

Nigeria Agriculture Policy Activity

Cost-Benefit Analysis (CBA) for policy support: Evidence from Kebbi State

By Dr. Balaraba Sule and Prof. Alex Coker

1.0 INTRODUCTION

1.1 Background.

Nigeria Agricultural Policy Activity (NAPA) is a follow-up on the closed Feed the Future Nigeria Agriculture Policy Project (NAPP), which was implemented in five states within the country and at the national level. The implementing states comprises Benue and Niger (North Central), Cross river and Delta (South-South), Ebonyi (South East), Kaduna and Kebbi (North West).

Thus, in line with the development objectives of NAPP, NAPA aims to promote inclusive agricultural productivity growth, improved nutritional outcomes, and enhanced livelihood resilience for men and women, through an improved policy enabling environment. Towards achieving this objectives, focus is on enhancing national capacity of Nigerians to generate and analyze information, formulate evidence-based policy options for considerations by stakeholders, while also improving policy processes driven by empirical evidence and based on dialogue.

In consonance with this objective, a Cost-Benefit Analysis (CBA) training was organized for relevant stakeholders within Kebbi State's Ministries, Departments and Agencies (MDAs) and some select Commodity Associations in the State.

The training, which lasted for 5 days, from August 22nd to August 26th 2022, was held at Vatebra Tech Hub, Birnin Kebbi. The training comprises eight modules, covering all aspects of cost-benefit analysis, including risk analysis and the application of CBA to policy analysis. The training was facilitated by A. A. A. Coker (PhD), Federal University of Technology, Minna and B. A. Sule (PhD), Ibrahim Badamasi Babangida University, Lapai, Niger State. Thirty-four (34) people including three females benefitted from the training, comprising officers of Kebbi State Ministries of Agriculture, Budget and Economic Planning, Finance, Commerce and Animal Health Husbandry and Fisheries. Other beneficiaries were staff of OXFAM, Feed The Future Assisted Agricultural Extension and Cultivating New Frontiers. Participants from the private sector comprises members of the All Farmers' Association of Nigeria (AFAN), Rice Farmers Association of Nigeria (RIFAN), Onion Producers, Processors and Marketing Association of Nigeria, The National Cassava Growers Association, Maize Association of Nigeria and Mango Farmers, Processors and Marketing Association. Staff of Kebbi State University of Science and Technology, Aliero also participated.



1.2 Objectives of Training

The goal of the training was to equip and enhance participants' understanding of the application of CBA techniques for Agricultural policy, program and project analysis. It was intended to ensure efficient fiscal management and enhance accountability, transparency and project sustainability in Kebbi State, through deepening trainees' capacities for project and policy analyses, within the public and private sectors. At the close of the training, all participants were expected to:

- i. understand the basic concepts of CBA;
- ii. develop and analyze enterprise/project budget;
- iii. acquire relevant skill-sets for the conduct of financial and economic analysis of agricultural policy, programs and projects;
- iv. carry out risk analysis for agricultural programs and projects;
- v. be able to select among project alternatives to support policy decisions; and
- vi. develop relevant project proposals incorporating CBA.

1.3 Justification for the Training

The conduct of the training was necessary, given the need to upscale the capacities of relevant stakeholders in the state in identifying and analysing viable investment projects within the state, with a view to ensuring efficient utilisation of scarce resources, while also avoiding wastages. In addition, the training was directed at enhancing agricultural policy engagement and decision making in the state, with the view for effective and efficient policy decision, project sustainability and livelihood improvements in line with the visioning and development goals of the state. Aside these, beneficiaries of the training are expected to develop project proposals incorporating the CBA component, which are probable inputs for consideration in the state's fiscal budgetary framework or by the development partners' loan and grant mechanisms.

1.4 Training Methodology and Approach

The training was participatory, involving both theoretical and practical sessions. Two modules were taken per day. While the morning sessions were particularly theoretical, the afternoon sessions were extensively practical and engaging. Participatory review of activities done the previous day was carried out daily. Pre and post-evaluation of participants' knowledge were undertaken to assess their level of knowledge acquisition and to obtain feedback on the impact of the training. A projector was used in all sessions of the training to enhance effective delivery and knowledge acquisition. Lectures were projected in PowerPoint for clarity and easy comprehension by participants. Practical sessions were generally engaging through one-on-one support for participants via their personal computers.

1.5 Opening Ceremonies

The training commenced with an opening prayer, followed by a welcome address by Professor Ayuba Gona, Kebbi State University of Science and Technology, Aliero. He welcomed all participants and thanked them for making the time to attend the training, despite their tight schedules. He observed that being in an era of resource constraints, this particular training in CBA could not be more timely. In his opening remarks, the representative of the Feed the Future Nigeria

Agriculture Policy Activity, Prof. Oyinkan Tasié, thanked participants for honoring the invitation. He noted that Kebbi State is an Agrarian State and hoped that the capacity building session will go a long way in achieving the desired objectives of strengthening evidence for agricultural policy decisions in the State, using the CBA techniques. He was of the opinion that knowledge gained from the training will cascade to the working places of the participants. He noted the plurality of stakeholders in attendance, and hoped that the impact of the training will be well felt across the State.

In his remarks, Dr. Coker thanked all the participants for making time to attend the training. He explained that the training is a composite of plenary and thematic practical sessions, given the need to create the desired impact. He noted that the expectation from participants at the close of the training is to be able to develop viable project proposals, with a strong CBA content, for consideration by Kebbi State Government and the Development Partners. He thanked all participants in attendance, while wishing them a successful and impactful training session.

2.0 TRAINING SESSIONS

The training spanned five days and comprised varied sessions as detailed in the following sub-sections. Two modules were covered daily with combinations of lectures, exercises and practical sessions.

2.1 Day One Training Session

The training session commenced with general introduction by all the participants. Activities during the first day of training covered two training sessions, one module per session including group discussion. The specific training modules are detailed as follows:

2.1.1 Module 1: Introduction and overview of CBA .

This session was delivered by Dr. Coker. It covered the concept and meaning of CBA, the purpose of CBA, and the scope and different types of CBA. The steps involved in conducting CBA and the limitations of CBA. The session concluded with a quick discussion on Cost Effectiveness Analysis (CEA)

2.1.2 Module 2: Financial or Private CBA

This session was facilitated by Dr. Sule. Topics covered were the objectives of financial analysis, procedure for financial analysis and key assumptions in deriving financial budget. The differences between farm (enterprise) budget analysis and project analysis were also discussed.

2.2 Day Two Training Session

2.2.1 Module 3: Capital Budgeting (Investment Analysis)

This session was facilitated by Dr. Coker. The session started with a recap of the modules covered the previous day. In this session, steps in capital budgeting analysis, time value of money and annuity and perpetuity were covered. Other areas discussed were determination of discount rate, Nominal and Real Values, Inflation and Analysing Future Benefits and Costs in CBA. The session concluded with an exercise given to the participants to assess their understanding of the concepts discussed.

2.2.2 Module 4: Model Farm Budgets and Aggregation to Project-Level Budget (Practical Session)

This session was facilitated by Dr. Sule. The session was strictly practical. Participants were made to go through the steps of constructing farm budgets individually on their computers. Model financial farm budgets for Fishery (Aquaculture) and Rice Production Enterprises were developed by the respondents.

2.3 Day Three Training Session

2.3.1 Module 5: Discounted Measures of Project Worth

The session began with a recap of day 2 activities facilitated by Dr. Coker. The topics covered were Benefit-Cost Ratio (BCR), Net Present Value (NPV), Internal Rate of Return (IRR), mutually exclusive projects and capital constraints. The session concluded with an overview of the use of NPV, IRR, B/C Ratio for project selection.

2.3.2 Module 5: Discounted Measures of Project Worth (Practical Session)

This session was facilitated by Dr. Sule. Each step carried out in formulating the enterprise and project budgets were reviewed collectively with the participants. The participants were taken through the steps in estimating IRR, NPV and BCR using excel. Different approaches to estimating NPV and BCR were demonstrated and these were later replicated by the participants.

2.3.3 Module 6: Risk Analysis in CBA

This session was covered by Dr. Coker. The module covers such topics as purpose of sensitivity analysis, types of sensitivity analysis, and steps in carrying out sensitivity analysis.

2.4 Day Four Training Session

2.4.1 Module 7: Economic CBA

The training session proceeded the Kebbi State Brownbag session. This session was anchored by Dr. Coker. The session commenced with a recap of Module 6 topics undertaken the previous day. Module 7 covered such topics as assumptions of economic cost-benefit analysis, financial versus economic prices, conversion of financial to economic benefits/costs, valuation of internationally traded goods and that of non-traded goods (labour and land). Externalities and indirect effects in economic analysis were also discussed.

2.5 Day Five Training Session

2.5.1 Module 7: Economic CBA (Practical Session)

This session was facilitated by Dr. Sule. The participants were guided through the steps involved in converting market (financial) prices to social (economic) prices. This was demonstrated to the participants practically while they were made to replicate the procedure on their computers.

2.5.2 Module 8: Applications of CBA to Policy Analysis

This session was facilitated jointly by Dr. Coker and Dr. Sule. While Dr. Coker covered the types and causes of price distortions in an economy, Dr. Sule covered the framework of policy analysis matrix (PAM) and uses of the PAM.

2.5.3 Module 8: Applications of CBA to policy analysis (Practical Session)

The practical session was facilitated by Dr. Sule. Participants were taken through a typical model of the PAM. They were shown how to calculate and interpret divergences between financial and economic entities.

2.5.4 Group discussion

This session was anchored by Dr. Coker. The participants were grouped into three and given a few minutes to deliberate and come up with two proposal topics with Cost-Benefit Analysis content for consideration by the State Ministry of Agriculture (Table 1).

Table 1: Topics proposed for buy-in by the Kebbi State Ministry of Agriculture

Group	Topic	Goal
<i>Group 1</i>	<i>Enhancing Poultry Egg Value Chain among Pro-Poor Households for Improved Nutrition in Kalgo and Maiyama LGAs of Kebbi State</i> <i>Strengthening Fish Value Chain for Improved Incomes among Vulnerable Women in Kalgo And Maiyama LGAs of Kebbi State</i>	<i>To reduce poverty and malnutrition among 1,000 households in Kalgo and Maiyama LGAs of Kebbi State</i> <i>To enhance the incomes of 1,000 internally displaced persons, including widows and women in catfish production in Kalgo and Maiyama LGAs of Kebbi State</i>
<i>Group 2</i>	<i>Upscaling Groundnut Production for Improved Livelihood in Augie and Jega LGAs of Kebbi State</i> <i>Enhancing Dry Season Cowpea Production for Improved Livelihood in Shanga and Argungu LGAs of Kebbi State</i>	<i>To increase dry season groundnut production for improved livelihood among 2,000 smallholder farmers in Augie and Jega LGAs of Kebbi State</i> <i>To increase dry season cowpea production among 2,500 small holder farmers in Shanga and Argungu LGAs of Kebbi State</i>
<i>Group 3</i>	<i>Increasing Wheat Productivity among Small-Holder Farmers in Argungu and Bunza LGAs of Kebbi State</i>	<i>To improve food security through wheat productivity increase among 1,000 small holder farmers in Argungu and Bunza LGAs of Kebbi State</i>

	<p><i>Improving Soybean Productivity (Glycin Max) among Smallholder Farmers in Bagudo and Birnin Kebbi LGAs of Kebbi State</i></p>	<p><i>To improve food security through soybean productivity among 1,000 small-scale Farmers in Bagudo and Birnin Kebbi LGAs of Kebbi State</i></p>
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Once topics are prioritized and selected from the options submitted to the Ministry, each group is required to develop a project proposal with CBA content, for possible buy-in by the Ministry. The essence is to guide and strengthen the knowledge acquired. Below is a summary of the topics initiated by that the various groups came up with.

3.0 Training Evaluation

3.1 Pre and Post Training Evaluation

At the commencement of the training, a pre-assessment test was administered to participants comprising 10 questions, covering topics proposed for coverage in all the eight modules of the training. The same set of questions were administered to participants at the end of the training sessions. The aim is to assess the extent of comprehension of the topics taught. In addition, tests aided in isolating what worked and areas of gaps and concerns, aside providing insight into the relevance and depth of the course from the learners’ perspectives. The result of the test further provided threshold for determining whether the objectives of the training were met.

3.2 Outcome of Pre and Post Training Evaluation

The results of the two tests administered on the training participants, put the average pre and post-training evaluation scores at 13.75 and 49.79 percent respectively. The paired t-test of significance indicated that there was statistical difference between the two evaluation scores, implying the training may have enhanced participants’ knowledge of CBA and its application in enterprise and project budgeting and viability analysis. This outcome provided the assurance that the desired capacity gap, may have witnessed some improvements, with implications for enhanced project investment planning and analysis for improved policy engagement, reduction of public resource wastage and project sustainability in Kebbi State.

3.3 Follow-up Action

To facilitate the intended support to participants in the development of their syndicate project proposals, a WhatsApp platform was created to serve as medium for technical support and follow up on participants’ progress.

4.0 Closing

In his closing remarks, Dr. A. A. A. Coker thanked all participants for the interest shown and commitment to learn, while urging them to utilize the skills learnt to change the narrative in Kebbi State. The participants were assured that the team will always be available to guide them through the

process of developing the proposal and clarifying grey areas. The training came to an end at about 4.30 pm.

5.0 Appendices

Table 2: Results of the t-Test: Paired Two Sample for Means

t-Test: Paired Two Sample for Means

	Variable 1	Variable 2
Mean	13.75	49.79166667
Variance	46.19565217	640.1721014
Observations	24	24
Pearson Correlation	0.251246709	
Hypothesized Mean Difference	0	
Df	23	
t Stat	7.208605402	
P(T<=t) one- tail	1.22058E- 07	
t Critical one- tail	1.713871528	
P(T<=t) two- tail	2.44116E- 07	
t Critical two- tail	2.06865761	

5.2 Training Agenda

FEED THE FUTURE NIGERIA AGRICULTURAL POLICY ACTIVITY
Training on Cost-Benefit Analysis (CBA) - Strengthening the Evidence for Policy
Decisions in Nigeria Organized by
Nigeria Agricultural Policy Activity

For

Selected Ministries, Departments, Agencies and Commodity Associations in Kebbi State

22nd to 26th April, 2022

Day 1

Time	Topic
09.00 – 09.30	Arrival and Registration of Participants
09.30 – 09.35	Opening Prayers
09.35 – 09.50	Introduction and Welcome Address
09.50 – 10.00	Training Overview, Goals and Objectives
10.00 – 10.30	Pre-Training Evaluation and Training Expectations
10.30 – 11.00	Tea Break

MODULE 1

11.00 – 01.00	1.0 INTRODUCTION AND OVERVIEW OF CBA
	1.1 Meaning of CBA
	1.2 Purpose of CBA
	1.3 Scope of CBA
	1.4 Types of CBA and their Purposes
	1.5 Steps in Conducting CBA
	1.6 Limitations of CBA
	1.7 Cost Effectiveness Analysis (CEA)

01.00 – 01.30 Prayer/Lunch Break

MODULE 2

01.30 – 03.45	2.0 FINANCIAL OR PRIVATE CBA
	2.1 Objectives of Financial Analysis
	2.2 Procedure for Financial Analysis
	2.3 Key Assumptions in Deriving Financial Budget
	2.4 Enterprise/Project Budgeting

DAY 2

MODULE 3

09.00 – 12.00	3.0	Capital Budgeting (Investment Analysis)
	3.1	Steps in Capital Budgeting Analysis
	3.2	Time Value of Money
	3.3	Annuity and Perpetuity
	3.4	Determination of Discount Rate
	3.5	Nominal and Real Values
	3.6	Inflation
	3.7	Analyzing Future Benefits and Costs in CBA

MODULE 4

12.00 – 01.00	4.0	Model Farm Budgets and Aggregation to Project-Level Budget
	4.1	Farm Budget for Fishery Enterprise (Aquaculture)
	4.2	Financial Budget for Rice Production Enterprise
01.00 – 01.30		Prayer/Lunch Break
01.30 – 03.45		Practical Session

DAY 3

MODULE 5

09.00 – 12.00	5.0	Discounted Measures of Project Worth
	5.1	Benefit-Cost Ratio
	5.2	Net Present Value (NPV)
	5.3	Internal Rate of Return
	5.4	Mutually Exclusive Projects
	5.5	Capital Constraints
	5.6	Conclusions on Use of NPV, IRR, B/C Ratio
12.00 – 01.00		Practical Session
01.00 – 01.30		Prayer/Lunch Break
01.30 – 03.45		MODULE 6
	6.0	Risk Analysis in CBA
	6.1	Purpose of Sensitivity Analysis
	6.2	Types of Sensitivity Analysis
	6.3	Steps in Carrying out Sensitivity Analysis

DAY 4

MODULE 7

12.00 – 1.00	7.0	Economic CBA
	7.1	Assumptions of Economic Cost- Benefit Analysis
	7.2	Financial versus Economic Prices (Supply and Demand Prices)
	7.3	Conversion of Financial to Economic Benefits/Costs
	7.4	Valuation of Internationally Traded Goods
	7.5	Valuation of Non-Traded Goods (Labor and Land)
	7.6	Externalities and Indirect Effects in Economic Analysis DAY 5

MODULE 8

09.00 – 11.00	7.3	Conversion of Financial to Economic Benefits/Costs (Practical Session)
11.00 – 01.00	8.0	Applications of CBA to Policy Analysis
01.00 – 01.30		Prayer/Lunch Break
01.30 – 04.30	8.1	Types and Causes of Price Distortions Due to Existing Policies
	8.3	Framework of Policy Analysis Matrix (PAM)
	8.4	Uses of PAM
4.30 - 4.35		Closing Remarks

5.3 Photo Gallery



5.4 Details of Participants

	<i>Participant's Name</i>	<i>Organisation</i>	<i>Email</i>
1	<i>Aminu Idris</i>	<i>Ministry of Agriculture</i>	aminuidrisagr@yahoo.com
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