and output flows in physical terms at farm level and verify the labour requirement calculations year by year. You can refer to Part 2 of the WinDASI manual for a detailed explanation of the calculations carried out by WinDASI in the "phased" mode.

ii. Analyze the financial viability of the newly established coffee farm, taking into account the phasing of coffee planting, assuming a project life of 15 years and a discount rate of 12%.

iii. Check the calculations of the requirements for fertilizer at the zone level.

iv. What is the maximum clearing cost that is justified per hectare in the coffee farm?

### 5.2 Additional questions

v. Analyze overall viability of the zone, based on 250 farms joining the project, taking into account the phasing of farmers entering the project, assuming the same life span and discount rate as above.

# 6 HINTS

i Create a commodity for each good and service, and insert the appropriate price.

ii Create an activity for cultivating coffee, specifying the unit of the activity (hectares) and the technical coefficients of the activity, i.e., the quantity of each input and output for one unit of activity (hectare) for all the years of the project.

iii Create the farm plan COFF-FARM indicating the "quantity" of the coffee activity started year by year, i.e., the number of hectares of coffee plantation undertaken year by year. BUT:

iv Do not forget to set the "phased" mode, inserting the code "C" for the coffee activity (instead of the default value "N"); and

v Do not cumulate the surfaces year by year.

vi Create a zone coded PROJECT and set "phased mode" for the plan COFF-FARM.

# 7 SOLUTION SET

## 7.1 Answer to question (i)

For Question (i), the inputs in physical units required by one farm need to be analyzed (see Section 4.1 in Part 1 of the WinDASI manual). They are shown in Table 4.

**Table 4: Input requirements and output of the plan COFF-FARM in physical terms**

| Item | Unit | Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8-15 |
| FERTIL | KG | 32.00 | 112.00 | 276.00 | 438.00 | 602.00 | 720.00 | 800.00 | 800.00 |
| LABOUR | DAY | 16.40 | 37.40 | 70.60 | 61.20 | 62.40 | 76.40 | 86.00 | 92.00 |
| SEEDLING | UNIT | 160.00 | 240.00 | 400.00 | - | - | - | - | - |
| COFFEE | KG | - | - | - | 30.00 | 95.00 | 230.00 | 325.00 | 400.00 |

Details of the calculation of the requirements in physical terms for labour requirements are shown in Table 4a.

**Table 4a: Calculation of labour requirements for plan COFF-FARM in physical terms**

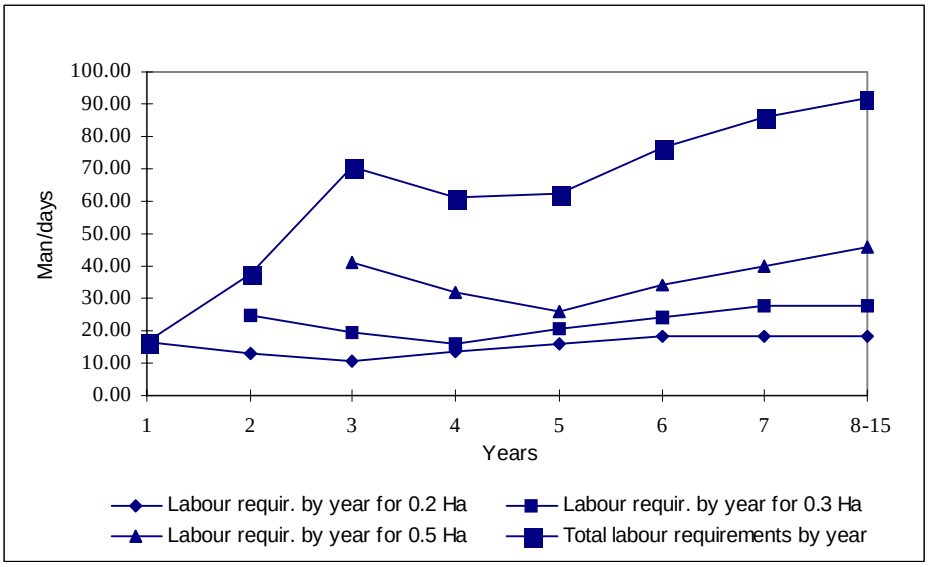
| Item | Hectares | Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8-15 |
| Labour requir. by year for 1.0 Ha | | 82.00 | 64.00 | 52.00 | 68.00 | 80.00 | 92.00 | 92.00 | 92.00 |
| Labour requir. by year for 0.2 Ha | 0.20 | 16.40 | 12.80 | 10.40 | 13.60 | 16.00 | 18.40 | 18.40 | 18.40 |
| Labour requir. by year for 0.3 Ha | 0.30 | | 24.60 | 19.20 | 15.60 | 20.40 | 24.00 | 27.60 | 27.60 |
| Labour requir. by year for 0.5 Ha | 0.50 | | | 41.00 | 32.00 | 26.00 | 34.00 | 40.00 | 46.00 |
| Total labour requirements by year | | 16.40 | 37.40 | 70.60 | 61.20 | 62.40 | 76.40 | 86.00 | 92.00 |

Notice that the labour requirements in year 1 of the project are calculated by multiplying the area planted in the first year of the project by the labour requirements per hectare in the first year of the coffee activity (e.g., 0.2 ha × 82 workdays per hectare = 16.40 workdays).

The labour requirements in year 2 are calculated as the area planted in the first year of the project times the labour requirements per hectare in the second year of the coffee activity (e.g., 0.2 ha × 64 workdays/ha = 12.80 workdays), plus the new area planted in the second year of the project times the labour requirements per hectare in the first year of the coffee activity (e.g., 0.3 ha × 82 workdays/ha = 24.60 workdays), to give the total labour requirements in year 2 of the project, namely 12.8 + 24.6 = 37.4 workdays. The same applies for year 3, where an additional 0.5 ha is planted, and so on for the other years of the project.

Figure 2 depicts the labour requirements by year and phase of planting.

**Figure 2: Plan COFF-FARM**
**Labour requirements by year and phase of planting**



## 7.2 Solution for question (ii)

The financial viability of the plan COFF-FARM can be assessed by analyzing the flows of costs and benefits. They are reported in Table 5 and depicted in Figure 3.

**Table 5: Plan COFF-FARM**
**Flows of costs and benefits**

| Item | WoP | Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8-15 |
| COFFEE | | | | | 300.0 | 950.0 | 2300.0 | 3250.0 | 4000.0 |
| Total output | - | 0.0 | 0.0 | 0.0 | 300.0 | 950.0 | 2300.0 | 3250.0 | 4000.0 |
| FERTIL | | 25.6 | 89.6 | 220.8 | 350.4 | 481.6 | 576.0 | 640.0 | 640.0 |
| LABOUR | | 114.8 | 261.8 | 494.2 | 428.4 | 436.8 | 534.8 | 602.0 | 644.0 |
| SEEDLING | | 160.0 | 240.0 | 400.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Inputs | - | 300.4 | 591.4 | 1115.0 | 778.8 | 918.4 | 1110.8 | 1242.0 | 1284.0 |
| Flow of net benefits | - | -300.4 | -591.4 | -1115.0 | -478.8 | 31.6 | 1189.2 | 2008.0 | 2716.0 |

Note that the flows of Net Benefits are negative in the first four years because of the time lag before the coffee plantation attains its full development. Given the presence of both negative and positive flows in different periods, any sound judgement of the financial viability of the project must be based on the discounted flows.

Table 6 gives the discounted flows of the Net Benefits at 12% for 15 years, while Table 7 shows some summary project indicators.

**Figure 3: Plan COFF-FARM**
**Flows of costs, benefits and Net Benefits by year**

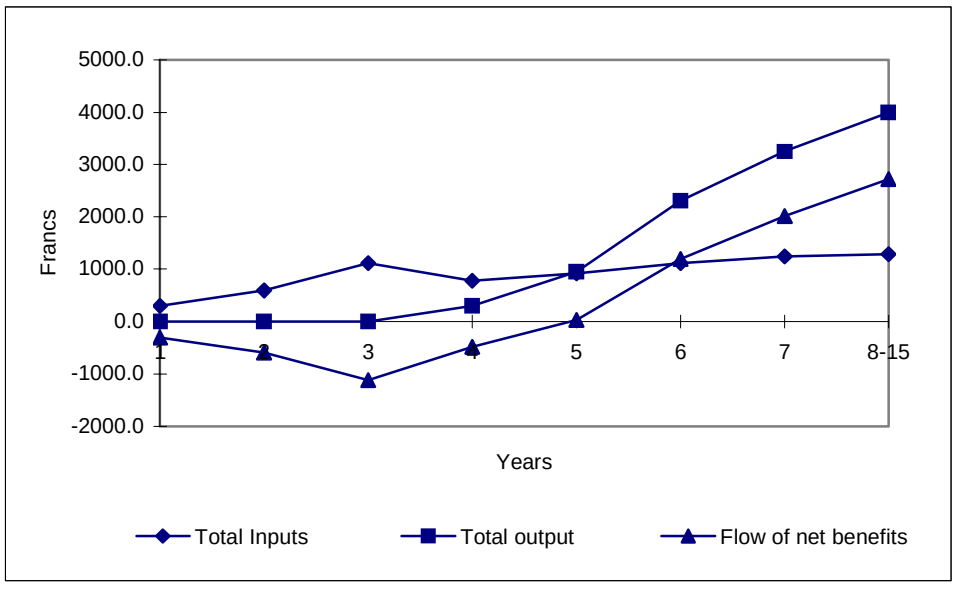


**Table 6: Plan COFF-FARM**
**Discounted flows of costs and benefits**

| Item | WoP | Years | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Total Benefits | - | - | - | - | 300.0 | 950.0 | 2300.0 | 3250.0 |
| Total Inputs and factors costs | - | 300.4 | 591.4 | 1115.0 | 778.8 | 918.4 | 1110.8 | 1242.0 |
| Net Benefits | - | -300.4 | -591.4 | -1115.0 | -478.8 | 31.6 | 1189.2 | 2008.0 |
| NIB | - | -300.4 | -591.4 | -1115.0 | -478.8 | 31.6 | 1189.2 | 2008.0 |
| Discount factor (@12%) | | 0.9 | 0.8 | 0.7 | 0.6 | 0.6 | 0.5 | 0.5 |
| Net incremental benefits (@12%) | - | -268.2 | -471.5 | -793.6 | -304.3 | 17.9 | 602.5 | 908.3 |
| Net Increm.Disc.Cumulated Benefits | - | -268.2 | -739.7 | -1533.3 | -1837.6 | -1819.7 | -1217.2 | -308.9 |

| Item | Years | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Total Benefits | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 | 4,000.0 |
| Total Inputs and factors costs | 1,284.0 | 1,284.0 | 1,284.0 | 1,284.0 | 1,284.0 | 1,284.0 | 1,284.0 | 1,284.0 |
| Net Benefits | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 |
| NIB | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 | 2,716.0 |
| Discount factor (@12%) | 0.404 | 0.361 | 0.322 | 0.287 | 0.257 | 0.229 | 0.205 | 0.183 |
| Net incremental discounted benefits (@12% | 1,096.9 | 979.4 | 874.5 | 780.8 | 697.1 | 622.4 | 555.7 | 496.2 |
| Net incremental discounted cumulative bene | 788.1 | 1,767.5 | 2,642.0 | 3,422.8 | 4,119.9 | 4,742.3 | 5,298.1 | 5,794.3 |

**Note:** The Net Incremental Benefits (NIB) are identical to the Net Benefits, since the WoP situation is assumed to be zero.

**Table 7: Plan COFF-FARM**
**Summary project indicators**

| Description | Coeff. | Discounted incr.values | Switching Values % | Critical Changes |
|---|---|---|---|---|
| Benefits | 1 | 12353.53 | -46.904 | 6,559.25 |
| Costs | -1 | 6559.25 | 88.338 | 12,353.53 |
| Increm. Net Present Value (NPV) | | 5794.28 | | |
| Internal Rate of Return (IRR) | | 37.94 | | |
| Benefit / Cost Ratio (BCR) | | 1.883 | | |

According to the indicators reported in Table 7, the project appears to be viable and robust at farm level. Indeed, the NPV is largely positive and the SVs of the main components are far from zero.

### 7.3 Solution to question (iii)

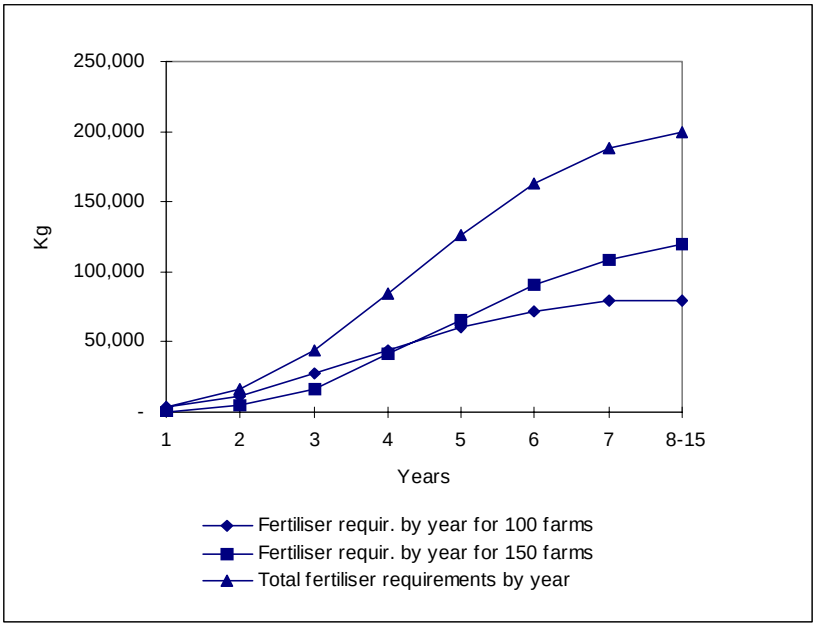
Fertilizer requirements at the zonal level (zone PROJECT) are calculated by multiplying the fertilizer requirements at farm level by the number of farms entering the project in each year. The calculations are shown in Table 8.

**Table 8: Zone PROJECT**
**Calculation of fertilizer requirements**

| Description | Farms entering | Year 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8-15 |
|---|---|---|---|---|---|---|---|---|---|
| Fertiliser requir. by year for one farm | | 32 | 112 | 276 | 438 | 602 | 720 | 800 | 800 |
| Fertiliser requir. by year for 100 farms | 100.00 | 3,200 | 11,200 | 27,600 | 43,800 | 60,200 | 72,000 | 80,000 | 80,000 |
| Fertiliser requir. by year for 150 farms | 150.00 | - | 4,800 | 16,800 | 41,400 | 65,700 | 90,300 | 108,000 | 120,000 |
| Total fertiliser requirements by year | | 3,200 | 16,000 | 44,400 | 85,200 | 125,900 | 162,300 | 188,000 | 200,000 |

Note that for the second sub-set of 150 farms joining the project in the second year, the fertilizer requirements in year 2 of the project are calculated by multiplying the fertilizer requirements at farm level in year 1 by the number of farms in the second sub-set (i.e., 32 kg/farm × 150 farms = 4 800 kg). Also, note that the fertilizer requirements for one farm are calculated as in Table 48, i.e., taking into account the phasing of the coffee activity at farm level. The fertilizer requirements by sub-set of farms and by year are depicted in Figure 4.

**Figure 4: Zone PROJECT**
**Fertilizer requirements by sub-set of farms and year**



### 7.4 Solution for question (iv)

From the answer to Question (ii), it appears that the NPV of the coffee plantation per hectare (as it has been phased in Table 3), makes a total of Francs 5794.20. If we were to invest this amount of money per hectare at the beginning of the project for land clearing, the project would break even exactly. This means that this is the maximum amount we are allowed to invest before obtaining losses.

### 7.5 Solution for question (v)

Given the viability of the project at farm level, the viability of the project at the zonal level is to be expected, as the zone is an aggregation of farms, with no investments at the zonal level and no changes in prices. Note, however, that the NPV at zonal level is not the simple sum of the NPVs at farm level. The phasing of the project associated with the truncation of the project life in year 15 causes a loss of value in the aggregated project, unless the final value of the more recent plantations is explicitly taken into account.

The summary project indicators for the zone are reported in Table 9.

**Table 9: Zone PROJECT**
**Summary indicators of financial viability**

| Description | Coeff. | Discounted incr.values | Switching Values % | Critical Changes |
|---|---|---|---|---|
| Benefits | 1 | 2,791,971 | -46.168 | 1,502,978 |
| Costs | -1 | 1,502,978 | 85.763 | 2,791,971 |
| Increm. Net Present Value (NPV) | | 1,288,993 | | |
| Internal Rate of Return (IRR) | | 37.72 | | |
| Benefit / Cost Ratio (BCR) | | 1.858 | | |

## 8 READERS' NOTES

The exercise NGAMO4 in this current formulation has been kept as simple as possible to allow the trainees to retain the basic elements of the phasing of activities and plans.

Before using the "phasing" function, a good knowledge of both the theory of project analysis and computing in the "normal" way should be acquired by the trainees. On this basis, the main steps of NGAMO4 can be discussed in about half a day. To run the full NGAMO4 exercise in a computer room with trainees with a weak knowledge of both the theory of project analysis and computing, at least one full day should be allowed. When the trainees' background is weak, the trainer could deliver the tasks one at the

time and verify their execution step-by-step, rather than delivering the full set of questions all at once.

If the trainer feels it necessary, he/she could introduce some variations and further elements of discussion, such as:

i verification by hand of some sample calculations of inputs and outputs, as it is extremely important to make the participants understand the way in which the phasing works;

ii assumption of zero opportunity cost of the land could be dropped by introducing a WoP scenario or by introducing a price for land; and

iii the final value of the plantations entering the project in subsequent years (year 2 onwards) could be explicitly considered.

Some parts of the exercise, notably the additional questions, can be skipped, without hampering the flow of the exercise.

### 8.1 Use of the .WDS files for the exercise NGAMO4

NGAMO4 exercise is supported by specific WinDASI files (files with a .WDS extension), available together with the WinDASI software2. The set of files available for NGAMO4 is reported in Table 10.

The first file of the set contains only a small fraction of the data and each subsequent file contains additional data until the data set is complete.

The paced release of these files allows the trainer to control the data entry process as the exercise is carried out. Each consecutive file will be loaded as indicated by the trainer during the execution of the exercise, thus enabling the trainer to:

- keep all the trainees at the same level during the data entry process;
- recover partial data sets in case of computer/power failure;
- manage a step-by-step entry of the data;
- speed up the data entry process, if necessary, by skipping some steps;
- allow slow trainees in the data entry process to catch up with the rest of the class;
- run the calculations starting with a common database.

The set of files complementing NGAMO4 may be used step-by-step by the trainer as follows:

[2] WinDASI software and exercise files are available in the EASYPol Module 018: ***WinDASI: A Software for Cost-Benefit Analysis of Investment Projects. Installation Note***

**Step 1**

The exercise NGAMO4 starts with the empty (default) file. In this file the commodities and the plan COFF.A are inserted.

**Step 2**

These data can be checked by loading the file NGAMO4a.WDS. Here the plan COFF-FARM and the zone PROJECT are inserted.

**Step 3**

After controlling the data, the full data-set NGAMO4.WDS can be loaded to run all the calculation of the NGAMO4 exercise.

The above steps are summarized in Table 10.

**Table 10: Files for the exercise NGAMO4**

| Step | File to be used | File content | Task to accomplish in the file |
|---|---|---|---|
| 1 | Empty (default)file | Nothing | Insert the commodities and the plan COFF.A |
| 2 | NGAMO4a.WDS | Commodities and coffee activity COFF.A | Insert the plan COFF-FARM and zone PROJECT |
| 3 | NGAMO4.WDS | Full data-set of the exercise NGAMO4. | Run the required calculations |

## 8.2 EASYPol links

This module belongs to a set of EASYPol modules which illustrate how to use the WinDASI application for financial and economic Cost Benefit Analysis of investment projects.

The user can learn how to install and handle WinDASI for Cost-Benefit Analysis of investment projects by going through the following EASYPol modules:

- EASYPol Module 018: ***WinDASI: A Software for Cost-Benefit Analysis of Investment Projects: Installation Note***
- EASYPol Module 019: ***WinDASI-A Software for Cost-Benefit Analysis of Investment Projects: Inserting and Managing Data***
- EASYPol Module 020: ***WinDASI-A Software for Cost-Benefit Analysis of Investment Projects: Calculations Performed by the Software***

The user can also follow up with NGAMO exercises using the following EASYPol modules:

- EASYPol Module 021: ***WinDASI Exercise: NGAMO1: An Irrigation Project: Impacts of Irrigation on Traditional Farms***
- EASYPol Module 022: ***WinDASI Exercise: NGAMO2: An Irrigation Project. Impacts of Irrigation and Mechanization on Traditional Farms***
- EASYPol Module 023: ***WinDASI Exercise: NGAMO3: Economic Impacts of an Irrigation and Mechanization Project***

In addition, a case study presenting the use of WinDASI to analyze a real project is reported in the EASYPol module:

- EASYPol Module 039: ***WinDASI-A Software for Cost-Benefit Analysis of Investment Projects: Case Study – Crop Intensification and Coffee Plantation***

## Module metadata

| | |
|---|---|
| **1. EASYPol module** | 024 |
| **2. Title in original language** | |
| **English** | WinDASI Exercise |
| **French** | |
| **Spanish** | |
| **Other language** | |
| **3. Subtitle in original language** | |
| **English** | NGAMO 4: Starting a Coffee Plantation in a Phased Mode |
| **French** | |
| **Spanish** | |
| **Other language** | |

**4. Summary**

This module presents NGAMO 4, a practical step-by-step exercise in Cost Benefit Analysis (CBA) of investment projects, to be run with the WinDASI software. (The word NGAMO comes from the name of the zone of the original project that was located in Myanmar). The goal of this exercise is to analyze the financial viability of a coffee farm newly established in a phased mode, i.e. in different phases, and then to analyze overall viability of a zone with 250 farms joining the project in a phased mode.

In this exercise two farm plans are used, no major constraints on input availability and output commercialization appear and the without scenario is set equal to zero. The analyst is required to determine the input and output flows, their discounted flows, verify net benefits and calculate the relative project indicators (NPV, IRR, and Benefit/Cost Ratio).

**5. Date**

November 2005

**6. Author(s)**

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| | |
|---|---|
| **7. Module type** | ☐ Thematic overview<br>☐ Conceptual and technical materials<br>☒ Analytical tools<br>☐ Applied materials<br>☐ Complementary resources |
| **8. Topic covered by the module** | ☐ Agriculture in the macroeconomic context<br>☐ Agricultural and sub-sectoral policies<br>☐ Agro-industry and food chain policies<br>☐ Environment and sustainability<br>☐ Institutional and organizational development<br>☒ Investment planning and policies<br>☐ Poverty and food security<br>☐ Regional integration and international trade<br>☐ Rural Development |
| **9. Subtopics covered by the module** | |
| **10. Training path** | **Investment planning for rural development** |
| **11. Keywords** | |