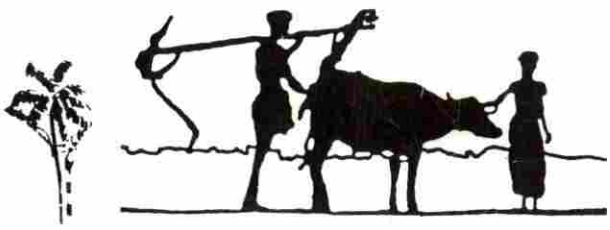
355

COMITE PERMANENT INTERETATS
DE LUTTE CONTRE LA SECHERESSE
DANS LE SAHEL
CILSS

PERMANENT INTERSTATE COMMITTEE
FOR DROUGHT CONTROL
IN THE SAHEL

PROPOSED FRAMEWORK FOR SOCIO-ECONOMIC AND ENVIRONMENTAL EVALUATION IN THE SAHEL (CESES)



March 1992

PERMANENT INTER-STATE COMMITTEE FOR DROUGHT CONTROL IN THE SAHEL

PROPOSED FRAMEWORK FOR SOCIO-ECONOMIC AND ENVIRONMENTAL EVALUATION IN THE SAHEL (CESES)

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C O N T E N T

F O R E W O R D

This paper entitled "Proposed Framework for Socio-Economic and Environmental Evaluation in the Sahel" (CESES), is the fruit of several months of reflections and research on the three-way relationship "Man-Ecology-Environment",conducted by the Ecology-Environment team of CILSS' Department of Projects and Programmes.

Ten project case studies were carried out in Burkina, Mali, Mauritania, Niger and Sénégal for the purpose of identifying relevant socio-économic and environmental criteria for their incorporation into conventional economico-financial evaluation criteria.

The Framework being proposed is a follow-up to the ecological guidelines published by CILSS in 1979.

The distinguishing feature of this Framework vis-à-vis conventional systems is that it effectively incorporates social and environmental criteria in the evaluation of development projects to ensure a "complete" and rational evaluation of natural resources-related activities.

The use of the tool calls for a clear definition of objectives to facilitate the task of weighting econommic, financial, social and environmental criteria and evaluations and putting them in ranking order.

The proposed Framework is the beginning of a process. It will need to be refined to enhance its pratical applicability in the field, considering the intricacies involved in natural resources management and its importance as a long-term activity by means of which Sahelian countries and their people can achieve sustainable development.

The work is the product of unfailing efforts on the part of all members of CILSS' Ecology environment team and Sahelian and International specialists (members of the CESES Steering Committee) who assisted in diverse ways with the production of this document.

Messrs. Mahamat Moustapha Yacouba, Dirk Van Mourik, Laouali Ibrahim, Aboulamine Berthe, Volker STAMM, Dirk KATTENBERG, BARRY Koumba and Mamadou DIOP, all contributed in no small measure, in the formulation of notions and methods embodied in this Framework.

I. CONTEXT

The first three decades of independence in Sub-Saharan Africa has been marked by a general agony experienced from the political, institutional, economic, financial, food and ecological points of view.

The great expectations and optimism of the immediate post independence years soon turned into growing despair which has been further compounded, in the last twenty years, by bitter climatic disappointments and the financial and institutional crippling of many public and para-statal agencies officially assigned to the management of the most vital sectors of national economies.

Most countries in the subregion have embarked upon Structural Adjustment Programmes which give pride of place to investment choices and efficiency.

The most deadly blow to CILSS member countries was dealt by drought which, coupled with countless other adversities (locust invasion, man's harmful activities, etc.), has largely undermined the developmental efforts of the sub-region.

In 1984, CILSS and Club du Sahel initiated "Futures Studies" on Sahelian countries and the end-product thereof, a report titled : "The Sahel facing the Future", thoroughly examines the Sahelian past and present.

The survey revealed a consistent pattern in Sahelian societies, i.e. the unacceptable scenario of food, financial and cultural dependence of the sub-region on external sources. The only future deemed acceptable to Sahelians is one with a new Non Governmental Sector or civil society, in which each Sahelian contributes his quota for a better tomorrow, while rural organizations also play a crucial role.

A rigorous management of the natural resources on which depend the sustained development of Sahelian countries is a sine qua non for the advent of this much-desired future. Unfortunately, the attainment of sustained development has been seriously and constantly undermined by both natural factors and human actions.

Relationships between the economy and the environment in Sahelian countries are more direct than in developed countries where natural resources endowments are supplemented with the available technology and financial resources. Not only does the dearth of technological and financial resources in the Sahel physically affect development projects but, more importantly, it poses a macro and micro-economic problem which calls for an urgent review of desertification control planning, evaluation and monitoring policies.

Factors underlying degradation are complex and varied. Notable among them are over-exploitation and misuse of land, defective conservation policies, overgrazing, deforestation, drought, etc. The cumulative effects of these factors have been a decline in the productive capacity of lands with a drop in productivity, social disarray as well as growing poverty and famine in rural areas.

In response to these adverse developments, CILSS member States, meeting in Nouakchott in 1984, worked out a strategy for desertification control (application of the revised strategy).

Ever since, the States have been drawing up National Plans for Desertification Control (NPDCs) and have embarked on large-scale actions. With the present state of affairs, there is a unanimous recognition of the need to undertake environmental action.

Whereas considerable financial resources have been sunk into environment-related programmes and projects, no one can tell with certainty how productive these actions have been. Many attempts have been made, but the different approaches seem to be aimed at justifying the activities that decision-makers want to pursue.

In view of the scarcity of resources in the Sahel, it is, of course, necessary that funds be utilized in close observance of sound economic and financial principles, albeit without overlooking the negative and positive socio-economic and environmental effects of projects.

Admittedly, information is becoming increasingly availbale on the disadvantages of strictly sectoral projects and indeed, development partners are giving increasing preference to multi-sectoral approaches.

A wealth of experience has been accumulated in the Sahel and it is indeed necessary to draw maximum lessons from them in working out an evaluation method, based on the lessons learned, to help analyse the results of past or future activies.

The sub-region abounds with project evaluation methods but most of them put inordinate emphasis on technical, financial and political considerations to the detriment of socio-economic and environmental considerations which are more relevant to Sahelian countrie

Many evaluation frameworks and analytical methods have already been drawn up by various agencies and, indeed, this paper does not intend to put forward a new one. The present intention is only to adapt existing evaluation tools to suit Sahelian realities, based on past failures and successes. This task is considered insuperable in the quest for relevant and appropriate choices of developmental actions, higher project performance, greater programming efficiency and added coherence in planning.

The proposed Framework for Socio-Economic and Environmental evaluation in the Sahel (CESES) should help determine (based on a full evaluation) the returns from a project investment. At the moment, economic and financial returns are the sole criteria for determining the feasibility of a project. The question is whether such an evaluation takes into account the whole range of effects (both favourable and unfavourable) induced by the project ; whether all elements are taken into consideration in their right proportions during the evaluation ; whether the evaluation takes account of soil degradation or conservation, increase in production and the rate of biological regeneration brought about by the project ; and whether the evaluation takes into consideration the fact that a fertile valley or a village, for example has been safeguarded by a project through the fixation of sand dunes.

Whereas it is true that such efects are hardly quantifiable, it is equally true that the quantification exercice should be a constant source of concern to help improve the apprehension of phenomena and avoid making rather superficial theories about qualitative aspects.

A Steering Committee was established to draw up this methodology. The committee held its maiden meeting in Ouagadougou (Burkina Faso) in September 1990, bringing together in addition to experts of the Executive Secretariat, Sahelian Senior Officials as well as OECD experts and consultants. The objective of the meeting was to outline the Framework for Socio-Economic and Environmental Evaluation and draw up the Terms of Reference for the project case studies. Pilot studies analyzing macro-and micro-economic considerations were arried out by Sahelian experts to help initiate discussions on the Framework during that meeting.

To back up the theoretical reflections, the Steering Committee advocated that concrete project studies should be conducted. The studies were therefore carried out by consultancy teams in Burkina Faso, Mali, Niger and Senegal from January to April 1991. The case studies were discussed at the second meeting of the Steering Committee convened at the end of April 1991.

Based on their discussions of the various studies conducted and background material already available on the subject of evaluation, a Select Committee, convened in Bamako (Mali) in June 1991, proposed a framework which was presented and discussed at the International Symposium on Integration and Evaluation of Desertification Control/Natural Resources Management Activities, held in Niamey (Niger) in October 1991.

The main objective of the present endeavour is to draw up a Socio-Economic and Environment Evaluation Methodology that will provide the broadest or fullest possible view of project conditions and implications by providing to policy-makers (the States, Donors, Peasant farmers) all the background information needed in making their choices :

* Prior to project-launching phase, the Framework should help :

- to formulate a project having a reasonable probability of success (ex-ante evaluation) or choose among several variants (alternatives) ;

* In the course of implementation of the project (monitoring) and after its completion (ex-post evaluation), the Framework should make it possible :

- to identify the different results and consequences of a project;
- to assess the effects and impact of DC/NRM activities ;
- to find explanations to them to be able to correct similar defects in ongoing activities (ongoing or summative evaluation) or draw relevant lessons for future projects (ex-post) and improve planning in order to preserve and restore the land and ecological heritage of the Sahel, with a view to attaining sustainble development.

The Framework will also help to sensitize policy-makers, planners and technical experts of Sahelian countries need to take account of socio-economic and environmental considerations when evaluating Desertification Control (DC) Projects. The idea is therefore to provide Sahelian States with a precious tool which makes for greater decision-making transparency in the choice and programming of DC/NRM activities.

II. BASIC ELEMENTS OF USAGE OF THE FRAMEWORK

A. Indicators

Indicators are variables helping to determine changes that have occurred in given situations. They can therefore be considered as a means of monitoring and evaluating the effects of an activity. They are also defined as specific (explicit), quantifiable and objectively verifiable means of determining the changes in or results of an activity under given conditions. This means that they provide a yardstick for determining, evaluating or indicating, in relation to the set objectives, how far a given activity :

- has yielded the anticipated inputs (input indicators) or outputs (output indicators).

- has attained its objectives (effects indicators, impact indicators).

The indicators could be :

- direct : if for instance, they indicate the delivery or use of fertilizer expressed as a percentage (input); cultivated land, expressed in hectares or as a percentage of the objectives; the percentage of farmers applying the recommendations of extension services, ie. the rate of adoption (effects) and changes in income levels and distribution (impact) in an agricultural project ; quantitative improvement in living conditions (stoppage of dune movement over a given area); area of land regenerated by using a soil defence system ; regeneration of a pastureland by re-adjusting the number of cattle heads grazing on a unit stretch of land;

- indirect : when a direct measurement is neither possible nor profitable (impact indicators). This applies, for example, to the value of immovable properties and building asset or consumption expenditure which indirectly indicate income levels.

Indicators should depend on the nature of the objectives and the effects and impact that the project seeks to obtain. Therefore, the first and foremost requirement is to define clearly and unequivocably the immediate objectives in the short, medium and long term.

Characteristics

The choice of indicators primarily require a sense of judgement, experience and knowledge of sources of statistical data. But, additionally, indicators should be :

- valid, ie. they should effectively assess what they are expected to assess;
- reliable, meaning they should be so verifiable or so objective that conclusions drawn from them would be identical even when the assessments are made by different people at different times and under different circumstances;
- relevant, implying that they should be related to the project objectives;
- sensitive, to changes in the situation observed;
- specific, based, as they should be, on available data;
- profitable, ie. the output should adequately match up to the time and money spent;
- current, meaning that rapid collection of data should be possible.

It is rare to find indicators meeting all these criteria. Even so, they can, at least, give an indication of trends and magnitudes and, thereby, help to make comparisons between different times or between different domains or groups of individuals at a given time.

Some purely technical considerations need to be discussed at this point :

The level assigned to data collected is one factor which can strongly influence the cost of data collection and the method applied in analysing the data.

Indicators may be aggregated at the national level, be derived from national sources and be valid solely at the national level. A specific example is the Gross National Product (GNP) which is calculated from national accounting.

A second category of aggregate indicators is calculated from the local level (sub-district, rural community, district, village, etc.).

A third category of indicators are derived from households or individuals, generally by means of censuses or polls.

Aggregate indicators generally make for easier collection than the household indicators. Unfortunately, they are of limited usefulness in the sense that they are difficult to break into component elements, which makes it difficult to generate discrete data from them.

Some concepts like popular participation and involvement hardly make for a quantified development of relatively simple indicators. Instead of attempting, at all cost, to fit these complex notions into a rather narrow numerical series, what can be done is to prepare descriptive statements indicating the direction of the change and then giving an appreciation thereof.

Implicit in the foregoing is that the number of indicators should be limited in such a way as to reduce data requirements and the cost of data collection to the minimum, while efforts are also concentrated on the most significant aspects.

There is a need for periodic review of indicators and of the attendant need for data, in order to integrate the trend of needs or required improvements into data quality.

Indicators in general or at least some of them should be "divisible" per sex, income group and operational area, according to the project's objectives.

Needy groups of people like rural communities, poor women and children (who form the broad majority of the Sahelian population) should receive special attention, for the indiscriminate use of mean figures in assessments, tend to conceal cases at the extreme ends and, for that matter, some important environmental and social aspects. The same applies to desert zones or areas at high risk, into which the greater part of Sahelian territor can be categorized.

The two categories cannot benefit equitably from development projects if they are not specifically designated as beneficiaries and if the underlying strategies are not expressly aimed at remedying their situation and, again, if their condition is not continuously monitored.

Non-the-less, one should not overlook the fact that an aggregate indicator is generally indivisible. For instance, an indicator calculated on the basis of the household or the individual cannot be required to provide separate data on men, women, regions or socio-economic categories like poor people or peasant farmers who own no land.

A list of indicators is presented in annex 1, on an indicatory basis.

B. Data and sources

Decisions pertaining to indicators and data should generally be grounded on sources already available or within obtainable reach. This paper does not consider it really useful to present a long list thereof as that could be too complicated or too long.

The first operation, therefore, is to determine available sources and information. It will often be found that the data or data sources do not correspond exactly to the goals pursued but could contribute to the attainment of the goal through a process of selection and structuring. It will also be necessary to collect additional data.

Guidelines for data collection have been provided in Annex 2.

III. PRESENTATION AND DESCRIPTION OF THE FRAMEWORK

The proposed framework for Socio-Economic and Environmental Evaluation in the Sahel (CESES) was drawn up by a team comprising Sahelian experts and experts from some OECD countries, who worked under the supervision of CILSS' Ecology/Environment Service. The objective is to integrate components of economic, financial, social and environmental analysis to help arrive at a more in-depth evaluation. Hence, the framework is aimed at providing an operational tool to planners, policy-makers and development experts of sahelian countries to strengthen efficiency in the monitoring and evaluation of sectoral or national projects and programmes.

It is designed as a simple framework that could be adapted to the different situations and contexts of projects and programmes. Besides, it draws on practices and activities at the administrative level (public and private institutions), local level, regional level and national level, in an endeavour to create, eventually, a database from which lessons could be drawn out of past experiences to help improve the planning and management of future development projects.

A/ Component elements of the Framework

The CESES is presented as an entity embodying four frameworks (environmental, financial, economic and social) and an integrated framework for an all-embracing or complete evaluation.

FRAMEWORK FOR SOCIAL EVALUATION

Framework for social evaluation							
criteria (1)	indicators (2)	value of indicators (3)	score<>0 from -10 to +10 (4)	correction factors from 0 to 1 (5)	transformed values (6)	weighting factors from 0 to 1 (7)	contribution to the ISD (8)
Index of Social Development - I.S.D.						1	

FRAMEWORK FOR SOCIAL EVALUATION OF A PROJECT OR A VARIANT

Column 1 : Assessment Criteria

Column 2 : Indicators

Column 3 : Value of indicator : it is the numerical value of the indicator

Column 4 : Score : A set of positive and negative figures ranging from +10 to -10, indicating the magnitude and direction of the impact or influence of the project on a given parameter.

The value is assigned on a continuing scale according to the positive or negative magnitude of the effect.

Column 5 : Correction factors.

In ex-ante evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

In ex-post evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

Column 6 : Transformed values

The product of columns 4 and 5

Column 7 : Weighting Factors

Based on the set objectives, their relative importance and their order of priority, it becomes necessary, at times, to weight the force of each criterion, using a coefficient ranging between 0 and 1. The total sum of the weighting coefficient is equal to 1.

Column 8 : Contribution to the Index of Social Development.

It is the product of columns 6 and 7. The sum of the contribution of the different criteria is equal to the Index of Social Development (ISD).

FRAMEWORK FOR ENVIRONMENTAL EVALUATION

Framework for environmental evaluation							
criteria (1)	indicators (2)	value of indicators (3)	score<>0 from -10 to +10 (4)	correction factors from 0 to 1 (5)	transformed values (6)	weighting factors from 0 to 1 (7)	contribution to the IED (8)
Index of Environmental Development - I.E.D.						1	

FRAMEWORK FOR ENVIRONMENT EVALUATION OF A PROJECT OR A VARIANT

Column 1 : Assessment Criteria

Column 2 : Indicators

Column 3 : Value of indicator : it is the numerical value of the indicator

Column 4 : Score : A set of positive and negative figures ranging from +10 to -10, indicating the magnitude and direction of the impact or influence of the project on a given parameter.

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In ex-post evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

Column 6 : Transformed values

The product of columns 4 and 5

Column 7 : Weighting Factors

Based on the set objectives, their relative importance and their order of priority, it becomes necessary, at times, to weight the force of each criterion, using a coefficient ranging between 0 and 1. The total sum of the weighting coefficient is equal to 1.

Column 8 : Contribution to the Index of Environmental Development

It is the product of colums 6 and 7. The sum of the contribution of the different criteria is equal to the Index of Environmental Development (IED).

FRAMEWORK FOR FINANCIAL EVALUATION

Framework for financial evaluation							
criteria (1)	indicators (2)	value of indicators (3)	score<>0 from -10 to +10 (4)	correction factors from 0 to 1 (5)	transformed values (6)	weighting factors from 0 to 1 (7)	contribution to the IFE (8)
Index of Financial Efficiency - I.F.E.						1	

FRAMEWORK FOR FINANCIAL EVALUATION OF A PROJECT OR A VARIANT

Column 1 : Assessment Criteria

Column 2 : Indicators

Column 3 : Value of indicator : it is the numerical value of the indicator

Column 4 : Score : A set of positive and negative figures ranging from +10 to -10, indicating the magnitude and direction of the impact or influence of the project on a given parameter.

The value is assigned on a continuing scale according to the positive or negative magnitude of the effect.

Column 5 : Correction factors.

In ex-ante evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

In ex-post evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

Column 6 : Transformed values

The product of columns 4 and 5

Column 7 : Weighting Factors

Based on the set objectives, their relative importance and their order of priority, it becomes necessary, at times, to weight the force of each criterion, using a coefficient ranging between 0 and 1. The total sum of the weighting coefficient is equal to 1.

Column 8 : Contribution to the Index of Financial Efficiency

It is the product of columns 6 and 7. The sum of the contributions of the different criteria is equal to the Index of Financial Efficiency (IFE).

FRAMEWORK FOR ECONOMIC EVALUATION

Framework for economic evaluation							
criteria (1)	indicators (2)	value of indicators (3)	score<>0 from -10 to +10 (4)	correction factors from 0 to 1 (5)	transformed values (6)	weighting factors from 0 to 1 (7)	contribution to the IEE (8)
Index of Economic Efficiency - I.E.E.						1	

FRAMEWORK FOR ECONOMIC EVALUATION OF A PROJECT OR A VARIANT

Column 1 : Assessment Criteria

Column 2 : Indicators

Column 3 : Value of indicator : it is the numerical value of the indicator

Column 4 : Score : A set of positive and negative figures ranging from +10 to -10, indicating the magnitude and direction of the impact or influence of the project on a given parameter.

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In ex-post evaluation = the product of : the ratio of the number of people really affected by the project to the total number of people living in the project's operational area and the ratio of the number of hectares actually treated by the project to the total area of the project's operational area.

Column 6 : Transformed values

The product of columns 4 and 5

Column 7 : Weighting Factors

Based on the set objectives, their relative importance and their order of priority, it becomes necessary, at times, to weight the force of each criterion, using a coefficient ranging between 0 and 1. The total sum of the weighting coefficient is equal to 1.

Column 8 : Contribution to the Index of Economic efficiency

It is the product of columns 6 and 7. The sum of the contributions of the different criteria is equal to the Index of Economic Efficiency (IEE).

Integrated framework for evaluation and selection of projects

project alternative (1)	social evaluation			environnemental eval.			financial evaluation			economic evaluation			integrated avaluati		choice of
	I.S.D. (2)	factor (3)	WI.S.D (4)	I.E.D. (5)	factor (6)	WI.E.D (7)	I.F.E. (8)	factor (9)	WI.F.E. (10)	I.E.E. (11)	factor (12)	WI.E.E (13)	I.D.D. (14)	ranking (15)	authority (16)

factor weighting factor (horizontal total = 1)
I.S.D. index of social development
I.E.D. index of environmental development
I.F.E. index of financial efficiency
I.E.E. index of economic efficiency
W.I.S.D. weighted index of social development
W.I.E.D. weighted index of environmental development
W.I.F.E. weighted index of financial efficiency
W.I.E.E. weighted index of economic efficiency
I.D.D. weighted index of sustained development

INTEGRATED FRAMEWORK FOR EVALUATION OF A PROJECT OR A VARIANT

Column 1 : Name and Number of the project or the project variant

Column 2 : Index of Social Development (ISD). It is the index obtained by the project or the project variant during the Social Evaluation.

Column 4 : Weighted Index of Social Development (WISD). The product of columns 2 and 3.

Column 5 : Index of Environmental Development (IED). It is the Index obtained by the project or the project variant during the Environmental Evaluation.

Column 7 : Weighted Index of Environmental Development (WIED). The product of columns 5 and 6.

Column 8 : Index of Financial Efficiency (IFE). It is the Index obtained by the project or the project variant during the financial evaluation.

Column 10 : Weighted Index of Financial Efficiency (WIFE). the product of columns 8 and 9.

Column 11 : Index of Economic Efficiency (IEE). It is the Index obtained by the project or the variant during the economic evaluation.

Colum 13 : Weighted Index of Economic Efficiency (WIEE). The product of columns 11 and 2.

Column 14 : Index of Sustained Development (IDD). It is the mean of the sum of the different indices.

Column 15 : Rating. Based on the Index of sustained Development (ISD), a rating is done by order of impact.

Column 16 : Weighted choice of the authority : the socio-economic and environmental evaluation is now ready. What remains is for decision-makers (private individuals, public authorities or institutions) to decide.

Columns 3, 6, 9 and 12 : Weighting factors of the evaluation. A weighting can be assigned to each evaluation according to the objectives and developmental priorities of the country, the project's operational area and available resources. The weight of each evaluation can be multiplied by a coefficient ranging between 0 and 1. The sum of the coefficients of the different evaluations should be equal to 1.

B/ Operating mode

It is a simple evaluation tool, and, for that matter, a means of improving upon planning. Hence, it could be utilized:

- in making findings and assessing effects and impacts;

- in comparing projected results and objectives;

- in making judgements or assessments regarding activities by determining its benefits and costs, and hence, its overall validity. Costs and benefits could be economic, financial, social or environmental. Accordingly, it helps identify uncertainties, constraints, shortcomings and, indeed, incoherences that may adversely affect the planning aimed at achieving total and sustainable development;

- satisfactorily, in decision making, in cases of urgent need for data, without having to resort to complex mathematical and financial theories, thanks to its simple form;

- to improve productivity and social conditions because indicators that it takes into consideration have an inherent capacity to foster policy reforms and strategic development programmes in the short, medium and long term.

The framework hereby proposed can be applied in two ways : a) by comparing the situation "before" and "after" the project; b) by comparing the situation "with" and "without" the project. What matters is to adapt the two to suitthe exigencies of the evaluation.

The first case requires the acquisition of databases prior to implementation of the project. Furthermore, foreseeable and upforeseeable changes should also be evaluated upon completion of the project.

In the second case, the comparison calls for the choice of a control area or group comparable to the project's area or group, followed by a comparative analysis of situations "before" and "after" the project.

That is to help determine changes that have occurred within the areas and the groups in order to identify the changes that were not brought about by the project.

C/ Limitations

The framework is in gestation, having now reached the phase of research-action. Upon completion of its formulation, there will be a need for consensus on the tool, and for a proper definition of its objectives. It would be necessary to define objectives, put them in ranking order, verify cause/effect relationship, determine the means required for attaining them,

etc. The use of the tool calls for the availability of several variants or alternatives.

In this phase, basic values are chosen on a subjective basis and this gives the one conducting the evaluation a broad latitude to manipulate the data.

The present evaluation tool has been simplified. Yet, its utilization requires recourse to such mathematical calculations as the Internal Rate of Return (IRR), Net current Value, etc. which may be beyond the reach of some technical experts.

IV. PRACTICAL APPLICATION

A. CASE STUDIES :

The governement of a hypothetical Sahelian country is being given a joint grant by the African Development Bank and the World Bank to finance An Integrated Rural Development Project in the MAB area.

The primary objective of the project is to reduce the extremely high infant mortality rate afflicting the region as a whole. Fifty pilot villages are to be selected from within the MAB area, using a random method of selection.

Upon analysis, a mission for prefeasibility studies rapidly proposed two alternatives.

Alternative one :

This alternative has four components :

1) Sinking 200 wells to provide water for the people who also face the problem of inadequate supply of potable water. The scheme will increase water supply by five litres/day/ household during the project's five-year duration. It is supposed that adequate provision of water will attenuate the high infant mortality rate by reducing the incidence of diseases and their parasites contained in pond waters ;

2) Organizing a vaccination campaign that will reach out to 10 000 people ;

3) Improving the food intake of the people through off-season farming, allocation of a mean annual monetary income of 100 000 FCFA/household to the people, creation of sixty additional jobs;

4) Developing 500 hectares of land and erecting 5 000 metres of stone bunds to help cope with the increase in population.

Alternative two

1) Technical and financial assistance for sinking 100 wells, with cement coating. Two expatriate NGO experts will be invited as volunters to assist with the work which will also require the importation of 1.5 million CFA worth of cement and iron.

2) Embarking on a literacy programme, with emphasis on the health and nutritional problems suspected to be directly linked with the high infant mortality. Plans are one also made for a training programme requiring infrastructural facilities for the establishment of a village chemist shop.

3) Initiating an agricultural loan scheme to enable peasant farmers to step up production by purchasing seeds, fertilizer and

insecticides (yielding an additional monetary income of 40 000 FCFA/household/annum).

4) Reforestation of 100 hectares of land.

This Alternative is expected to create 30 permanent jobs.

At the national level, five Ministers are all highly interested in administering this project which carries a very high prestige, needless to mention the substantial financial resources involved.

In the opinion of the Minister of Health, the project is basically health-related and should be under his Ministry.

The Minister of Rural Development thinks, for his part, that the project should operate directly under the Agricultural Service of his Ministry.

The Minister of Environment's argument is that the Reforestation component of the Scheme is of great importance, hence the need to assign the project to the Forestry Service under His Ministry.

Finally, the Minister of Social Welfare came to state publicly that since the scheme is an Integrated Rural Development Project and since all components thereof contribute fowards the objective of reducing the mortality rate, it is only logical that His Ministry, which is in charge of Local Level Extension and Training activities, should run the project and coordinate the efforts of the other Ministries.

Representatives of both the African Development Bank and the World Bank came to realize that the "battle" among the different Ministries was causing undue delay to the conduct of the necessary project evaluation and was actually posing a threat to future efforts. The issue created the additional task of ensuring that there is no protracted delay in implementation, should they decide finally to finance the project.

Following discussions with the Chief of the area, the President of the Republic decided that a neutral, competent and multi-disciplinary team be set up to see to the conduct of the evaluation, help to make a choice between the two Alternatives and make the necessary recommendations.

B- SOLUTION

Alternative A

Framework for social evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to ISD (8)
Drinking water	nbr.litr/d/hsehl	5	4	1	4	0,3	1,2
Health situation	nbr.pers.vaccina	10000	7	1	7	0,7	4,9
					0		0
					0		0
					0		0
Index of Social Development - I.S.D.						1	3,05

Framework for environmental evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IED (8)
Soil quality	nbr.ha.recuperat	500	5	1	0,5	0,3	0,15
Soil protection	m..of bunds	5000	6	1	0,5	0,7	0,35
					0		0
					0		0
					0		0
Index of Environmental Development - I.E.D.						1	0,25

Framework for financial evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IFE (8)
Profitability	Intern.Rate o.Re	14	8	1	8	0,4	3,2
Monetary income	FCFA/y/pers.	100000	9	1	9	0,6	5,4
					0		0
					0		0
					0		0
Index of Financial Eficiency - I.F.E.						1	4,3

Framework for economic evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IEE (8)
Employment effec	nbr. employed	60	1	1	1	0,5	0,5
Balanc.o.payment	NAV h.curr.FCFA	-30000	-3	1	-3	0,5	-1,5
					0		0
					0		0
					0		0
Index of Economic Efficiency - I.E.E.						1	-0,5

Alternative B

Framework for social evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to ISD (8)
Drinking water	nbr.litr/d/hsehl	5	4	0,75	3	0,6	1,8
Alphabetisation	nbr.pers.alphabe	2000	1	0,75	0,75	0,4	0,3
					0		0
					0		0
					0		0
Index of Social Development - I.S.D.						1	1,05

Framework for environmental evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IED (8)
Soil protection	nbr.ha.reforest.	100	6	1	0,5	1	0,5
					0		0
					0		0
					0		0
					0		0
Index of Environmental Development - I.E.D.						1	0,5

Framework for financial evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IFE (8)
Profitability	Intern.Rate o.Re	10	-2	1	-2	0,2	-0,4
Monetary income	FCFA/y/pers.	40000	4	0,75	3	0,8	2,4
					0		0
					0		0
					0		0
Index of Financial Eficiency - I.F.E.						1	1

Framework for economic evaluation							
criteria (1)	indicators (2)	value indicators (3)	score<>0 -10<s<10 (4)	correction 0 to 1 (5)	tr.formed values (6)	weighting fact.0 to1 (7)	contribut. to IEE (8)
Employment effec	nbr. employed	30	2	1	2	0,5	1
Balanc.o.payment	NAV h.curr.FCFA	-15000000	-6	1	-6	0,5	-3
					0		0
					0		0
					0		0
Index of Economic Efficiency - I.E.E.						1	-1

Integrated framework for evaluation and selection of projects

project alternative (1)	social evaluation			environnemental eval.			financial evaluation			economic evaluation			integrated avaluati		choice of authority (16)
	I.S.D. (2)	factor (3)	WI.S.D (4)	I.E.D. (5)	factor (6)	WI.E.D (7)	I.F.E. (8)	factor (9)	WI.F.E. (10)	I.E.E. (11)	factor (12)	WI.E.E (13)	I.S.D. (14)	ranking (15)	
A	3,05	0,3	0,92	0,25	0,3	0,08	4,3	0,2	0,86	-0,5	0,2	-0,10	0,44	1	1
B	1,05	0,2	0,21	0,5	0,4	0,20	1	0,2	0,20	-1	0,2	-0,20	0,10	2	2

factor	weighting factor (horizontal total = 1)
I.S.D.	index of social development
I.E.D.	index of environmental development
I.F.E.	index of financial efficiency
I.E.E.	index of economic efficiency
W.I.S.D.	weighted index of social development
W.I.E.D.	index of environmental development
W.I.F.E.	weighted index of financial efficiency
W.I.E.E.	weighted index of economic efficiency
I.S.D.	weighted index of sustained development

C. COMMENTS

We assume, for our present purposes, that the set objectives of the project are attained and that all the people living in the projects operational area are directly or indirectly affected by the project's activities. That implies a correction factor of "1" for the different criteria.

FRAMEWORKS FOR EVALUATION

Framework for Social Evaluation

A few examples :

- The criteria of "Supply of Safe drinking Water" : the project contributes an additional 5 litres of safe drinking water per day per household.

The evaluation team will assign a value ranging between + 10 and -10 according to the set objectives, the situation of the area and their own experience. We assume, for the purpose of our study, that the score assigned is 4.

- Criterion of "Health" : the vaccination of 10 000 people is considered as a highly positive achievement in view of the present health situation of the people within the area. The evaluation team therefore assign a score of 7.

The evaluation team, in consultation with technical officers in the area and the local level authorities, fixed a weighting factor of 0,3 for potable water and 0,7 for vaccination.

The Index of Social Development is therefore equal to : (4*1*1*)* 0,3 + (7*1*1*)* 0,7 = 6,1 : 2 = 3,05.

That represents the mean contribution of the different criteria to the Index of Social Development (ISD).

The same reasoning applies to the frameworks for environmental, financial and economic evaluation and to alternative B.

Integrated Framework for evaluation

This in an aggregate of the various evaluations. In this regard, the value obtained in each evaluation is corrected using a weighting factor before being incorporated into the overall evaluation. This factor depends on the magnitude of the evaluation and the operational area (national level).

The index obtained is the mean of the contributions of the different evaluations. The index helps to make a rating and a choice among the different variants (alternatives) or projects.

CONCLUSION

This document has presented a tool which decision-makers, planners, and technical experts can utilize in data collection and analysis, in the measurement of project's effects and impacts and in choice-making, based on a monitoring and evaluation endeavour which incorporates economic, financial, social and environmental considerations.

A satisfactory evaluation and monitoring activity should demonstrate the probable impact of a project on the development objectives being pursued, by comparing the various means by which scarce resources could be utilized (ex-ante evaluation) or by analyzing the results (ex-post evaluation) achieved by the projects.

The analysis should determine whether the selected option is the best from the point of view of size, technique, location and, last but not least, the final beneficiaries and the quality of the output. The analysis should demonstrate that the project selected will offer the economy a greater net gain as compared to any other option.

There is no gainsaying that the effects of rural development project are numerous, interdependent and of diverse magnitude (primary effect, secondary effect, etc.). Some of the effects are perceptible only in the medium or long term (eg. replenishment of water tables); some other effects are not felt in the project area but elsewhere (eg. limitation of damages).

There is another crucial problem in the determination of effects : the problem of time dimension. The truth is that to acquire reliable data, measurements should be made over a number of years, often exceeding the duration of the project.

The proposed framework is in the launching phase. Reasearch activities will be conducted in the different ecological zones and sectors of CILSS countries in order to refine it and adapt it increasingly to suit the different contexts.

A N N E X E S

ANNEX 1. INDICATORS

These criteria are to be selected according to the nature of the project and the objectives being pursued. The following list is presented only on an indicatory basis :

ECOLOGICAL INDICATORS

Elements considered	Domain of application	Indicators in terms of units of measurement
WATER	Surface water, potable water, rain water	- n° of litres/inhabitants/day - av. distance up to water point - water quality - n° of ponds, lakes, etc. - capacity - etc.
	Run-off water	- mode of devpt. of drainpipe - natural land area improved - n°, acreage and capacity - area artificially developed - etc.
	Ground water	- relative level of water tables - salinity or salination - n° of boreholes and wells/ inhabitant - meshing density of network - capacity of water hole
	Water quality	- depth of water table - permeability (soil infiltration) - catchment quality - servicing of water equipment - state of cleanliness - taste - presence or absence of pathogens - water aggressiveness (on metals, crops) - aeration
SOILS	Soil productivity	- trend of crop yield - influence of organic manuring on soil structure - fallowing - duration - crop rotaton on bilogical basis

ECOLOGICAL INDICATORS (contd.)

Elements considered	Domain of Application	Indicators in terms of units of measurement
SOILS (contd.)	Water retention capacity of soils	- rate of infiltration - slowness of water flow - productivity per unit area - water balance
	Other characte-ristics	- rate of resilience/vulnerability - soil aridity - wind/water-born carriage - acidification - traces of toxic elements or compounds - porosity - density - humus content and trends - soil profile - mechanical resistance - velocity of flow of run-off water - land clearing and pressure on marginal lands - duration of bareness of soils (absolute or seasonal) - plants indicative of desertifi-cation (or "sahelization" in the south) - number and quality of SDR projects - yield - time and duration of soil bareness - vegetation index and its trends - flora composition - productivity of biocoenosis and agrobiocoenosis - stability and erosion resistance (reduction of wind-borne carriage) - field capacity of soil - soil infiltration - degree of micro-biological activities - content of organic matter, clay, loam - percentage of land under fallowing - scientific rotation of crops
FLORA	Land clearing	- trends of the percentage of forest and vegetative cover - stabilization of erosion - soil fertility level - outings for fulwood collection and distances covered in the process

ECOLOGICAL INDICATORS (contd.)

Elements considered	Domain of Application	Indicators in terms of units of measurement
FLORA (contd.)	Bush-fires	- area of fire-burnt land - rate of evolution or annual regression - flora composition - vegetation index - fire-outbreak frequency and annual trends
	Over-grazing	- trends of vegetative cover - animal feeding capacity and trends - density or percentage of trees pruned per unit area - acceleration or deceleration of artificial erosion processes - change in flora composition or phyto-sociologigal dominance relationships
	Improvement of vegetative cover	- type of vegetative forest cover - area covered or the equivalent - rate of coverage compared to the total acreage of the impact area - percentage of regeneration - etc.
FAUNA	Assessment of protection, conservation and trends	- suppression, reduction or cessation of the issuing of hunting permit - limited issuinf (seasonal) in the year - complete cessation of hunting in the area - creation of appropriate conditions for fauna reproduction - creation of zones strictly forbidden to human entry - rate of collection - cessation of the expansion of farm lands and the pressure on marginal lands - bush fire trends - over-grazing - trespassing on lands reserved for herds, or straying of the herds beyond the area reserved for them - n° and acreage of parks and protected areas - trend of number of species and their reproduction rate - reconstitution of animal nutrition processes

ECOLOGICAL INDICATORS (contd.)

Elements considered	Domain of Application	Indicators in terms of units of measurement
FAUNA (contd.)	Assessment of protection, conservation and trends	- resettlement of the endangered animal species in very remote areas or under the protection of animal guards (ie. active protection of last species) - density - reconstitution of animal inhabitants - biotope preservation - introduction or re-introduction of species - animal resettlement - rate of destruction - size of animal population and structure - banning of hunting trophies for endangeral species - presence and, more importantly, percentage of young animals compared to adults
	Production	- Size of herds - composition - structure - ponderal trends - distance and duration of transhumance - state of pasturelands - density - productivity of pastureland - rate of reproduction - livestock-breeding methods (sedentary breeding, discarded transhumance, etc.).

SOCIAL INDICATORS

Elements considered	Domain of Application	Indicators in terms of units of measurement
ECONOMIC AGENTS	Plant and animal production	- output per product - cereal and food available for each inhabitant - livestock population in the area including the animals of peasant farmers, herdsmen, etc. - description of the impact of transhumance on the project area (animal population involved, transhumance,dates, watering places, etc.) - trends of pasturelands and water holes - trends of farm-produced fodder resources - marketing and trading methods
	Incomes	- income sources and levels (from farming, livestock breeding, crafts and trades, trading, temporary salaried work) - income consumption patterns - appropriation and destination of harvests - number of jobs
	Social differentiation	- distribution (frequency analysis) per farm unit (or per household or family unit) . total area . cultivated area . part consumed by producer himself . part sold . net income - variations in social status (land owners,"landless" peasant farmers, salaried workers, owners of means of transport, processing plants or storage facilities) - estimates of amounts and form of surpluses directly collected from producers (for whom is the collection made and how is the amount collected utilized ?) - division of tasks and decision-making bodies among farmers - resources of the people - external technical assistance

SOCIAL INDICATORS (contd.)

Elements considered	Domain of Application	Indicators in terms of units of measurement
ECONOMIC AGENTS (contd.)	Health	- enrolment rate in primary schools, secondary schools, universities - mortality/morbidy rate
	Project's reaction	- proportion of population informed about the project - awareness - proportion of population informed about the objectives and the real interests of the project - proportion of the population that are aware of least one activity of project - percentage of different forms of perception of the project
	Commitment and involvement	- rate of acceptability - rate of homogeneity - rate of confidence - rate of adoption - rate of replication possibilities - sustainability of works - number of local organizations formed - number of servicing contracts signed

FINANCIAL INDICATORS

DOMAIN OF APPLICATION	INDICATORS IN TERMS OF UNITS OF MEASUREMENT
- Net up-dated value	
- Cost/Benefit Ratio (C/B)	
- Internal Rate of Returns (IRR)	
- Returns Threshold	

ECONOMIC INDICATORS

DOMAIN OF APPLICATION	INDICATORS IN TERMS OF UNITS OF MEASUREMENT
Economic impact of project	- Rate of economic integration $\frac{\text{Value added}}{\text{Turnover}}$ - National advantage derived from the project - $\frac{\text{Local value added}}{\text{Value added}}$
Impact of balance of payments	- Net current value of foreign exchange flow
Mobility of fund invested (risk)	- Time-limit for recovering the funds
Effet on public finance	- $\frac{\text{Updated value of taxes}}{\text{Updated value of investment}}$ - Updated value of receits minus recurrent costs - updated value of investments
Effect on job creation	- National employment generated per unit of capital invested $\frac{\text{Total of national employment}}{\text{Value of investment}}$ - Qualified jobs generated per unit of capital invested $\frac{\text{Total qualified jobs}}{\text{Value of investments}}$ - Non-qualified jobs generated per unit of investment $\frac{\text{Total non-qualified jobs}}{\text{Value of investments}}$ - Qualitative evaluation of project impact on employment in allied activities
Social effects	- Salary distributed per unit of capital invested : Updated value of local staff expenditures divided by the updated value of investments

ECONOMIC INDICATORS (cont.)

DOMAIN OF APPLICATION	INDICATORS IN TERMS OF UNITS OF MEASUREMENT
Profitability and efficency of investments	- Net current value - Net current economic value - Efficiency of expendtures made in foreign exchange Updated local value added Net current value of foreign exchange
Economic effects of indirectly profitable projects	- Quantitative evaluation of the development of economic activities brought about by the Project

ANNEX 2.

To make take a complete and efficient evaluation, it is necessary, first and foremost, to stock of data and, thereafter, to define additional needs, prepare a questionnaire suiting the set objectives and, finally, to conduct a survey on a representative sample, using the questionnaire.

A complete and efficient evaluation will also require that a meeting be held, bringing together all parties concerned (evaluation team, donors and beneficiaries), to clarify the objectives of the project and evaluation and to ascertain the expectations of each and every one.

We propose the following guidelines for data collection :

a) Information on project activities

These information are on the following aspects :

General information

* Project title
* Executing agency
* Total investments
* Funding sources
* Duration of project operations
* Total area covered by project
* Number of persons affected by project.

Project sector

NB : If it involves an integrated rural development project, indicate the activity or categories of people most closely associated with the project :

- irrigated farming
- rain-fed farming
- village water supply
- animal water supply
- fishing and fish farming land
- reforestation and development
- pastureland development, management of animal routes
- animal/livestock production
- transport and
- parks development fauna protection
- marketing/cooperatives
- Education/manpower development
- mineral resources
- industrial development
- planning/feasibility studies, etc.
- others

- Project objectives and charateristics

Give a brief summary of the following types of information:

* Major activities of the project (for example, creation of village nurseries, tree-planting on plots of land, or intensified production of cereal, pastureland regeneration, etc.);

* Secondary activities (for example, production and marketing of gum arabic, introduction of fodder cropings, harvests conservation and storage, etc.);

* Project contribution (eg. by way of training, provision of equipment, vehicles, revolving fund, etc.);

* Results, goals and risks of the project (for example, the number of workers trained, hectares planted, area of land protected, kilogrammes of fodder produced, viable method of organization established, etc.);

* Benefits (eg. increase in the production of beanpoles, fuelwood and gum arabic, improvement of crop yield, reduction of soil erosion, reduction of harvesting and post-harvest losses, etc.);

* Cost (local costs, recurrent costs and aid requested; other "cost" in terms of adverse impact on the population.

- Project's relations with the Sahelian development priorities in the Sahel

CILSS member states have adopted a regional desertification control strategy for sustainable development :

* explain how the project fits into the following development priorities :

. natural resources management for sustainable development

. food crops and foods security policies

* explain how the project influences and controls these factors;

. degradation of vegetative cover resulting from deforestation, acquisition of fuelwood, clearing of land for farming, over-grazing or indiscriminate bush-burning for hunting, land clearing of land, improvement improvment of pasturelands, etc.;

- introduction of cash crops and increase in the pressure of marginal croplands, reduction of the duration of fallowing periods and of soil fertility;
- excessive flow of rain water and drop in the levels of water tables;
- soil compacting and erosion (possibly associated with farm mechanization);
- creation of new water holes without controlling their use;
- concentration of or increase in livestock population densitites;
- break-down of the traditional system of land-use and soil fertility maintenance (fallowing);
- interference with transhumance and nomadic patterns.

Reference situation

This refers to the initial situation prevailing prior to the implementation of the project. This general information concerns all types of development projects and pertains to :

Project location

* indicate the exact location of the proposed project and its operational area or impact area;

Rainfall

* indicate annual rainfall in mm at intervals of :

  - 100
  - 350
  - 600
  - 1000

* Draw a table of rainfall distribution in time and space over the past 10 years

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N.B. It will be helful to attach a large-scaled map of the project's area (scale 1/10000 or 1/50000), especially if the area is characterized by substancial variations in vegetation, topography, soil types, ethnic-based farming pratices and spatial distribution, etc.

Population

* Indicate population size in the project area itself:

Ethnic group	Approx. figure	Major activities

* Draw a table of population size and structure (age, sex, etc.) over intervals of 10 years.

* Indicate the recent rate of immigration and emigration.

Socio-cultural considerations like :

* Modes of cooperation among ethnic groups or communities ;

* The powers of institutions, decision-making, traditional and social structures, etc;

* Popular participation through population segments or groups (women, children, etc);

* Attitude of the people to health and environmental issues

Other ongoing development projects

It should begin with a brief description of the project's area and an itemization of major previous or ongoing projects that could have some interaction with the proposed project.

Project title	Objectives	Funding Level	Funding Source(s)	Activities	Regions and people involved

Analysis of the causes of failures and successes of other similar projects

System of ownership or usage of resources (water and land) and the legislation governing their management

Information needed for the study on possible interferences;

Provide information for each of the following :

- Water resources

  * Indicate the main sources of water supply in the dry and rainy seasons for the users stated in the following table :

Users	Ground water table, wells	Cost	Surface water ponds, dams	Cost
Man				
Livestock				
Agriculture				
Fauna,Forest				
Fish Farming				

  * Indicate the qualitative aspect of water sources (be they potable or not) and improvement and investment activities affecting water quality ;

  * Describe the relative numerical availability of the various water sources in the zone : ponds, dams, rivers, natural lakes, traditional wells, cemented wells, boreholes, etc.;

  * Indicate the average distance covered by the people living in the project's impact area before reaching a dependable source of water : at the end of the dry season and in the middle of the rainy season ;

  * Indicate the average depth of ground water table within the neighbourhood of the project area : at the end of the dry season and in the middle of the rainy season ;

  * Prepare a table on annual variation of the discharge of water sources.

- Health

* Indicate the predominant diseases and the seasons during which they occur ;

* Major causes of deaths ;

* Number persons / medical officer/nurse/midwife/traditional birth attendant, in the project's impact area (and possibly the importance of traditional healers) ;

* Indicate the number, distribution and facilities of dispensaries and other community health services and structures in the project's impact area.

- Socio-Economic infrastructure

Describe the current situation of the administrative regions or departments within the project's impact area, with regards to:

* The transportation system : kilometers of roads that are motorable all year round ; relative, seasonal or permanent isolation of the whole or part of the project's impact area.

* Schools : rate of school enrolment per sex; literacy rate (regardless of language);

* Describe marketing and supply infrastructure and channels : for cattle, plant products, farm equipment, equipment for allied agricultural activities ;

- Land-use :

Indicate :

* Acreages and yield in the past 10 years ;

* Exploitable potential in the rainy season and the dry season ;

* The distribution of lands utilized for food crops, cash crops and livestock breeding ;

* The distribution of farms per unit area, number of farms per family, average duration of the fallowing period (at present or at different times in the past);

* Absorption capacity of and access to land (agriculture, livestock breeding, forestry) ;

* Tree sizes and structure over the past 10 years ;

* Soil charateristics;

* Soil fertility : does erosion pose a significant problem ?

* Means of soil fertility regeneration (chemical or organic fertilizer, etc.).

- Livestock

* Livestock population per species (cattle, sheep, goats, camels, etc.);

* Livestock ownership system;

* Herd movement : short or seasonal transhumance, longer or inter-regional migration (nomadism);

* Indicate, if possible, the average distance covered daily by the herds before reaching pasturelands and water holes, in the early and middle part of the rainy season;

* Indicate the diseases that have posed problems in the past, and the magnitude of the diseases in past decades ;

* Indicate, where appropriate, clashes or competition between wild animals and domestic animals over the use of pasture resources.

* Livestock exploitation for milk, meat, etc.;

* Pastoralists organizations.

- Vegetative cover

* Fill in the following table with maximum precision. There is no need for a detailed vegetational map or for any indepth survey.

Type of vegetative cover	Characte-ristics	% Area of project	Density or % of cover	Major wood species trees/shrubs	Herba-ceous cover

- Energy

Indicate :

* Fuels currently utilized and trends of utilization over the past 10 years;

* Availability and accessibility of each source of energy (wood, cow-dung, gas, etc.);

* Forestry legislation

* Average distance up to the main sources of energy supply and time spent in the collection and transporting of fuelwood utilized by an average family in a week _____hours/week/family;

* Price per unit of measurement and trends in the past 10 years.

- Topography

* Express in percentage terms the portion of the project's area having the following slopes :

. flat land _____ %

. nearly flat land _____ %

. gentle slope _____ %

. moderate slope _____ %

. steep slope _____ %

. sharp/rocky escarpment _____ %

Where :

. flat land is defined as a slope of less than 1 %

. nearly flat land is defined as a slope of between 1 and 2 %;

. gentle slope is defined as a slope of between 2 and 5 %

. moderate slope is defined as a slope of between 5 and 10%;

. steep slope is defined as a slope of between 10 and 25%;

. sharp/rocky escarpment is defined as a slope of over 25%.

- Fauna, fishing and mineral resources

* Enumerate all the protected zones within the project's impact area;

* Fill in the table below, indicating the species likely to be the affected by the project (distance from the project area will vary with the species), underline all species existing within the project area.

Animal species	Frequen-tly found	Occasion-ally found	Rarely found	Population estimate	State of habitat

* Indicate the special habitat needs of rare animal species;

* Briefly describe the importance of local fishing within the project area or its neighbourhood.

- Functional and institutional structures and relations

* Governmental rural development agencies : operational budget, activities, personnel, expansion of extension services;

* Non-Governmental Organizations (local structures, communities, foreigners, etc.);

* Training (level of training, qualification, etc.).

- Existing systems and mechanisms for recouping costs in the different sectors (health, water, education, etc.

- Employment situation and volume

Indicate :

* Employment type and volume;

* The periods or seasons for such employment;

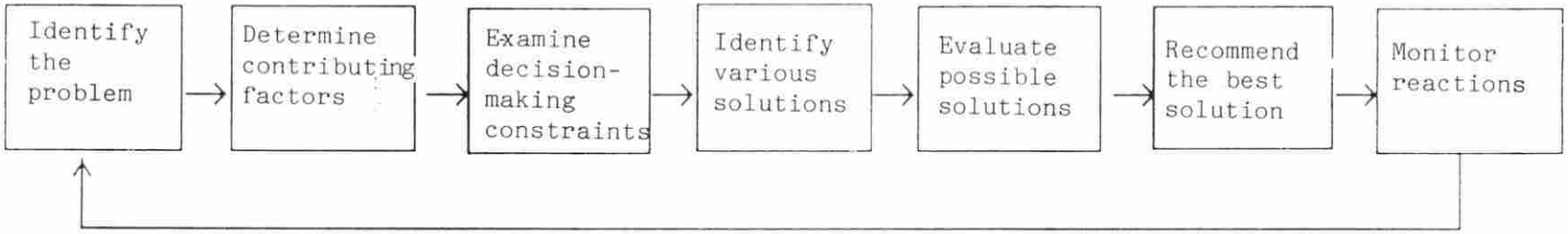
* Earnings.

- Agro-sylvo-pastoral integration

* Overview of development activities;

* Capacity of rural or nomadic farmers and herdsmen to sustain production and to meet their needs during periods of sub-normal rainfall (survival strategies).

Stages for the solution of a problem through analysis



Source : D. Casley and Krishna K, Monitoring and evaluation of agricultural project, Economica, 1987.

ANNEX 3. REVIEW OF CONCEPTS

A/ Review of Concepts

The emergence of monitoring and evaluation as a discipline came as a relatively new phenomenon in develoment analysis and planning in newly-independent Africa. While the notion of "monitoring" is as old as that of management, the emergence of the concept of evaluation dates back to only the early 1950s. Since then, the idea has been evolving slowly but steadily. Both donors and developing countries are increasingly realizing the importance of monitoring and evaluation as an invaluable tool or instrument for the efficient management of projects or programmes. This realization has special relevance for the desertification control process because the impact of the implementation of the said projects and programmes may trigger off disastrous or even irreversible situations that could pose extremely insurmountable obstacles to development; unfortunately, that is the situation in which Sahelian countries seem to find themselves today.

Monitoring and evaluation may appear to be an obvious concept. However, it is our conviction that a brief consideration of the two concepts is important, at this stage, to help broaden our understanding of the framework for socio-economic evaluation.

Monitoring is the continuing or periodic review and observation exercise conducted by management at every level of the pecking order to ensure that inputs delivery, work programmes, attainment of expected output and other necessary activities are proceeding according to plan.

Monitoring aims to ensure effective and efficient performance of the project by providing, at every level of the pecking order, back-up information that enables project officals to improve operational plans and, where necessary, to take appropriate steps to fill existing gaps in the project's implementation. Monitoring, therefore, forms an integral part of the information system within a project, and constitues an internal activity. Monitoring, a precondition for sound management, should be conducted by those assigned, at different managerial levels, to the execution of either a programme or project.

Evaluation is an operation aimed at determining, most systematically and objectively, the pertinence, efficiency, effect and impact of activities vis-à-vis the set objectives.

It is an organic process meant to improve ongoing activities and to assist management in its future activites in planning, programming and decision-making(1

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(1) "Pre-evaluation" as distinguished from "evaluation", is a critical and prior evaluation of the relevance, feasibilty and potential efficiency of an activity. It is thus carried out prior to the decision to undertake the activity or to approve allocation of funds to it.

Evaluation, considered in the context of anti-poverty rural development project, is aimed at assessing positive and negative impacts; in other words, the immediate and long term objectives and the impact on beneficiaries classified preferably into income groups. The point at issue is to determine the group that gained (or lost) from the activities, the magnitude of the impact compared to the pre-existing situation, the nature of the impact (direct or indirect) and the cause (ie. a maximum attempt to establish the relationship of cause and effect between the activities and their results).

Whereas monitoring is only effected while the project is under execution, evaluation for its part, is made :

1) in the course of execution (continuing evaluation);

2) at the end of the activity (terminal evaluation);

3) some years after the end of the activity, when its impact (long term objectives) is expected to be fully realized (retrospective evaluation).

Continuing evaluation consists in analyzing, in the implementation phase of an activity, the extent to which the said activity maintains its relevance, effectiveness and efficiency and what should be the expected output, the effects and the present and foreseeable impact. It could be of service to policy-makers by giving them information as to adjustments needed to be made in objectives, policy implementation strategies, etc., and by providing them with advice for their future planning activities.

Continuing evaluation involves determining whether the postulates or assumptions made during the project formulation/pre-evaluation stage are still valid or whether some modifications need to be made before the overall objectives could be attained. It could be, for example, that the assumptions which served as a basis for conceptions had been inaccurate, that unforeseen, external or internal factors necessitate the reconsideration of initial assumptions or that the objectives themselves call for a re-definition of efforts or the re-orientation thereof, on account of the experience acquired since the commencement of the activity.

Terminal evaluation is made six to twelve months after the completion of the project, either as a substitute for retrospective evaluation of projects with short-term management (eg. rural loans projects, agricultural extension projects) or before proceeding to the next phase. This raises a problem when it comes to applying it in order to evaluate the impact of projects and programmes on the environment.

Retrospective evaluation takes place some years after the completion of the project when the full impact is expectedly achieved. This assertion raises two uncertainties : a) the uncertainties connected with the time when the evaluation should be made ; b) the uncertainty as to the time when the full impact should be achieved.

Terminal and retrospective evaluations pursue a dual objective:

1. Evaluating the extent to which the overall results of the project have been obtained in terms of outputs, effects and impacts;

2. Drawing lessons pertaining to the design, formulation, pre-evaluation, execution, monitoring and evaluation of future development projects.

Evaluation should therefore be considered as a process of learning. The process of national development and, particularly rural development, is a largely unexplored field in which planning officials and decision-makers still have a lot to learn about the dynamic of rural societies. "The evaluation process often leads to a better understanding of activities evaluated and a more constructive approach to the execution of the said activities and to any other action that may be deemed necessary for the future".

Monitoring and evaluation are both tools for analysing the data and relevant sources of information needed for decision making. Administrative reports such as activity reports on physical and financial inputs and outputs supplemented by indepth surveys or analyses of prevailing difficulties, may provide basic data for monitoring.

Monitoring analyses supplemented with other indepth studies will provide basic information for continuing evaluation. The two processes, supplemented with further data on socio-economic conditions and living conditions of beneficiaries before and after the project will, together, provide basic information for retrospective evaluation.

Monitoring and evaluation are therefore inter-dependent processes which combine to form a unified system.

B/ **Measurement and evaluation of project's effects and impacts**

Based on the conclusion that a project is justified judging from the qualitative changes it would make in the social, economic and environmental conditions of their beneficiaries, it is indispensables to be able to assess and evaluate systematically their effects and impacts.

1) Assessment of effects

The effect of a project, as utilized in this paper, refers to the expected results, eg, increase in productivity or improved regeneration of vegetative cover prompted by a rural development project.

Since these assessments are closely related to the very management of the project, it will be necessary to ascertain the use and objectives of the assessment.

2) Impact analysis

Impact, as utilized in the document, refers to changes effectively made in the living conditions of beneficiaries.

Improvement of living conditions is the ultimate objective or goal of most projects. Hence, there is a need to ascertain, for the purpose of the evaluation and subsequent planning exercises :

- whether or not conditions have been improved;
- if any eventual changes can be attributed, partly or fully, to the project instead of other causes.

Preference is given to the use of the word "evaluation" instead of "measurement" since the idea is not to effect a precise and absolute measurement but rather "to assess relative changes" resulting from the implementation of project.

Fundamental issues which the impact analysis of a project should address are :

- the determination of the socio-economic situation (income, living standard , etc.) of the target group ie whether it has been changed significantly by the project;
- whether the change is positive or negative;
- the magnititude of the change;
- the reasoning behind the change (causal relation).

ANNEX 4.

B/ OVERVIEW OF EXISTING EVALUATION FRAMEWORKS

A project's feasibility is generally determined through economic and financial evaluations. These types of evaluations do not take account of some important factors like variations resulting from degradation or conservation of soils, productivity...

It will therefore be more realistic and, indeed, helful to make a complete evaluation that goes beyond the present approach of cost/benefit analysis to apprehend all the social and environmental factors.

Besides, it must be admitted that in the current state of researches, there is no ready-made method that can be applied to meet the economic, financial, social and environmental criteria for evaluating the type of projects carried out in desertification control. From the economic and financial points of view, there has yet to be an unanimous agreement on certain evaluation methods. This subject has been generating continuing polemic and in spite of some measure of agreement over the objectives and the underlying theoretical bases for each method, a definitive conclusion has yet to be reached on the matter.

Under the circumstances, each agency or research bureau tries to make its economic evaluation of projects according to its own perceptions and order of priorities. Many different methods are thus utilized and the most important among them have already undergone application and are well documented. These are the reference price methods (particularly the OECD method, and the UNIDO method) and the "effects" method originating from France.

Instead of an indepth presentation of the various methods, this paper will only make an overview of existing ones, and highlight their impact on projects.

- Economic analysis methods

Cost/Benefit analysis (CBA)

This method is applied to quantify, using a given currency unit, the total cost and benefits generated to a community by an investment alternative.

Examples of a project's costs and benefits to the commun

BENEFITS	COSTS
Job creation	Pollution
Income distribution	Drop in fiscal revenue
Manpower training	Repatriation of profits abroad
Technical innovations	
Foreign exchange savings	

1) The reference price methods

The reference price methods have, since long, been,the preserve of bankers who utilized them as an analytical base grounded on financial analysis. In other words, a project is approved if its benefits exceed its costs.

Many attempts were made to apply the method until the reference price movement was widened with the OECD publication of Volume II of the method, written by Little and Mirrlees (Handbook for Analysis of Industrial Projects in Developing countries) and with the publication of the "UNIDO Guidelines".

These two methods (UNIDO, IBRD and OECD) are referred to as reference price methods owing to their similarities in the application of current value as a project evaluation criterion. Furthermore, they tend to shift to the use of virtual prices or reference prices instead of the market price.

However, there are some seeming and rather intangible differences between the two methods.

- The OECD method (Little, Mirlees)

The OECD method emphasizes consumption maximization through a model relating to saving and investments, whereas the UNIDO method aims et total consumption.

In other words, under the OECD method, project selection should be used to generate savings. Other objectives of the method (income distribution, employment, etc.) are only of subsidiary significance or are implicit. To this end, it enhances the value of cost/benefits at international prices. Value enhancement is immediate for international goods while, for national goods, the local prices are converted into internatioal prices by using conversion factors. The project is thus incorporated into the global economy and only the projects that prove to be internationally competitive have an advantage. Moreover, "the objective" function is analogous to the principles applied in profit maximzation of enterprises.

This implies that the method is based on the following principles that :

- international price is for input and opportunity cost of foreign exchange for output

- applicable interest rate = updated interest rate

- wage rate = opportunity cost of labour

- The UNIDO method (Margin Dasgupta, Pearce)

The UNIDO method, for its part, aims at optimal use of resources to help step up Gross National Product based on a concern for equity and social justice which are achievable through the re-allocation of incomes to reduce the inequalities characteristic of developing countries.

Instead of seeking to attain maximum efficiency and equity, the concern of the UNIDO method is for an optimum balance of efficiency/equity.

It has two basic characteristics :

- it uses local prices by re-evaluating international prices which are determined by using a reference exchange rate;

- it takes into consideration increases in total consumption as the main objective of project evaluation.

In other words, the method considers consumption as the ultimate goal of investment, meaning that investment is made for the purpose of consumption. Even so, there are other allied objectives like re-allocation.

Hence, once the objectives are identified and weighted, the method is basically limited to :

- the identification and calculation of direct and indirect costs of total consumption;

- the calculation of reference prices most significant for decision making;

- estimation of the social rate of updating and the relative weight to be assigned to the net benefits accruing to the various groups in the economy.

IBRD Method (Squire, Van der Tak, Gittinger)

The method takes into account the project's impact on the distribution of income :

- over investment and consumption
- among the riCH and the poor

In addition to the efficiency price (international price), the method advocates the introduction of collective prices (weighted prices expressing income distribution) as reference price.

The effects method

This method, implemented under the auspices of the French Ministry of Cooperation, was first, applied in Morocco around 1950.

Thereafter, the approach was used in Italy and Algeria (1956-1957), but there is no certainty whether much inspiration was drawn from the method which is now spread worldwide (see Marc Chervel and Michel Le Gall, Handbook for Economic Evaluation of Projects : Effects Method). It is an ex-ante macro-economic evaluation method and of Keynesian inspiration.

The effects method consist in assessing the overall effects of a project by analyzing the increase in overall value added (ie project's contribution to net increase in gross domestic product) and how it is distributed among the different groups identified in national accounting.

The method identifies different effects :

- Investments stimulate imports and generate value added (direct primary effects) ;

- Domestic consumption leads to an increase in value added, upstream and downstream of investment (indirect primary effects) ;

- Income re-allocation prompted by investment creates muliplier-induced effects (Secondary effects).

All in all, an investment project brings about :

- costs in foreign exchange
- induced national savings
- revenue to the States

The sum total thereof helps to make a judgement on and comparison between financing proposals.

In the assessment of effects, the input-output analysis method is applied. That brings us to three types of calculations :

1. Calculation of the differential for assessing the benefit of a project ;

2. Calculation of Social cost ;

3. Comparison between the differential and social cost.

The comparison of social cost with the value added differential expresses the project's cost/benefit ratio from the point of view of the national economy, in the effects method.

Comparative Analysis of the two methods : Reference Price, Effects Method.

The Effects method has always been compared to the Reference price method. The two types of methods share common objectives but have different approaches. Hence, some of the most important issues to be solved especially those directly relevant to us are left hanging in the balance.

These methods do not respond directly to our concern inasmuch as they fail to take account of all social and environmental aspects. None-the-less, the analytical approach they propose can be used as a model in both the design and utilization of the evaluation framework which is the subject of the present discussions.

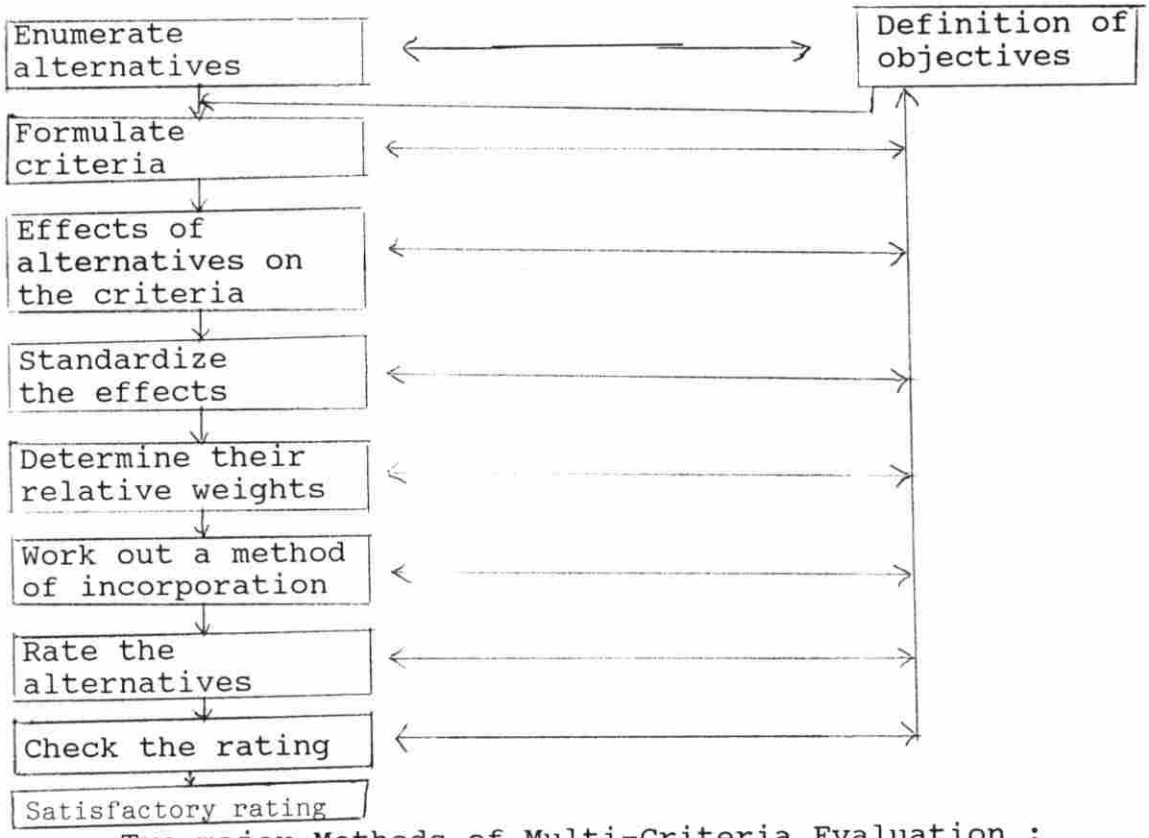
The two methods provide a common framework for evaluation. They go beyond both the micro-economic model, which focuses on the individual and project's implementing agency, to consider the effects of a project throughout the economy.

None of the two methods takes account of uncertainty, which presupposes that current prices will remain constant with time.

Both methods call for a perfect knowledge of the country concerned (relationships among woorkers, socio-political realities, etc).

2. Multi-Criteria Analysis Methods (MCA)

In Multi-Criteria Evaluation Methods (MCE), investment alternatives are rated according to their attractiveness. Attractiveness depends on the assessment of the attainment of objectives diagrammatically :



Two major Methods of Multi-Criteria Evaluation :

- Weighting method :

The effects of an investment are weighted in one way or the other

- Sequential elimination method :

Each pair of alternatives is analyzed and only the most appealing alternative is selected.

The MCE have some advantages :

- they make it possible to consider all aspects of a decision, including the political aspects.

- the economic and financial criteria are taken into account but are not the sole basis for decision making.

- the MCE do not pursue an artificial objective but undescore the fact that different groups may have different opinions as to the importance or magnitude of the effects of an investment.

3. Financial Criteria of Analysis

1. DEADLINE FOR RECOVERY

- Cut-off period :
  Setting a deadline by which the funds invested should be recovered

- Deadline for recovery :

  Time limit by which the total of incomes exceeds investment expenditure

2. MEAN ANNUAL RATE OF RETURNS

Net mean annual return in relation to to initial investment $\left(\frac{\sum R}{n}\right)' / I = R$

3. UP-DATED RATE OF PROFIT

- Up-dated net profit :

Difference between investment expenditures and the sum of up-dated incomes $\left(\sum \frac{R}{(1+a)} t\right) - I = B_a$

- Internal Rate of returns :

Hypothetical rate which offsets the up-dated profit

$$\left(\sum \frac{R}{(1+IRR)} t\right) - I = 0$$

SUPPLEMENTARY CRITERIA

- Efficiency rate of capital $\left(\frac{\sum R}{I}\right)$
- Coefficient of employment per unit of capital :

  the number of jobs created divided by the initial investment

- Coefficient of labour productivity :

  The sum of incomes divided by the number of jobs created.

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