METHODOLOGY FOR A LOGICAL APPROACH TO AGRICULTURAL POLICY ANALYSIS AND DISCOURSE

J. A. Famiyeh, MSc , PhD
Department of Agriculture Economics & Farm Management, UST, Kumasi

ABSTRACT

This paper develops a simple methodology to facilitate the researcher-policy maker dialogue, which is one of the major issues in contemporary development planning. The methodology is based on the Logical Framework concept with sector policy providing the basis for the preparation of the framework. The method involves the following steps:

- *preparation of the Policy Logical Framework;*
- *using the framework to raise relevant policy consistency issues; and*
- *analysing policy issues and discussing solutions.*

In order to illustrate the use of the Policy Logical Framework in sector planning, the paper develops a crop-subsector policy matrix based on information from Ghana's 1990-95 Medium-term Agricultural Development Plan. The matrix is then used to raise relevant policy issues and to highlight the nature of information required to promote effective policy discourse. One key advantage of the methodology is that it provides structure and, consequently, facilitates policy discussion, particularly on ex-ante basis. In addition, it makes it possible to identify areas for highly relevant policy research. It is important, therefore, that policy-makers or their representatives be involved in all the three policy planning steps.

Keywords: *Project, logical framework, policy, consistency, sub-sector, planning.*

INTRODUCTION

From the perspective of development, the pre-1980 period may be characterised as the era of project-based development. The abysmal performance of many development projects during the period influenced, substantially, the shift of emphasis of multi-lateral development finance from direct project activity to policy reform during the 1980s. Nevertheless, it became clear during the 1980s that policy-making itself was fraught with difficulties, particularly, as the gap between policy-makers (politicians) and policy analysts (academics) widened. This observation opened a new area of research aimed at bridging the gap between those two actors in the policy process. Needless to say that promotion of effective communication is a key ingredient of good policy-making. Recent literature on the subject of effective policy communication have paid significant attention to the methods of policy discourse [1].

This paper is a modest contribution to the search for appropriate modes of policy discourse, particularly at the sector level in developing countries.

The Planning Process

Theoretically, the development planning process revolves around a number of steps variously described by different writers - Catanese and Steiss [2], Mc Loughlin [3]. - These steps which include the identification of problem areas, the survey, evaluation and choice between alternative ways of bringing about the desired change and the implementation of selected courses of action, conform to the so-called rational approach to decision-making [4,6]. Beenhakker's concept of planning [5], which describes a comprehensive system of development planning and budgeting, builds into the planning process the concept of a cyclical and continuous process. The planning process, in reality, tends to be more complex than the steps suggested in the literature. In some cases it has not been necessary to go through all the steps; but in other cases, such as the highly decentralised systems, additional steps have been included.

The cause for concern

A review of several LDC plan documents seem to indicate that some conscious attempts are often made to follow certain guidelines as made obvious in the latest development planning process in Ghana.

Dr. J.A. Famiyeh

However, there seem to be some problematic aspects of those plans that tend to weaken their usefulness during plan implementation. One such weakness is associated with the definition of the development strategy, and the translation of the strategy into specific policies as indicated by Killick [7].

The result is that though the plans often specify project-level public spending, the link between the project-level objectives and national-level goals is often obscured. This weakness in the planning process is associated with:-

(a) ineffective communication between the professional planners, the politician/policy makers and the civil administrators as indicated by Conyers and Hills [8].

(b) the obsession about projectizing national development as the most favoured micro-level strategy of development and

(c) inadequate sector-level planning

Perhaps of the three sources of planning weakness, the sector planning weakness requires greater attention for the reason that it contributes largely to the other two weaknesses.

With regard to sector planning, the literature has generally emphasised projects and programs. With the exception of very few, such as Mollet [9], no tacit mention is made of the task of providing for skilled research workers. In principle, if sector planning were to involve only decisions as to where to invest public funds, then presumably, the professional planners in the government ministry ought to be able to make those decisions without much difficulty. However, the suggestion about budgeting for skilled researchers points to other aspects of the sector planning process that require the intervention of such professional researchers. Since the choice of policy is 'the heart of the planning process', genuine effort needs to be made to involve professional policy analysts in sector planning to ensure the promulgation of effective sector policies or development strategy. This is even more important as the development planning process moves away from the "sector" to the "area" where policies become crowded out by projects.

Nevertheless, as policy planning assumes greater importance in the process of agricultural development, its effectiveness becomes a major concern of all those involved in the policy process. Among them would be:-

(a) policy makers who have the political power to formulate and implement policies affecting agriculture;

(b) policy analysts who have the training and professional ability to analyse and supply the necessary information and advice for sound policy decision-making; and

(c) farmers and agricultural marketing institutions whose self-interest and, presumably, commitment to the public good induce them to listen and act in accordance with policy but without whose active support and involvement policies can never be effective.

One common factor linking the three categories of actors in the policy process is "communication". It is the ineffectiveness of the communication between these actors that generate a cause for concern in the sector planning process.

The aim and organisation of this paper

This paper is a development of a methodology that promotes effective communication between the policy maker and the policy analyst. The presumption here is that there is a communication gap (1) between the two actors; and this gap adversely affects the quality and promptness of policy decisions in agriculture. However, in order to promote a meaningful collaboration between policy makers and policy analysts, an important condition must be that a good procedural framework is available to effectively depict and communicate agricultural policy; and to facilitate decisions about the type of information appropriate for sound and prompt decision-making.

This paper is in three parts. The first part deals with the development of a Policy Logical Framework Matrix; the second part outlines the mechanism of applying the matrix to raise relevant policy issues; and the final part

illustrates the use of the Policy Logical Framework to facilitate policy discourse.

It is important to note that the term "discourse", is not used in this context to imply conversational tactics or 'rhetorical strategies' but, as Hajer [10] indicates, "an ensemble of ideas, concepts and categories through which meaning is given to phenomena..." The policy discourse referred to in this paper is both theory and practice based on the complementary use of a systematic method; and as van Dijk [11] rightly puts it, "producing and understanding discourse requires a vast amount of effectively organised knowledge" as shown by the Policy Framework discussed in this paper.

THE ATTRIBUTES OF A POLICY LOGICAL FRAMEWORK

An important objective of several policy-based research sponsored by government and external donors is to enhance the interaction between policy makers, researchers and civil society, leading to an improved programme of research on the one hand and a strong policy analysis and formulation on the other. This interaction should provide policy makers with timely, clear and readily usable information and recommendations. In an attempt to meet this and other objectives, it is argued that an appropriate policy framework to facilitate the policy-maker-analyst dialogue should have the following attributes:

(a) simplicity: It must be simple, i.e., it must simplify the understanding of government's agricultural policy framework or strategy;

(b) comprehensiveness: It must present policy in a comprehensive manner: i.e. it must portray a logical approach to understanding the influence of public policy and the effect that other factors outside the control of the agricultural policy-maker, have on the agricultural sector;

(c) effectiveness: It must facilitate effective policy discourse, i.e. it must make it possible to reasonably anticipate and discuss both short-run and long-run policy issues; and

(d) wider coverage: It must encourage wider involvement in policy analysis, i.e. within reasonable limits, it must motivate the policy maker (and, possibly, others concerned about agricultural policy) to be involved in determining what relevant information to gather in order to facilitate sound and timely policy decision- making.

The policy logical framework

I have illustrated [12] that if the content of the Project Logical Framework is modified to contain policy information but retain the logical framework dialectics, several of its advantages discussed in the literature, particularly, by McCullough [13] and Cracknell [14], will equally apply to such a policy framework. For example, the policy framework would assist to establish consistency between higher agricultural policy objectives and on-the-ground implementation of agricultural activities. This is consistent with attribute: (a) above, which requires that the policy framework facilitates the understanding of government's agricultural policy relation-ships or strategy. A second example is that the policy framework would provide the basis for open discussion of the consistency between different agricultural policies and assist in promoting a common understanding of issues that determine the effectiveness of policy. This has important implications for the choice and implementation of appropriate agricultural policies. This proposition is also consistent with attribute (c) above, which requires that the policy framework facilitates effective policy discourse. These and other examples (2) of the usefulness of the proposed policy framework make it a preferred basis for a meaningful dialogue between policy makers and policy analysts.

The policy logical framework matrix

Table 1 is a format for the Policy Logical Framework considered in this paper.

Table 1: The Policy Logical Framework Matrix

Summary of Policy Objective	Indication of Achievement	Sources of Information	Important Assumptions, Risks and Conditions
Level 4: Sector Policy Goal			
Level 3: Subsector Policy purpose			
Level 2: Subsector Output Policy Objective			
Level 1: Subsector Policy Input PA PI IO .... 1... 1... 1... 2... 2... 2... 3... 3... 3... etc etc etc			

PA - policy area PI - policy instrument IO – instrumental objective

Terminology and concepts

A number of specific terms used in the matrix are defined as follows:

A sub-sector concept is applied here to reflect a well defined arm of the Ministry of Food and Agriculture. For example, the crops sub-sector and the livestock sub-sector (3). From Level 1, a sub-sector policy input is a course of action which forms part of the sub-sector strategy. For example, the development of new sorghum varieties; regular supply of fertiliser; provision of credit; and improvement in extension are all policy inputs into a cereal (hyv) improvement strategy.

A policy input requires a three-part specification: The first is the broad policy area into which individual policy inputs can be classified. For example, the policy to develop the hyv of sorghum would belong to the broad policy area of Research.

The second part specification is the policy instrument or mechanism by which policy inputs will be expected to be implemented. For example, in the case of a sorghum hyv development, the instrument could be the Crops Research Institute that must recruit qualified plant breeders, secure parent sorghum varieties and undertake the required breeding, screening and multiplication programmes. A policy instrument thus refers to an actor and its activities, which are meant to give effect to policy.

The third part specification of the policy input is the instrumental objective. It represents the important precondition that must be satisfied for the sub-sector strategy to be effectively accomplished. For example, in the case of the policy instrument described above, the instrumental objective could be to increase the potential yield of sorghum from 500 kg/ha to 1000 kg/ha within a five-year period. Thus the instrumental objective is that objective specific to the policy instrument in question.

Level 2 of the policy framework matrix specifies the collective objective of all the policy instruments applied in a sub-sectoral strategy. Such a collective objective is described as the output policy objective and it is the immediate sub-sectoral policy objective to which all instrumental objectives contribute. For example, the cereal sub-sector output policy objective may be to increase all cereal output by 30 percent within a five-year period.

Level 3 of the matrix describes a less immediate policy objective expected to be achieved by the

end of a specified period. This is termed the policy purpose. For example, a cereal sub-sector policy purpose may be to increase national self-sufficiency in cereal production to provide sufficient cereal for human and livestock consumption.

Level 4 depicts what may be considered as the ultimate goal of the Ministry of Agriculture which, in the above illustrations, may be to build up food reserves as a means to encourage the government to plan national development with greater certainty. Policy objectives of this type are described as the sector policy goal.

Like the Project Logical Framework matrix, the Policy Framework Matrix also has columns for indicators of achievement of policy objectives; sources of information; and most important assumptions, risks and conditions.

The Policy Logical Framework as proposed in this paper has been shown to conform to the following logical framework concepts described in "CIDA Guide" [15] and Famiyeh [12,16].

- a hierarchy of objectives;
- a casual linkage within the hierarchy of objectives;
- a notion of hypothesis; and
- important assumptions and conditions.

Steps in the matrix preparation

Bearing in mind these concepts, the steps to follow in preparing the Policy Logical Framework would be:

1. Specifying clearly the sub-sector in question. This will enable all those involved in the policy discussion to agree upon the scope of activity to cover in the discussion.
2. Identifying the relevant sector strategy which the sub-sector is expected to adopt and the time horizon specified for relevant policies to be implemented and results assessed.
3. Identifying sub-sector policy input from both the sector-general and sub-sector-specific policies and classifying them into Policy Areas, Policy Instruments and Instrumental Objectives.
4. Identifying the sub-sector output policy objective.
5. Identifying the possible intermediate and highest policy objectives and selecting those with the strongest link to the sectoral strategy to be implemented by the specified sub-sector.
6. Identifying all important assumptions, risks and conditions underlying the achievement of policy objectives at each level of policy hierarchy.
7. Checking for primary, secondary and tertiary policy causalities.
8. Determining appropriate indicators for measuring achievements and the relevant sources of information.

It is worth pointing out at this stage that the most important policy causality is that between the policy input (Level 1) and the output policy objective (Level 2). The reason is that those are the levels with the primary causality (4) and hence most relevant for the achievement of the sectoral goal.

The mechanism of applying the matrix

The matrix described above (Table 1) is meant to assist in agricultural policy planning and discourse. In this regard, its ability to present a reasonably comprehensive picture of the sub-sector policy scenario is of fundamental importance. But what seems to matter most is what key information it contains and what meaningful planning use that information can be put to.

Focusing attention on Levels 1 and 2, the idea is to establish consistency between the factors outlined in (a), (b) and (c) below. The term "consistency" is used here to mean compatibility or the ability to relate positively to one another for the benefit of achieving some specific common objective. A strong idea of complementarity is also implied in the use of term "consistency" in the exploration of the relationships outlined in (a), (b) and (c) below:-

(a) Relationship between individual instrumental objectives (IOs); the output

policy objective (OPO), and the important assumptions, risks and conditions (IAs) (see Figure1).

This is to ascertain whether each instrumental objective, given the relevant assumptions, risks and conditions regarding its effectiveness, will contribute to the achievement of the common target - the sub-sector output policy objective. This check provides a good opportunity for policy analysts to discuss with policy makers the role of key assumptions underlying the achievement of the various input policy objectives.

(b) Relationship between individual policy instruments (PIs) and their respective instrumental objectives (IOs).

There are several criteria to consider in this consistency check. But the most salient ones are: (i) Institutional consistency, ie. checking whether the agency selected to implement that aspect of the sub-sector policy input is strong enough to do so and what, if any, bottlenecks are likely to show up; (ii) Resource consistency, ie. Whether adequate budgetary and logistical support have been planned or provided, as the case might be, for the aspect of the sub-sector policy input; and (iii) Time consistency, ie. Whether the time allotted for results to show is adequate.

Where the relationship between the policy instrument (PI) and the instrumental objective (IO) is such that one PI is associated with many IOs, there is the likelihood that the PI would not be effective. This may be due to organisational difficulties, the likely limited resources available to the agency, and the possible time constraint that may emerge at the implementation stage. On the other hand, if several policy instruments have the same instrumental objective, then, depending on the scale of activity, the policy instruments may either complement each other or demonstrate a case of functional duplication. The latter could entail higher costs for the same or even less effective outcome.

(c) Relationship between pairs of policy instrument.

This is meant to ascertain the complementarity or otherwise between policy instruments. It is one means of identifying inter-organisational conflicts and the possible negative effects they have on the achievement of the objective of the sub-sectoral strategy. The basic methodological steps for establishing policy consistency are to:-

(a) bring together the factors (PI, IO, IA, OPO) between which consistency is to be established.

(b) raise relevant policy questions or issues regarding the relationship between the factors; and

(c) Seek solution to the questions either through research or by consulting those who are knowledgeable.

It is expected that the policy maker or his representative will participate actively in the construction of the framework and the first two steps above if a meaningful policy maker-researcher dialogue is to be effected. The policy maker's participation in these steps will help to clarify the objectives of policy, the basis for measuring success and the important assumptions and conditions underlying the achievement of policy objectives. He will also participate in raising policy issues either on-ex-ante or on ex-post basis; and possibly, become drawn into the kind of information required to improve policymaking.

Illustration of the policy logical framework [using Ghana's crop sub-sector policies (1990-1995)].

The appendix Table 1 is a policy framework for the crops sub-sector in Ghana with 1990 as the policy turning point. It is worth pointing out that though the policy framework was prepared initially by the author of this paper, it was presented to some high-ranking personnel of the Ministry of Food and Agriculture for their concurrence. Extract from the table is presented below (Figure 1) to highlight those sub-sector policies which have direct impact on farm-households in the northern savannah agro-ecological zone. The extract was made considering the relevance of the consistency between the instrumental objectives and the output policy objective. Hence the other two types of policy consistency check (i.e. PI-IO and PI-PI) (5) have not been considered in this paper.

Relationship between instrumental objectives and productivity in the crops sub-sector

It is notable from Figure 1 that all the specified instrumental objectives should lead, intrinsically, to the achievement of productivity gains on farms in northern Ghana. This will be the case, particularly, if instrumental objectives are achieved simultaneously. Therefore, policy questions should necessarily focus on the assumptions, risks and conditions underlying the effectiveness of the instrumental objectives.

Crops sub-sector policy issues

The following are crop sub-sector policy issues raised from Figure 1. The discussion of the policy issues focuses primarily on the data or information required for effective policy discourse.

Organic Manure

With regard to relationship (1) in Figure 1, several issues can be raised. For example, one issue relates to the need to identify alternative sources of organic manure available to farmers in the northern savannah agro-ecological zone. This is important because if there is competition for the use of organic manure, particularly, crop residues, then farmers would have to rely on the collection of cow-dung. But the possible high transport cost may tend to constrain farmers' use of this organic manure source. Hence the policy may tend to be ineffective. Another information which is fundamental but which is not adequately available is crop response to organic manure, given the different farming systems, notably, compound farming, bush farming and dry season gardening. Some evidence from Manga Research Station seem to point to the fact that moderate amounts of organic manure that were well preserved and properly applied to crops did provide significant yield increases. Indeed, information about the response of various crops to organic manure application must be available to facilitate the provision of advice, in that respect, to farmers.

Improved Seed

From relationship (2) which focuses on the use of improved seeds, relevant issues will relate to the proportion of farmers using improved seed; and whether farmers are, indeed, willing to buy seed every season or, at least, every other season. Although the cost of improved seed is high, there are several advantages to gain from the regular use of it. Nevertheless, a highly significant number of subsistent and semi-commercial farmers in northern Ghana do not include it in their farm budget. They frequently rely on portions of their last harvest or what they can borrow from friends and/or relatives. Even for those who purchase improved seed, the tendency is to use the progeny for planting in the next and subsequent seasons. This is not a healthy practice and does not lead to productivity gains. It is important to know what proportion of farmers use improved seed regularly and on what acreage of land in order to be able to estimate the level of productivity achieved by farmers growing particular crops.

Oxen Ploughing

From relationship (3), which concerns oxen ploughing, it is important to examine what cost savings are made from the adoption of bullock ploughing and see whether such cost savings justify oxen purchase. It will be relevant to examine all the benefits that possibly make animal traction attractive to farmers; their chances of obtaining credit for oxen and actually obtaining the animals; alternative arrangements that exist for gaining access to oxen-ploughing; and the proportion of households that have access to these alternative arrangements. Such information will be an aid to policy discussions on the use of oxen to gain productivity increases in farming.

Irrigation

Relationship (4) focuses on irrigation. Here it will be necessary to assess the number of households that have had access to small/micro scale irrigation systems.

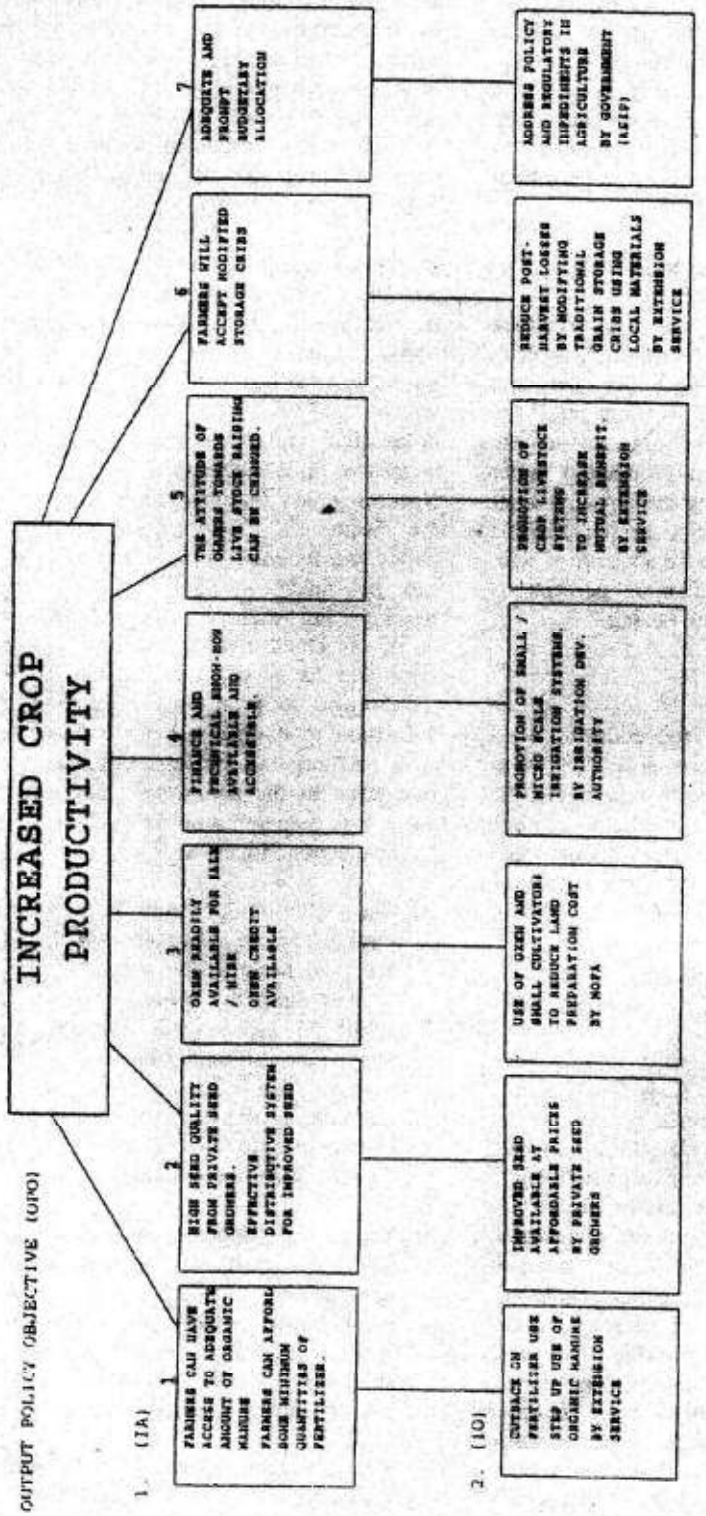

Figure 1: CONSISTENCY BETWEEN INSTRUMENTAL OBJECTIVES AND INCREASED PRODUCTIVITY IN THE CROP SUBSECTOR IN NORTHERN GHANA

NB: If [Table 2] is an indirect instrumental objective, its efficiencies and consistency with increased productivity can be analysed separately.

1. (IA) = ASSUMPTIONS, RISKS, AND CONDITIONS
2. (IO) = INSTRUMENTAL OBJECTIVE

It is possible that several of these irrigation equipment exist but the bottleneck may be that farmers are not availing themselves to them on account of high cost and doubtful effectiveness. Such information must necessarily be available to facilitate effective policy discourse on the use of small/micro scale irrigation systems to promote agricultural productivity in northern Ghana.

Crop-livestock integrated system

Relationship (5) refers to crop-livestock integrated systems. Here, the issue will seem to border on livestock farmers' attitude and perception about livestock raising; and the degree of complementarity or competition between livestock and crop production under compound and bush farming systems. In order to effect any meaningful policy discourse in this area, it will be necessary to be acquainted with accurate information about farmers' perceptions and attitudes toward livestock raising.

Grain Storage

Relationship (6) concerns reduction in post-harvest losses. For an effective policy discourse in this area, some information relating to the nature of adoption of the modified grain storage crib and farmers' perception about the modified crib vis-à-vis the traditional grain storage systems must be available.

Addressing policy and regulatory impediments

From [IO_7] i.e. "Addressing Policy and Regulatory Impediments", it is notable that consistent with Ghana's current development strategy of economic liberalisation with emphasis on the minimisation of government's administrative involvement and/or control of domestic production and markets, agricultural policies in the 1980s and 1990s have focused on exposing the farmer to free market conditions. The assumption is that the farmer can adjust fully, in the long run, to the working of the price mechanism and, consequently, experience improvements in his standard of living. In order to facilitate such an adjustment process, government, with World Bank assistance, announced the Agricultural Sector Adjustment Programme (ASAP). The ASAP is meant 'to address policy and regulatory impediments' in the agricultural sector in order to enhance agricultural growth [17]. An important part of ASAP's activities is to improve the necessary infrastructure (roads, markets etc.) and local institutions as a means to promote agricultural productivity and production (see PI_7 of appendix Table 1).

It will be necessary to subject the ASAP to some critical ex-ante or ex-post analysis to examine its effectiveness in increasing food security in northern Ghana. Thus, the general issue we might want to raise will relate to the extent to which ASAP can enhance farm-level productivity and production in order to increase household or district food security.

Needless to say that the information to facilitate the discussion of the effectiveness of many policy instrumental objectives discussed above, can be made available through organised research. For example, a research team working under a Dutch-funded research programme attempted to supply and discuss information with regard to promotion of organic manure utilization to compensate for a necessary cut-back on inorganic fertilizer utilization [refer to first issue in the series presented above]. A paper was prepared and the major outcome for policy discussion were as follows:-

(i) The policy to promote farm productivity through the use of organic manure cannot be effective because the potential availability of cow-dung the principal source is only about 22 kg/ha while the recommended application is 8 tonnes/ha.

(ii) Considering the collection cost, it is more economical to invest more in chemical fertiliser than in cow-dung.

(iii) The use of adequate amounts of inorganic fertiliser must be promoted through appropriate facilitating delivery mechanisms. Indeed, some fertiliser credit scheme must be instituted as a second best solution to the problem of fertility conservation in northern Ghana.

(iv) For the maintenance of soil fertility on sustainable basis, production and

application of bio-fertilisers must be explored in Ghana as has been successfully done in Thailand (6).

CONCLUSION

This paper is an attempt to contribute to the search for effective methods of discussing sector policy. The view is that any attempt at effectively managing food policy will require a well-structured means of policy discourse. The paper presents a modified Project Logical Framework, named Policy Logical Framework (PLF), as a basis for providing effective policy information to facilitate policy discussions. The preparation of the PLF itself is a skill that requires explicit training and sector ministries ought to be responsible for this. An effective way of utilising a PLF has been demonstrated using a system of policy consistency checking. A dominant aspect of the policy consistency check is the ability to raise relevant policy issues, which would then be addressed constructively given the availability of relevant data or information bases. This paper reasonably demonstrates this procedure using Ghana's crop sub-sector policy framework, prepared for northern Ghana. There can be no doubt that the methodology greatly improves policy communication and assists to uncover important areas for policy analysis. A trial discourse between a research team and personnel of the Ministry of Food and Agriculture demonstrated the validity of such an attribute, though further developments in the methodology is expected through organised workshops and the production of a sector policy discourse manual.

NOTES

1. Some of the factors creating the gap include diverse financial, academic and political interests and constraints. For more details, see Famiyeh [12].

2. These advantages have been indicated by McCullough [13] with reference to the Project Logical Framework.

3. See a more detailed discussion of the sub-sector concept in Famiyeh [12].

4. See Famiyeh [12,16].

5. I have omitted the PI-IO and PI-PI consistency checks in this paper believing that there is minimum duplication of functions among policy instruments; and all the policy instruments relate, at least, neutrally if not positively to each other. Beside, most of the actions are to be implemented by the government through the unified extension service, research institutes and specialised agencies such as the Ghana Irrigation Development Authority.

6. The research wing of Thailand's Myanmar Agricultural Services has successfully established a rhizobium plant using local materials to produce bio-fertiliser in the range of 100 mt/year. The use of ½ kg rhizobium with leguminous crops can produce a yield increase equivalent to that obtained from an input of 30 kg Nitrogen fertiliser per hectare from chemical fertilisers [18].

REFERENCES

1. Apthorpe, R. and Gasper, Des (Guest Editors) Arguing Development Policy: Frames and Discourses, The European Journal of Development Research. Vol. 8 No. 1 June 1996. Frank Cass. London, 1996.

2. Catanese, A. and Steiss, D. Systematic Planning for Complex Systems, Planning Outlook. New Series Vol. 5, 1968.

3. McLoughlin, J. B. Urban and Rural Planning, Faber and Faber, 1969.

4. Faludi, A. Planning Theory and A Reader In Planning Theory Oxford, Pergamon Press (1973 a & b)

5. Beenhakker, A. A System for Development Planning and Budgeting, Westmead, Gower, 1980

6. Carley, M. Rational Techniques in Policy Analysis, London. Heinemann, 1980.

7. Killick, T. Development Planning in Africa: Experiences, Weaknesses and Prescriptions Development Policy Review. Vol.1 Sage, London, 1983.

8. Conyers, D. and Hills, P. An Introduction to Development Planning in the Third World John Wiley and Sons, 1986.

9. Mollett, J. A. Agricultural Planning: An Introduction, in FAO Agricultural Planning Studies. No. 13, Rome, 1970.

10. Hajer, M. Discourse Coalitions and the Institutionalisation of Practice, in Fischer, F. and Forester, J. (eds.) 1993', The Argumentative Turn in Policy Analysis and Planning' Durham, NC: Duke University Press, 1993.

11. Dijk, T. van, Discourse and Society, A New Journal for a New Research Focus Discourse and Society, Vol. 1, No. 1, pp 5-16, 1990.

12. Famiyeh, J. A. The Logical Framework Concept in Agricultural Planning Unpublished PhD Thesis, Bradford University. U.K., 1991.

13. McCullough, M. Project Framework: A Logical Development for more Effective Aid, British Overseas Aid. ODA London, 1985.

14. Cracknell, B. E. Evaluation of ODA's Experience with the Project Framewor ODA, London, 1987.

15. CIDA. Guide for the Use of the Logical Framework Approach in the Managemen and Evaluation of CIDA's Internationa Development Projects, CIDA, Canada

16. Famiyeh, J. A. Methodology for a Logica Approach to Agricultural Policy Analysi and Discourse, RG-AFS, Note 1, UST Kumasi, 1994.

17. Government of Ghana. Ghana's Achieve ment of Self-sustainability in Foo Production and Food Security for 10 Year 1983-1993 MOFA, Accra, 1993.

18. Kyi Win. The Use of Bio-fertilisers i Myanmar, Proceedings of workshop o Sustainable Agriculture in the Lowland held in Thailand, 24th September - 7 October, 1990.

Appendix Table 1

CROP SUBSECTOR POLICY LOGICAL FRAMEWORK FOR NORTHERN GHANA (1990)

Summary of Policy Objective	Indicators of Achievement	Source of Information	Assumptions, Risks and Conditions
Sector Policy Goal The people of Northern Ghana to attain physical and financial access to adequate and nutritionally balanced diet of high quality by the year 2000 (Ref.)	• Increasing regional per capita GNP • Increase in calorific intake (per capita) • Reduction in infant mortality • Incidence of childhood disease	Statistical Services MFEP HOH Records Field Surveys MOH/States. Services MOH/States. Services	
Subsector Policy Purposes Self-sustainability in food production (increased food production)	Increasing per capita food production	Statistical Services (MFEP)	Real per capita income of Northern Ghana will increase at the rate of ≥ 5% p.a. and be sustainable. Agric-Non-agric terms of trade is favourable
Subsector Output Policy Objective Increase in productivity of the crop production	Increased crop yield	MOFA Records	Good rainfall and general weather conditions. Low incidence of man-made disasters, (e.g. bush fires) Social harmony.
Subsector put Policy in Objective PA Input use Ph(1) Promote continued use of organic material to benefit soil texture and structure; reduce the use of chemical fertilizers and increase the efficiency of fertilizer utilisation by plants	Intensity of Organic material Use Profitability of input use [organic, inorganic, combination]	Field survey data analysis	Farmers do have access to adequate organic material; and are prepared to adopt recommended practices
(ii) Use prover crop rotations [especially cereal-grain legume-rootcrop]			
101 To cutback on the use of chemical fertilizers without significant loss in productivity	Fertilizer use [Quant./ha] compared with recommended	On-farm trials – NAES	

Summary of Policy Objective	Indicators of Achievement	Source of Information	Assumptions, Risks and Conditions
PI1 Improved Seeds To encourage private seed growers to produce certified seed for sale to farmers	Quantities of improved plantain material produced	MOFA Records NAES Records	
102 Improved seeds can be made available to farmer at competitive prices	Quantities purchased by farmers		Farmers have access to improved plantain material and can afford to purchase them at market prices.
PI3 Mechanization (i) Farmers groups, entrepreneurs, equipment dealers to be encouraged to operate tractor hire services and/or leasing arrangements and mobile workshops.	No. of tractors available No. of private tractor rentals Size of area mechanically cultivated		
(ii) To encourage greater use of oxen for cultivation by improving existing credit schemes for oxen investment and to encourage the sale of equipment other than plough such cultivators and carts so that full benefits of owning oxen can be realised	Credit disbursed for investment in oxen. Number of oxen credit recipients	Credit institution records - do – - MOFA Records	Oxen are readily available for sale
(iii) Training of oxen and farmers	Number of farmers trained in bullock ploughing	- do -	
10_3 To reduce the cost of land preparation and overcome seasonal labour shortages	Reduction in cost/ha of land preparation	Field survey data analysis	
PI_4 Irrigation [Farmer Managed] (i) GIDA to assist committed farmers' groups to identify area with good potential for irrigation, undertake design studies, plan the implementation and assist groups to raise any necessary finance. Micro-irrigation schemes in fadamas (valley	Established effective farmers groups. Farmers trained in irrigation management Micro-schemes installed Area covered Cost-effectiveness	GIDA Records - do – - do – Field data analysis	Financial and technical know-how will be readily available Possible land disputes on valley-bottom lands will not hamper

Summary of Policy Objective	Indicators of Achievement	Source of Information	Assumptions, Risks and Conditions
10_4 To increase irrigated farm productivity under farm-managed conditions	Irrigated crop yields and production	- do - MOFA Records	
P15 Extension			Front-line Extension Staff are well equipped to effectively advice on practices.
Extension staff (FLS) to advise farmers on: (a) timely planting, correct planting density, dept. of planting. Placement of fertilizer and adequate weeding	Extension contact		The land fallow system is gradually losing favour with farmer due to increasing scarcity of suitable farmland.
(b) Cultivation along contours etc. (c) Integration of livestock into the farming system	Extent of crop-livestock linkage	Research	
(d) Tree-planting, especially in Upper East Region	Intensity of adoption of tree planting	Research	
(e) 10_5 To properly manage the soil and increase crop yields			
$P1_6$ Post-Harvest Activities			
Extension Service [FLS] to advice farmers to modify traditional grain storage cribs based on materials that are readily available to farmers.	No. of farmers adopting advice on modified grain storage facility	Dept. of Extension Service Records	The recommended technology exists Farmer will accept modified storage cribs
Promoting chemical treatment of grain to prevent insect damage to marketed produce in storage			
105 To reduce post-harvest losses		Field Survey Data Analysis	

Summary of Policy Objective	Indicators of Achievement	Source of Information	Assumptions, Risks and Conditions
PI Agricultural Marketing			
Government to create an enabling marketing environment through:			
(i) creation of adequate transport infrastructure especially feeder roads and facilities for the dissemination of market information	Kilometres of feeder roads ◆ constructed ◆ maintained/rehabilitated		Adequate and prompt budgetary allocation will be made by Government
(ii) promotion of efficient financial markets to support commodity markets through increased availability of credit to traders, transporters, wholesalers, etc.	Institutional credit portfolio allocation to markets Credit provision Funding levels		
(iii) Government, under the Agricultural Sector Adjustment Programme, to strengthen District Assemblies, rural associations, women's groups, religious and business groups by assisting them with up to US$15,000 each for projects such as rural water, market rehabilitation, access road construction, village processing and storage units.			
10 To address policy and 11 regulatory impediments in the agricultural sector to enhance overall growth rate to 3.7% p.a. up to Year 2020.	Regional economic growth rate	Statistical services MFEP	

Summary of Policy objectives sourced from: Republic of Ghana – MOFA 'Ghana Medium-Term Agricultural Development Program (MTADP) (1990-1995) Ministry of Agriculture, Accra.

Information on ASAP sourced from: 'Ghana's Achievement of Self Sustainability in Food Government of Ghana (1993) Food Production and Food Security for 10 years 1983-1993, MOFA, Accra. May 19993