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METHODOLOGICAL BASES FOR THE PROGRAMMING AND EFFICIENT MANAGEMENT OF PUBLIC INVESTMENT

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Prologue

One of the most important economic-policy advances in the economic and social development of Latin America lies in the significance attached to the quality, profitability and complementarity of investment. The profitability of investment has become a substitute for accumulated amounts of capital in enhancing the growth of income and well-being.

Accordingly, the design of methodological schemes to programme and efficiently manage public investment is starting to play a fundamental role. In other words, within this new approach it will be necessary to analyse the problem of investment in an integrated and dynamic way, making connections between microeconomic elements and the preparation and evaluation of projects, and between macroeconomic factors and the design of comprehensive policies for the allocation of public expenditure, especially budget programming.

Along these lines, the present document hopes to serve as a conceptual framework for defining and carrying out actions to improve investment management by Governments and make it easier to bring these into line with other policies.

Lastly, the document reflects the recent experience accumulated by ILPES in providing advisory assistance to the countries of the region and, to a large extent, incorporates new investment-management and budgeting concepts and techniques. It was prepared by Eduardo Aldunate, an ILPES expert.

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1. INTRODUCTION

In their quest for economic and social development, the developing countries have to face the problem of making the most efficient and effective use possible of scarce resources. Labour, in particular skilled labour, capital, foreign exchange and natural resources are generally either in short supply or restricted, and need to be allocated as carefully as possible so as to achieve the highest possible rate of growth.

When resources are allocated to achieve a given objective, fewer resources are necessarily available to pursue other objectives. If resources are allocated in the most efficient manner, it is possible to achieve more objectives with the same resources.

The key task of any Government is to define strategies to allow a country to maximize its economic and social development with the limited resources available. Consequently, it has to face the need to make an optimum allocation of the available resources among the different activities and projects so as to allow the chosen development strategy to be accomplished.

The most elementary macroeconomic models link a country's rate of growth to the level of investment. More complex models differentiate between investment in physical capital and investment in human capital. Finally, there are some models which introduce the "quality of investment" variable to account for a country's rate of growth. Consequently, if the validity of this type of model, i.e., the thesis that a country's rate of growth depends on the quality of its investments, is accepted, improving the efficiency and effectiveness of public investment takes on particular significance.

The high level of indebtedness of most of the countries of Latin America and the Caribbean severely restricts their possibility of achieving greater growth through external indebtedness. Consequently, the only possible path towards greater development of the economies of the countries of Latin America and the Caribbean requires the improvement of public and private investment.

Furthermore, the limited opportunities for obtaining greater external resources are often jeopardized by a lack of available projects for which to apply for credit from multilateral financial agencies. In addition, in view of the difficulty in preparing and following up programmes involving multiple works, it is customary to devote credit resources to major projects, which are not necessarily of greatest priority. Local resources are diverted to provide collateral for the credit, thereby leading to the postponement of smaller projects, which are frequently of social interest. Once again, in order to solve this problem it is necessary to improve the public sector's capacity to manage public investment.

Under these circumstances, ILPES, in fulfillment of its objective of being a centre for developing and disseminating approaches and methodologies designed to ensure the greatest possible progress of its member countries, wishes to present a coherent, sound and practical proposal whose basic aim is to support Governments in their efforts to improve the management of public investment in those areas to which each of them has given priority.

In order to clarify the possible means of improving public investment, it is first of all necessary to tackle the structure thereof, to identify its main components and the links between them. It is only after the system has been fully grasped as an organic whole that it will be possible to define actions which are consistent with one another as well as with each country's institutional framework. Consequently, the following pages provide an analysis of the structure of public investment, using a systems approach.

2. THE STRUCTURE OF PUBLIC INVESTMENT

Public investments may be assimilated to a production process, in the sense that it absorbs resources and provides products. A production process is easily conceptualized as a production line along which, by the use of various resources, a certain product is manufactured. By analogy, public investment absorbs financial, human and material resources and generates a variety of goods.

Moreover, a production process always involves management functions such as information-gathering and decision-making. Thus, for example, in the case of a production line it will be

necessary for management to have information in order to decide how much to produce and how to do so (what resources are to be used). This entails the need for information from outside the production line (for example, information on the market for resources and for products) as well as information on the production process itself (for example yield and costs).

Similarly, it is possible to conceptualize public investment as a series of production processes controlled by a management function the Government. This leads us to draw up the diagram shown in figure 1, in which the production processes themselves are distinguished from the management function of public investment.

Figure 1:   Public investment as a productive process
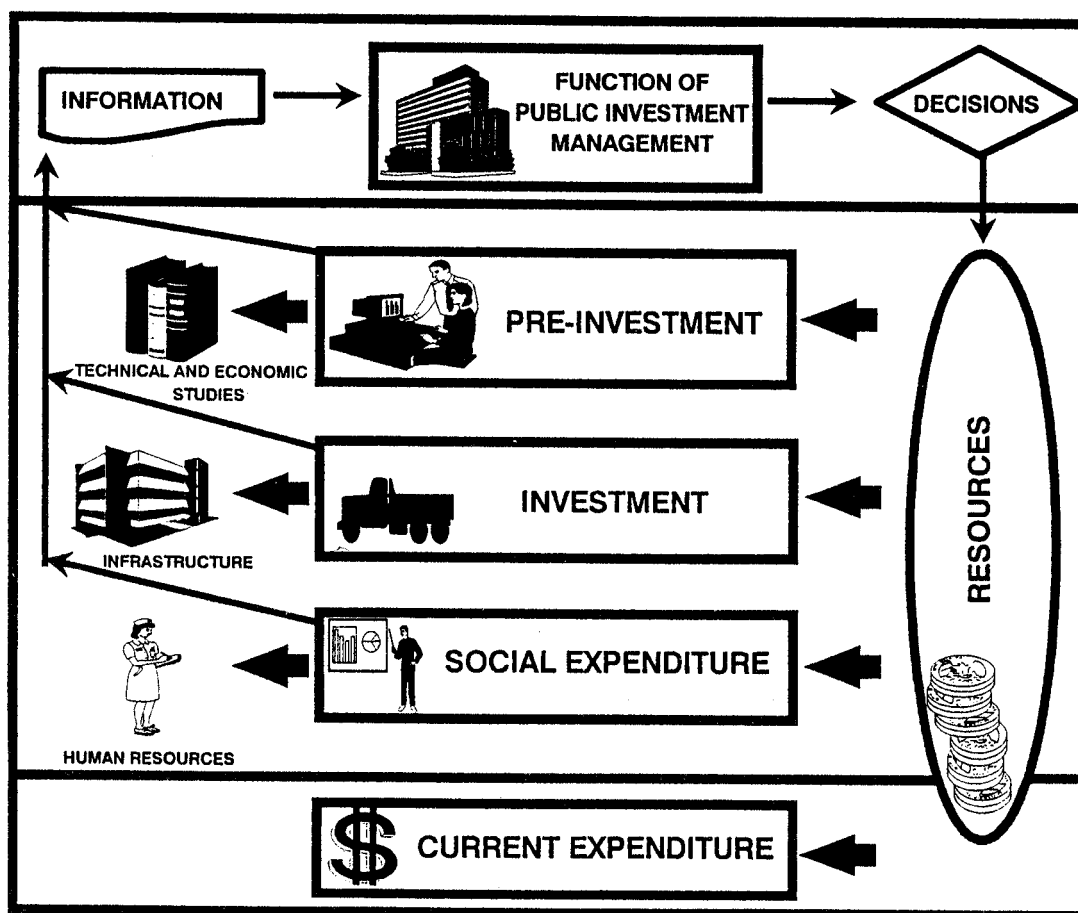
2.1 Elements which make up the public investment system

Figure 1 sets out three main blocks. The central block represents the physical processes involved, which, in the above example, may be compared to the production line itself. The uppermost block has been used to represent the management function associated with the production process, while the lowermost block represents the current expenditure connected with the production of goods and services by the State. These may be assimilated to the overhead involved in a production line.

In the uppermost block, the **Function of Public Investment Management** represents all the procedures associated with the management and control of public investment. In other words, it includes the collection of information, its processing and analysis, and decision-making in respect of the planning and control of public investment. For the time being, we shall treat this function as a "black box" and analyse its relation with the physical processes which it manages and controls.

The central block of figure 1 sets out these physical processes. In this initial stage of analysis it would have been possible to group the different processes under a single heading of "public investment". However, in order to identify those areas deserving special attention, the processes of pre-investment, investment itself and social expenditure (investment in human capital) have been distinguished.

The **pre-investment process** includes all steps connected with the identification, preparation, formulation and evaluation of projects. Consequently, it covers the stages of idea, profile, pre-feasibility and feasibility of the project cycle. It should be stressed that the approach adopted excludes decision-making from these steps.

The **Investment Process** covers the construction of works by the public sector. It excludes only actions connected with investment decisions and the physical and financial follow-up of the various projects.

Finally, **Social Expenditure** includes all actions designed to augment or preserve the country's stock of this resource. Consequently, it includes any action or programme undertaken by the public

sector for the purpose of improving the population's health and level of training, as well as actions to achieve the physical or social rehabilitation of those needing it.

The lowermost block represents the **Current Expenditure** of the public sector, as a system connected with the management function and with the above processes. This covers all expenditure made by the public sector which does not constitute investment, but which is necessary for the State to play its proper role. Therefore, this category includes expenditure connected with the management of public investment, conduct of the country's foreign relations and the provision of internal security and of defence.
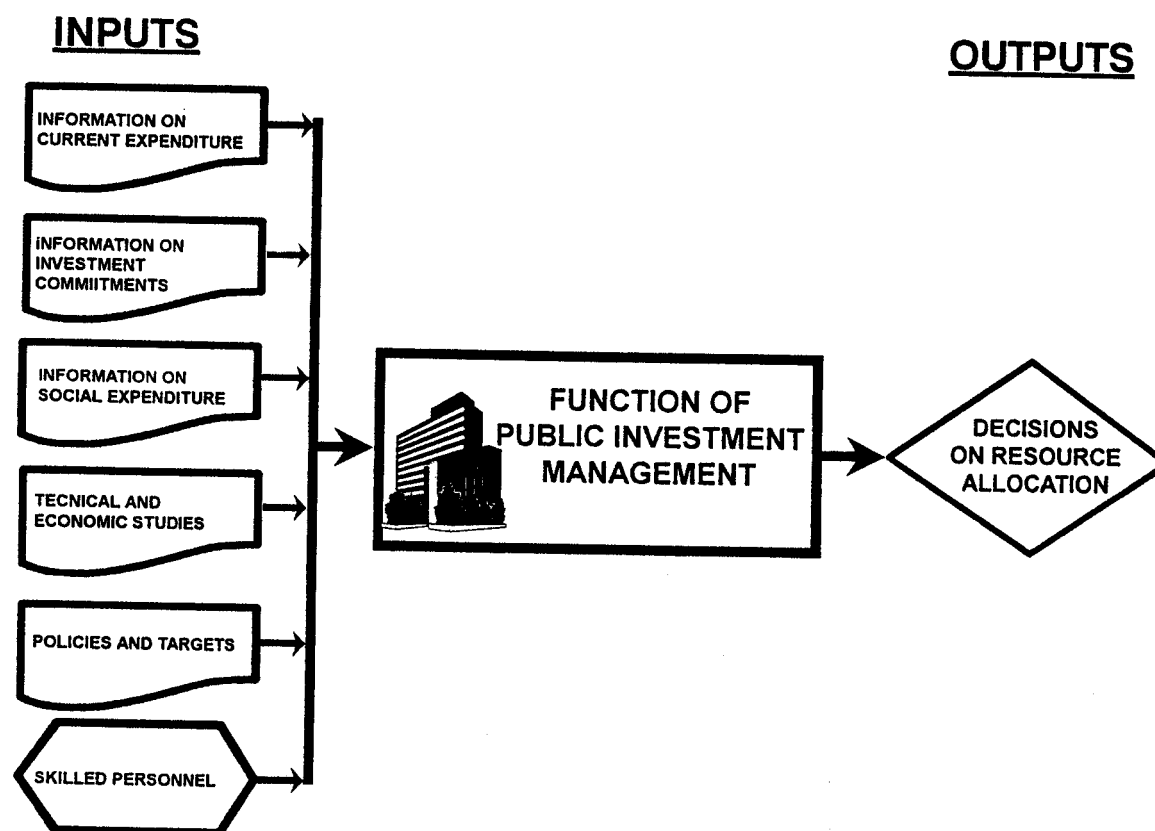
Having thus defined the main components of the public investment system, we may proceed to analyse how they interrelate in order to function as a harmonious whole. In order to do so, it is essential to point out, as has already been done, that the resources available to a country are always restricted, particularly in the less-developed and developing countries. Consequently, there will always be competition for the available resources between the chosen measures. For example, if a high percentage of the available resources is devoted to the execution of works, it will be to the detriment of the pre-investment process and of social expenditure. By analogy, excessive emphasis on increasing social expenditure may severely jeopardize the provision of the physical infrastructure required for the country's development.

2.2 The function of public investment management

It is in the light of this dilemma that the function of public investment management acquires particular significance, as it is this function which takes decisions in respect of resource allocation. In other words, it decides how the available resources are to be allocated between pre-investment, investment, social expenditure and current expenditure. It also specifies which projects and programmes are to be allocated resources and in what way, so as to optimize their use.

This requires information on the level of current expenditure, of social expenditure, and of investment commitments, technical and economic studies, personnel skilled in the management of public investment and clearly defined investment policies which correspond to national and sectoral targets. (Figure 2).

Figure 2:   Administration of public investment

INPUTS

OUTPUTS

```
INFORMATION ON
CURRENT EXPENDITURE

INFORMATION ON
INVESTMENT
COMMIITMENTS

INFORMATION ON
SOCIAL EXPENDITURE                  FUNCTION OF
                                 PUBLIC INVESTMENT        DECISIONS
TECNICAL AND                        MANAGEMENT            ON RESOURCE
ECONOMIC STUDIES                                          ALLOCATION

POLICIES AND TARGETS

SKILLED PERSONNEL
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In respect of current expenditure, the management function needs to be informed as to the actual use made of resources by each of the institutions which make up the public sector.

Information relating to investment commitments includes data on the resources required for the studies, projects and programmes which will continue to be implemented during the following budgetary period, as well as on the resources actually used by them during the current budgetary period.

Technical and economic studies will give rise to fresh and properly appraised investment ventures. The management function will utilize this information in order to allocate resources among the different sectors, as well as to projects and programmes within each of them. Furthermore, depending on the volume of available resources and the number of projects assessed, the

management function will be able to decide as to the desirability of devoting more or less resources to the pre-investment process.

The need for skilled personnel is self-evident since, as has already been mentioned, the management function involves a set of information flows, analysis thereof and decision-making. Consequently, human resources with proper training in the application of the different methodologies and procedures are required for the management function to perform efficiently. They constitute the cornerstone of any efficient public investment system.

It is equally clear that the performance of the function as a whole needs to be directed by national policies in respect of public investment. Each Government decides which objectives it desires to achieve, while the management function is responsible for striving to attain these objectives in the shortest possible time, taking into account the restrictions imposed by the quantity of resources available.

The manner in which these inputs are utilized in order to come to a decision over the allocation of resources will be dealt with in greater detail later.

2.3   The pre-investment process

The pre-investment process (figure 3) provides output in the form of technical and economic studies of projects. These may be at the level of profile, pre-feasibility or feasibility studies. These studies feed the management function with the information necessary for the allocation of resources. The main inputs required to produce these studies are project appraisal methodologies, social prices for the social appraisal of projects, personnel skilled in the use of these methodologies, financial resources and project ideas.

The project appraisal methodologies play the key role of indicating, for each type of project, how its costs and benefits are to be appraised. These methodologies provide techniques for estimating the project's contribution to the country's development. In the process, features such as the use or generation of foreign exchange, profitability of the capital invested, creation of jobs and demand for financial and physical resources are assessed. Standardized information by type of project

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Figure 3: The pre-investment process

INPUTS

OUTPUTS

NEEDS,
IDEAS

SKILLED
PERSONNEL

FINANCIAL
RESOURCES

PRE-
INVESTMENT

TECHNICAL
AND ECONOMIC
STUDIES

PROJECT APPRAISAL
METHODOLOGIES
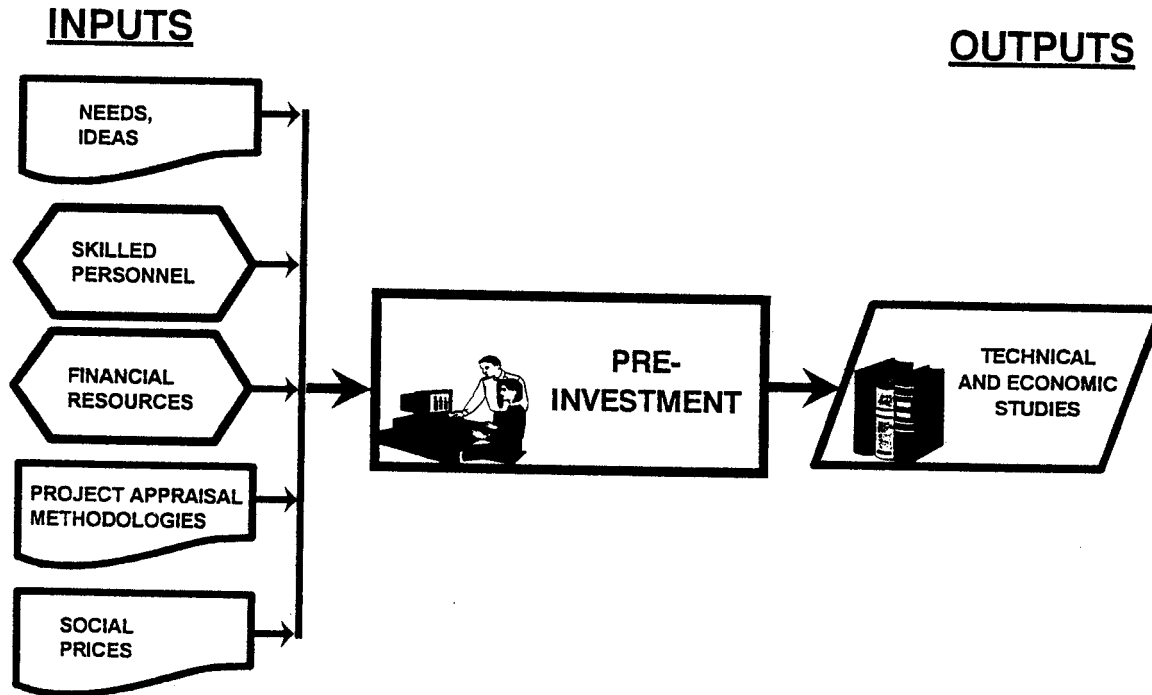
SOCIAL
PRICES

is obtained, thereby facilitating the prioritization of projects by sectors.

Social prices are another significant input for the pre-investment process, as they make it possible to make a social appraisal of the projects. Depending on the approach adopted, social prices correspond to shadow prices of the resources or include redistributive effects. The first is an attempt to correct market distortions so that the prices reflect the real economic cost of the resources used and goods produced; while the second uses social prices to introduce policy variables such as income redistribution or environmental conservation. Lastly, the pre-investment process requires project ideas to be studied and developed. These may come from the community, national or regional political authorities, or need-assessment studies.

Once again, there is a clear need for skilled personnel; in this case in the private and social appraisal of projects. Methodologies themselves constitute only a guide as to the procedure to be

followed in carrying out a technical and economic study. They are of no use if they are not applied by properly trained officials possessing sound judgement.

2.4   The investment process

The investment process itself (figure 4) provides output in the form of finishing works. These works then form part of the stock of resources available for the development of other activities and public sector programmes, or increase the country's basic infrastructure (stock of capital) facilitating private-sector activities. At any point in time, an intermediate output will be works in progress. It is essential to draw attention to these, since the management function will need information on the expenditure involved in completing these projects.

Figure 4:   The investment process
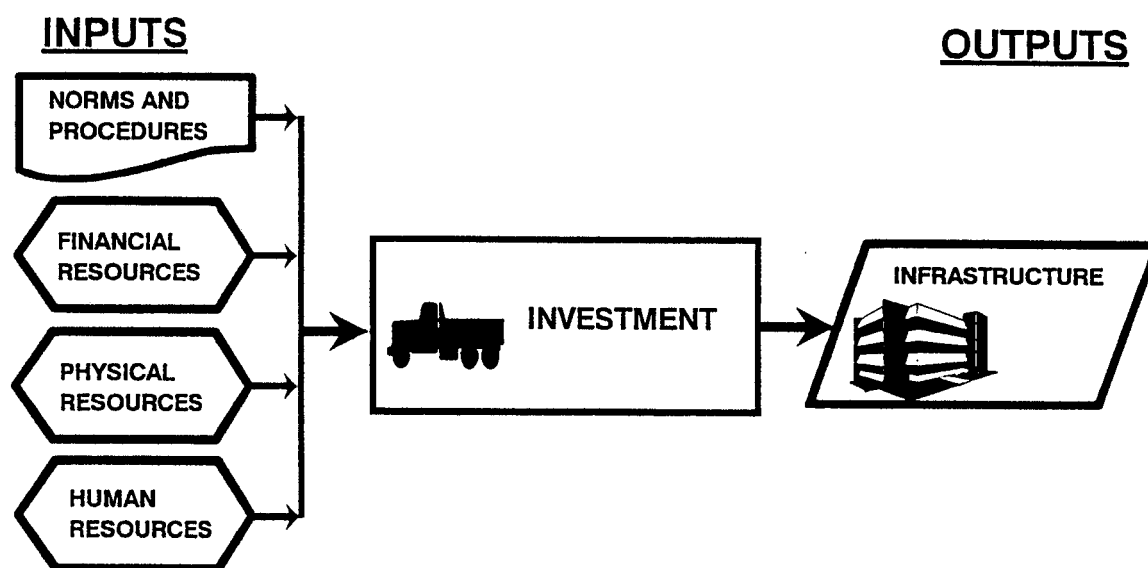
Moreover, the investment process is connected with current expenditure, as the completed works require resources in order to operate. The main inputs therein will be capital and skilled personnel. In addition, it is necessary to define norms and procedures for contracting and executing the works.

## 2.5   Social expenditure

Social expenditure or investment in human capital (figure 5) includes all actions or programmes undertaken by the public sector with the aim of improving the health and level of training of the population, as well as those designed to achieve the physical or social rehabilitation of individuals requiring it. In order to carry out this type of action, it is necessary to possess personnel skilled in fields such as education, nutrition, medicine, social rehabilitation and health. Financial resources are necessary to meet the cost of expenditure, inter alia, wages, materials, transport and services. Finally, physical infrastructure, such as hospitals, schools and offices, is required to carry out certain activities.

There are obviously close links between what has been designated as social expenditure and the investment process, as well as between investment and current expenditure. It will generally be extremely difficult to distinguish between current expenditure and social expenditure on items such as the salaries of teachers, doctors and paramedicals, which may appear in the current budget of institutions or be assigned to specific programmes. Furthermore, the infrastructure required to carry out social programmes would, under the proposed pattern, be set up by the investment process, thereby requiring excellent coordination therewith.

Notwithstanding these observations, it appears desirable to distinguish social expenditure from the investment process and from current expenditure, as this will make it possible to define and use ad hoc methodological tools for allocating and managing social expenditure.

Figure 5:   The social spending process
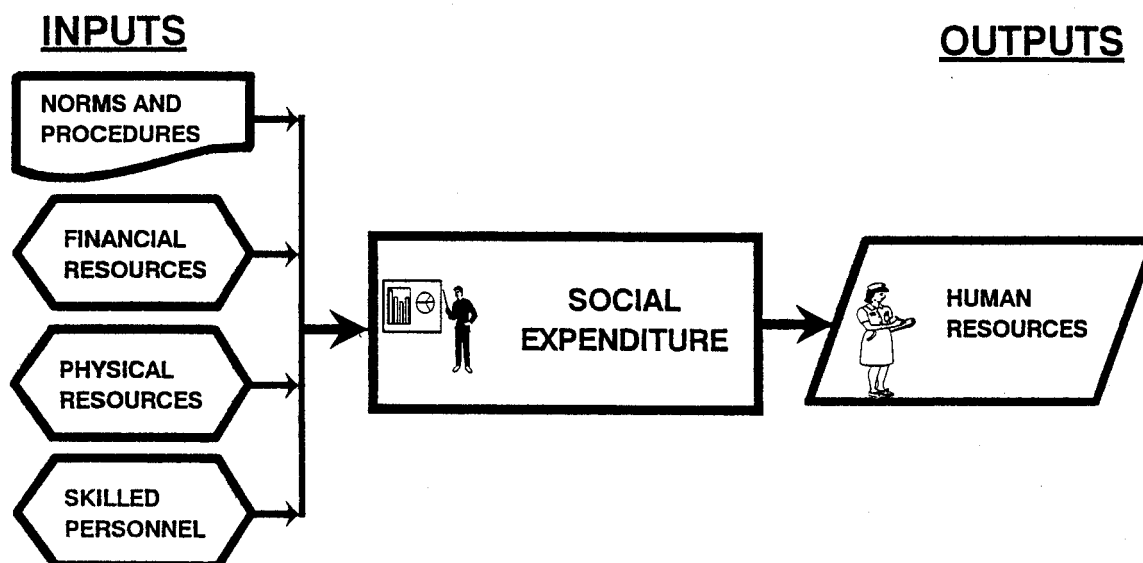
2.6   Systems comprising the function of public investment management

Following this global analysis of public investment, we shall now tackle in greater detail the operation of the management function. To do so, it shall be broken down in order to analyse its different component systems.

Figure 6 provides a breakdown of the management function into five essential component subsystems. These are a Budget Follow-Up and Control System (BFCS), a Macroeconomic Projections System (MPS), a Current Budget Allocation System (CBAS), a Social Expenditure Allocation System (SEAS), and an Investment Programming System (IPS).

Figure 6: The function of public investment administration

These various systems receive information from outside the management function, process it, and provide as output a decision about resource allocation. This decision may be broken down, as shown in figure 6, into a current budget, social programmes and investment programmes.

The current budget will determine the funds which each public-sector institution may use during the budgetary period for each of the items detailed therein, such as wages of officials, fuel, supplies, etc.

The social programmes will specify the different actions to be undertaken by the Government in support of health, education, nutrition or rehabilitation. It is desirable for these budgets to include all the expenditure connected with a given action, such as wages, materials, etc.

The investment programme will specify each and every one of the studies and projects which the Government will pursue or initiate during the budgetary period, indicating what resources are allocated to each of them. This programme needs to be tightly linked with social programmes and with current expenditure, as it provides the necessary infrastructure for social programmes and sets up a demand for resources in order for the completed programmes to operate.
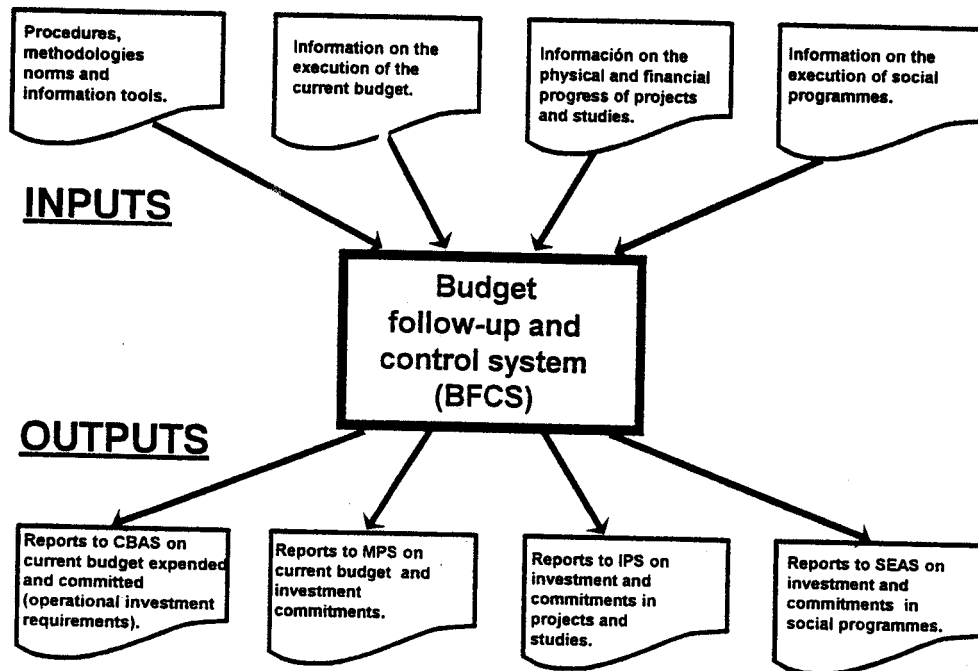
In order to optimize the management function, it is necessary, for each of the systems identified, to perform efficiently and to be properly coordinated. Consequently, an analysis will now be made of each of them with a view to clarifying their functions and interrelations. This will make it possible to identify actions which will contribute to optimizing the management function.

2.6.1   The Budget Follow-up and Control System (BFCS)

If attention is first directed to the Budget Follow-up and Control System (figures 6 and 7), it will be apparent that this system receives information related to the execution of the current and capital budgets (works and studies under way). In other words, the subsystem receives information from all public-sector institutions on the payments made, both out of the current budget and in respect of studies, projects and programmes. This information needs to be periodic (on a monthly or at least a quarterly basis), in order to allow decisions to be taken to correct deviations from the initially estimated costs and deadlines, or to make the necessary adjustments when such deviations are the result of uncontrollable circumstances.

In addition to carrying out this control function, the system gathers and processes the information and provides reports to the systems that provide macroeconomic projections and set budgetary frameworks, allocate current expenditure and social expenditures and prepare investment programmes.

In order to carry out these tasks, the system requires norms and procedures to allow it to gather the required information in a regular and standardized manner, and to process it rapidly and efficiently. Furthermore, it requires personnel skilled in the application of norms and procedures, and in the use of information systems.

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Figure 7: Budget follow-up and control system

INPUTS

Procedures, methodologies norms and information tools.

Information on the execution of the current budget.

Información on the physical and financial progress of projects and studies.

Information on the execution of social programmes.

Budget follow-up and control system (BFCS)

OUTPUTS

Reports to CBAS on current budget expended and committed (operational investment requirements).

Reports to MPS on current budget and investment commitments.

Reports to IPS on investment and commitments in projects and studies.

Reports to SEAS on investment and commitments in social programmes.

2.6.2 The Macroeconomic Projections System (MPS)

The Macroeconomic Projections System (figures 6 and 8) receives information from the follow-up system on the actual current expenditure of the different public-sector institutions and on the expenditure involved in studies, projects and programmes. This information, together with information from exploratory investment programmes, provides an input for the preparation of macroeconomic projections making it possible to set estimated levels of public-sector income and expenditure. Finally, on the basis of the information received, the projections made and the investment policies in force, the system will define the overall budgetary framework. In other words, it will decide the volume of resources to be devoted to current expenditure, to pre-investment and investment and to social expenditure.

**Figure 8:**   Macroeconomic projections system
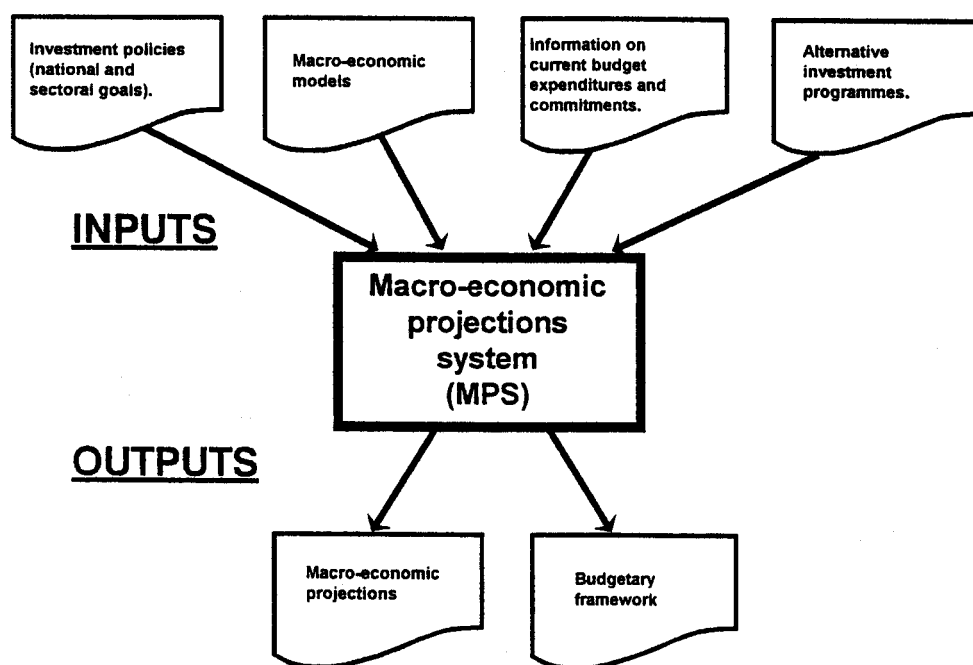
In addition to the information mentioned above, the system requires models in order to effect the required projections, as well as skilled personnel to utilize, update and improve them.

2.6.3   The Current Budget Allocation System (CBAS)

The Current Budget Allocation System (see figures 6 and 9) receives information on the actual current expenditure of each of the public-sector institutions, per budgetary item. In addition, it receives information on the additional current expenditure required by the various institutions to finance the operation of the projects which came on line during the present budgetary period or which will begin to operate during the coming period. The latter information is provided by the

Investment Programming System and the Social Expenditure Allocation System. Finally, it also gathers information from the Macroeconomic Projections System in respect of the total level of resources available for current expenditure.

Figure 9:   Current budget allocation system
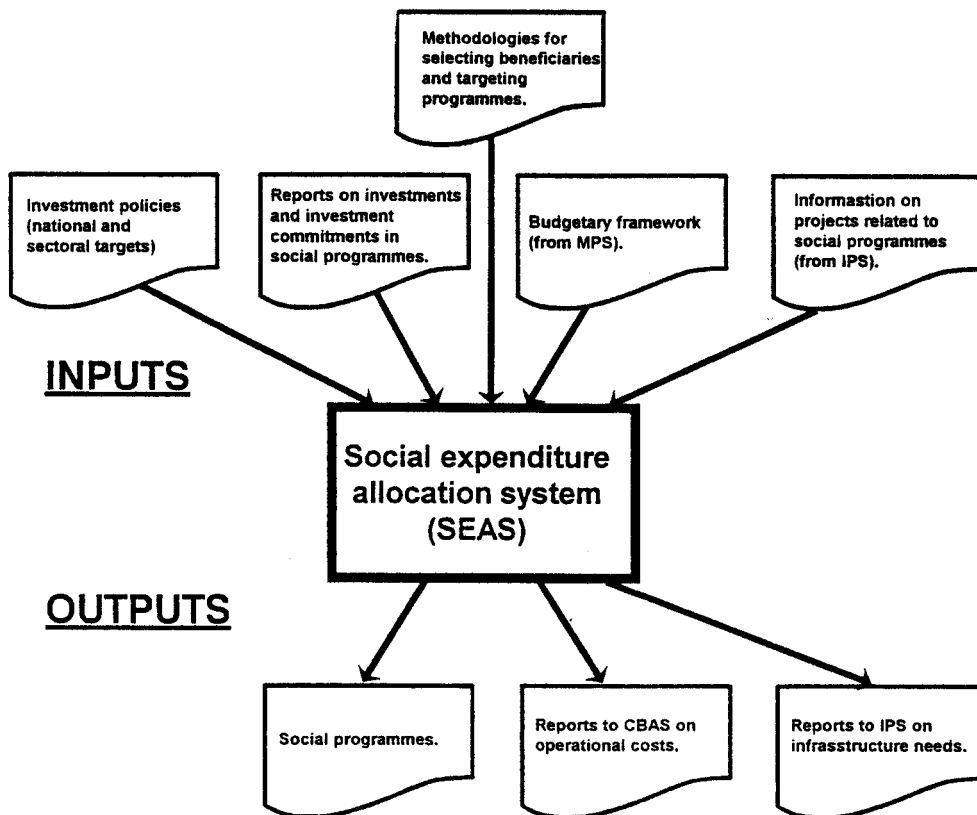
On the basis of this information, the Current Budget Allocation System takes a decision in respect of the resources to be allocated to each of the public-sector institutions. This allocation may be made at a global level or per item, and may be decided autonomously by the system or on the basis of the draft budgets submitted by each institution. In this case, the final decision on the institutional budgets will be taken through a process of discussion and analysis of each institution's draft budget.

The existing investment policies constitute another major input for this system, as decisions to allocate more or less resources to specific sectors or institutions will be essentially based thereon. In addition, there is a clear need for personnel with proper training in the operation of this system.

2.6.4 The Social Expenditure Allocation System (SEAS)

The Social Expenditure Allocation System (figures 6 and 10) receives information from the Budget Follow-up and Control System on the actual expenditure of the different programmes under way. In addition, the Macroeconomic Projections System provides it with information on the resources available for the coming budgetary period. On this basis, and taking into account existing policies, the system takes a decision as to the allocation of resources to programmes under way or to be initiated during the coming budgetary period. The allocation may be made at the institution level, at the programme level, or even at the programme item level. The decision may be taken autonomously or on the basis of discussion with the concerned institution.

In order to perform this task efficiently, the system requires methodologies and information systems allowing it to clearly identify the different social action programmes. In other words, in addition to allocating resources to the different programmes, the system must be capable of ensuring that the resources are actually received by the target groups, thereby minimizing seepage to other sectors of the population.

2.6.5 The Investment Programming System (IPS)

Finally, in addition to the budgetary framework drawn up by the Macroeconomic Projections System, the Investment Programming System (figures 6 and 11) is provided with information from the technical and economic studies undertaken as part of the pre-investment process, together with information from the Follow-up System in respect of works and studies under way which require financing for the coming budgetary period. On the basis of this information, and taking into account the investment policies in force, the system takes a decision concerning the allocation of resources to studies and projects.

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Figure 10: Social expenditure allocation system
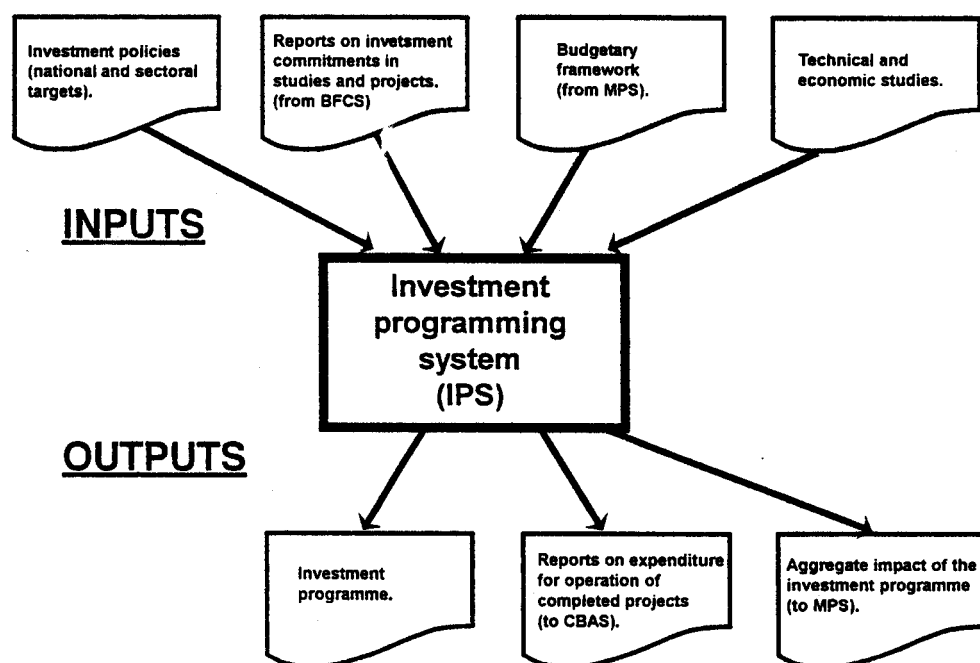
There is clearly a strong link between the Macroeconomic Projections System (MPS) and the Investment Programming System (IPS). An interactive process is required to elaborate investment programmes to supply the MPS together with budgetary frameworks supplying the IPS in order to obtain the definitive projections and investment programme.

2.7 The institutional factor

Naturally, the diagram of the public investment system set out above is a theoretical one. Its purpose is to provide a clearer understanding of the way in which the system operates, rather than to reflect any real situation.

Figure 11:   Investment programming system
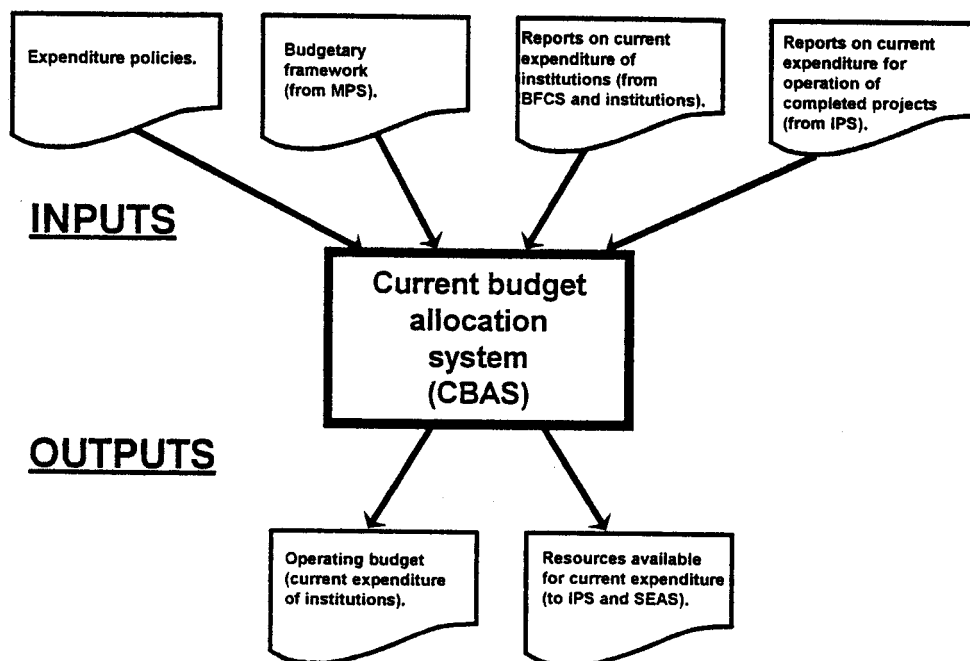
In practice, this diagram is rendered far more complex by the existence of numerous public-sector institutions involved in public investment and fulfilling different roles which in many cases overlap. Also, certain tasks, such as ex-post evaluation of projects, are often not carried out by any institution at all. An analysis will now be made of the roles which the public sector must assume in order to link the different elements of the system with the institutions making up the public sector.

2.7.1 The roles of the public sector

A fundamental factor which needs to be taken into account in analysing the public investment process is the structure of government. This will, to a large extent, determine the procedures for the identification, appraisal, selection and execution of investment programmes.

Whatever institutions compose the public sector, it will always be possible to classify them on the basis of their function and territorial coverage. From the functional angle, the following categories may be distinguished:

- **Government**

    Government institutions are those responsible for decision making in respect of the management of the State. From the public investment angle, we are particularly concerned with those possessing decision-making capacity as to which investment programmes are to be undertaken.

- **Execution**

    Executing institutions are those responsible for implementing the decisions taken by government institutions. Our interest is in those institutions which carry out works, studies or programmes either directly or by contracting private firms.

- **Advisory services**

    The role of advisory services is to provide support for decision-making, by putting forward recommendations to government institutions. This role is generally filled by offices or ministries of planning or of economic development. These institutions will analyse the different investment proposals and recommend which are to be undertaken, and when.

- **Finances**

    There is always an institution responsible for managing public finances within a government. This institution is usually responsible for distributing the funds allocated to the other institutions in the national budget and possibly for supervising budgetary performance.

- **Comptrollership**

The role of the comptroller may be performed by the institution responsible for financial management or by another specially established institution. In respect of investment initiatives, its role will be to ensure the funds are used for the studies, projects or programmes to which they were actually allocated, and that the whole of the process of contracting, purchasing, payments, advance payments, etc., is carried out in accordance with government norms.

2.7.2 Roles and the proposed model

The above roles may be connected with some of the elements and systems comprising public investment. Thus, for example, the system of follow-up and budgetary control is clearly linked to the financial and comptroller functions. The investment process is carried out by executing agencies, while pre-investment will probably involve both advisory and executing institutions.

Consequently, it is necessary for the proposed theoretical model to adjust to the specific characteristics of each country's institutional framework. However, it is essential to keep sight of the overall pattern of the system in order to efficiently buttress steps to improve public investment. Failing this, it is easy to fall into the trap of adopting an approach whose limits are set by the activities currently carried out by each institution. In this case there is a risk of adopting measures to strengthen institutions, methodologies and systems of support for decision- making which are inconsistent and even incompatible with one another.

3. ACTIONS TO IMPROVE PUBLIC INVESTMENT

The above series of diagrams depicting public investment makes it possible to identify those areas in which steps can be taken to improve investment management and increase the effectiveness and efficiency of social expenditure, pre-investment and investment.

For efficient management of public investment in general, it is crucial to have information on the various processes involved. Furthermore, this information should be reliable, complete and timely.

Otherwise, it is impossible to manage public investment; it becomes a series of disconnected, uncoordinated and, frequently, inefficient and ineffective initiatives.

Each of the processes should also have tools to ensure its efficiency and effectiveness. This is the reason for establishing procedures and norms to regulate its development. Given below as an example are some tools to support the more efficient use of pre-investment, investment and social expenditure, followed by a discussion of tools and methodologies to support public investment management.

3.1   Pre-investment process

As pointed out above, the pre-investment process refers to the transformation of project ideas into technical and economic studies to assist in taking decisions about the execution of projects and programmes.

For this process to be carried out efficiently, standardized methodologies for identifying, formulating and evaluating projects must be available. These facilitate the first steps in the pre-investment process, i.e., the identification of projects and preparation of profile studies.

It is also necessary to have staff trained in the formulation and appraisal of projects who know how to apply the methodologies, calculate social prices and develop new methodologies or improve on the existing ones. In view of the various levels of preparation required for the above-mentioned tasks, it is desirable to have a large number of staff trained at the basic level (application of methodologies), several at the intermediate level (support for the other staff and more complex appraisals) and a few staff capable of developing new methodologies and calculating social prices.

It is also useful to have a registry of consultants who are experts on pre-investment, so as to be able to call on the best experts when necessary. Terms of reference and standardized administrative guidelines for hiring should be established.

Lastly, the existence of a system for ex-post evaluation of projects is a significant contribution to the improvement of the whole pre-investment process. This makes it possible to compare the

original estimates with the results obtained during the execution and operation of projects, and subsequently to prepare and adjust the methodologies for project formulation and evaluation.

3.2   Investment process

The investment process takes care of transforming a series of inputs into goods and infrastructure to meet society's needs. In particular, it focusses on providing infrastructure and goods that are not generated by the private sector.

However, there is a clear tendency for this process to be carried by the private sector, with the public sector being limited to hiring private firms and supervising their performance. This sole fact usually means a significant improvement in the efficiency of the investment process.

But a major private-sector role is not enough to guarantee the efficiency of the process. Tools must be available to facilitate the identification and contracting of the best firms, streamline the public-sector tasks, reduce the risk of fraudulent practices and ensure that the projected results are achieved. As an example, some tools are mentioned below which help make the investment process more efficient.

First, it is helpful to have lists of contractors arranged according to specialty and skill, allowing for the selection of the best firm for each task. These lists should contain information on the performance of firms and results obtained (from the budget follow-up and control system and from ex-post evaluation), since this makes it possible to reclassify contractors according to their performance.

It is also necessary to have administrative and technical guidelines, as well as bidding procedures and standardized hiring practices. These should be designed to streamline the selection and contracting of firms, bearing in mind that the possibility of fraudulent practices must be avoided or reduced.

An important role is also played by technical standards. These make it possible to set out parameters to help require contractors to comply with minimum quality levels, in terms of both

materials and of products, thus ensuring that the expected results are achieved. To ensure compliance with these technical standards, a technical supervision should be made, to verify compliance with norms and specifications on the part of the contractor or executing agency. This can be carried out by public officials or by specialists hired specifically for this purpose.

Obviously the investment process requires various types of resources. In particular, trained staff is needed for supervising works and carrying out technical inspections. This staff, besides serving as direct supervisors, should transmit the information required for decision-making. In other words, the staff directly in charge of supervising each project form the basis for the operation of the financial and physical follow-up system, which provides basic information for public investment management.

3.3   Social expenditure

The function of social expenditure is to maintain and increase the stock of human capital of the country or region. This translates into health, nutrition, education and social security programmes which rehabilitate or increase the capacity of individuals to carry out the activities they desire.

However, resources are limited and do not allow for meeting all existing needs. Thus, tools are needed to ensure that the resources allocated to social expenditure are used efficiently. This requires a detailed knowledge of how ongoing programmes are developing and who the beneficiaries are. It is also necessary to be able to detect groups in need, especially those not in a position to exert pressure.

This process should have guidelines to define the operation of each programme. These should be simple so as to avoid making management too bureaucratic, but should be strict enough to keep groups other than the target group from receiving undue benefits, and to avoid fraudulent practices. Moreover, care should be taken that the cost of administering each of the programmes is kept to a minimum.

The process of social expenditure frequently demands a certain infrastructure. For example, an education programme might require classrooms, a health programme, clinics and a nutrition

programme, kitchens and dining rooms. Thus, the social expenditure process should evolve in coordination with investment.

It is useful to note the separation that occurs, in the proposed approach between investment in social projects (for example, the building of a school) and social expenditure (for example, a literacy programme). In other words, any project that involves the building of infrastructure (physical capital) will be considered part of the investment process. On the other hand, any process whose direct result is an increase in human resources skills (human capital) will be considered social expenditure.

This approach is clearly distinct from that used in most studies on social expenditure, in which such expenditure is defined on a sectoral basis. For example, social expenditure is usually incurred in the health, education, housing and social security sectors. In some cases this includes drinking water, sewerage and electric power, and even credit programmes or urban transport.

The difference in the proposed classification is due to the fact that we are studying tools and methodologies to help improve public investment management in general. From this standpoint, any investment that involves the building of infrastructure will require similar tools and methodologies. However, any social programme that directly addresses individuals will require other tools and methodologies.

3.4   Current expenditure

Public resources are also used, often to a large degree, to finance public-sector operating costs. For example, these costs include the payment of salaries, rental of buildings, buying of office supplies, purchase and operation of vehicles and payment for services. The proposed approach excludes wages and costs of social programme inputs, regarding them instead as social expenditure.

For example, the salaries of public school teachers or physicians, nurses and auxiliaries would be considered social expenditure at hospitals. Study materials or medicines needed by the above-mentioned staff to carry out their duties would not be part of operating costs either. The salaries of administrative officials in education or health ministries, however, would be categorized as operating

costs. Clearly, this appproach is strictly theoretical, since in practice it would be impossible to determine social expenditure and operating costos according to these definitions.

It may be useful to recall at this point that the approach used compares public investment to a production process. In this sense, the operating costs correspond to the overhead of a firm, i.e., all costs not directly related to the production of goods or services.

Given the above clarification, certain aspects of these costs should be noted. It is clear that efficient public-sector management involves trying to minimize costs of providing goods and services. Therefore, all expenditure not directly associated with the production of goods or services by the public sector should be kept to a minimum. This means detecting and eliminating unnecessary expenditure, simplifying procedures so that fewer staff are required for paperwork, and delegating as many functions as possible to the private sector.

One illustration would be demand subsidy-programmes in the social sectors, under which a subsidy is granted to beneficiaries to "buy" the service they need, allowing the private sector to provide the service. This solution has proven to be much more efficient than the direct furnishing of services by the public sector. This is mainly because it saves bureaucratic operating costs, and not because the production of the service itself is less costly. This greater efficiency is ensured by competition within the private sector, since otherwise the private sector would produce the services at similar or higher costs than would the public sector.

Secondly, the entire process of public-sector management must be made more efficient in those areas in which it is impossible to delegate the responsibility to the private sector, such as defence, justice and domestic security. For these, mechanisms must be found to reach the desired objectives effectively and efficiently. Advanced training of the staff who carry out these activities is certainly a step in the right direction. Similarly, modern equipment (for example, better information and communications systems) may help achieving the same results at lower cost.

3.5   Function of public investment management

Of special interest here is the function of public investment management. This function takes the decisions on the allocation of resources and controls their use. Thus, actions to improve this type of management will have a significant impact on the effectiveness and efficiency of public investment.

The breakdown of the function into the systems composing it (figure 6) makes it easier to define specific actions to improve the management of each system. The coordinated development of these actions will make it possible to obtain an overall improvement in the function of public investment management.

3.5.1   Budget Follow-up and Control System

The function of this system is to gather information about the development of the various processes and take corrective decisions where deviations occur that signify reduced efficiency or a risk of not reaching the proposed targets.

To improve the management of this system, action must be taken to enhance the quality of the information gathered, increase its volume and make it available in a more timely fashion. It is also possible to define actions to promote better decision-making on the basis of the data collected.

Data collection procedures can be improved by having better norms and procedures for generation of information, use of computerized systems for data collection, transmission and processing, better inter-agency coordination and more highly trained staff.

It is important to note that more data does not mean better data. Frequently, the institution of a modern system of budget follow-up means a reduction in the amount of data collected. The reason for this is that duplication usually exists in requests for information from executing agencies, planning bodies, Government, regional governments, etc. Executing agencies are often asked to send data that could perfectly well be obtained by requesting it from other sources, by processing other data requested, or by searching its own files. Thus, the redesign of the follow-up system should begin with the question "What is the minimum data I should request in order to meet my objectives?"

It is also necessary to improve on the corrective decisions taken on the basis of the information gathered. For these decisions to be effective, they must be timely. In other words, problems must be detected at an early stage and fast action taken to prevent them from worsening. Those who analyse the data gathered must have sufficient training and, in particular, must devote most of their time to analysing the information and not, as is often the case in public-sector institutions, to processing it.

Consequently, improvement of the budget follow-up system requires having better norms and procedures, sharing data among institutions, better information systems and more highly trained personnel.

3.5.2   Macroeconomic projections system

The macroeconomic projections system must allow for reliably estimating the availability of public-sector resources, on the basis of the evolution of the economy and the Government's economic policies. This requires information about recent economic trends, both those of the country and those of the main trading partners.

In the work of this system, two stages may be distinguished. In the first, it is necessary to determine the total volume of resources that will be available to the public sector in the next and, even better, in the subsequent budgetary periods. In other words, to have a picture of the global macroeconomic environment. In the second stage, the system should provide a recommendation or decision (depending on the current institutional set-up) about the distribution of these resources among investment, social expenditure and operating costs.

Clearly, a basic requirement for the operation of this system is the availability of highly trained personnel. It may even be useful, at least in the first stage, to contract a university or consulting firm to do the projections.

The first task also requires the system to have a macroeconomic projections model. This should be adjusted periodically, comparing past projections with the real evolution of the economy and availability of public-sector resources.

For the second task, the model must analyse the results obtained in allocating resources to investment, social expenditure and operating costs in different ways. Social expenditure, however, does not usually yield benefits in the short term, but only in the medium or long term. On the other hand, investment in infrastructure does show immediate results. Therefore, the model used should compare alternative scenarios at least in the short and medium term.

Lastly, the system should permanently monitor the evolution of the economy and public-sector income, so as to take corrective steps in time if significant deviations from the projections are observed.

3.5.3   Social expenditure allocation system

The scarcity of resources in many countries of the region has forced many Governments to postpone urgent social programmes. One alternative that may minimize the impact of these cutbacks and maximize the impact of available resources is the targeting of social expenditure. This means ensuring that the benefits of social programmes are received by those who really need them, and preventing them from seeping to less needy groups or even to rich people.[1]   Accordingly, a basic objective of the social expenditure allocation system is to ensure that social programmes are targeted and executed efficiently.

To fulfil this task, the characteristics of the beneficiaries of ongoing programmes and unmet needs (gaps) in the social area must be ascertained. A periodic evaluation is also needed as to whether the ongoing programmes are reaching the desired targets and whether this is done efficiently. Consequently, this system should play the role of administering social programmes and of determining unmet needs that require specific public-sector action.

To make this task more efficient, a key point is the training of the staff in charge of implementing the system. Modern information systems to cross-check information on needs with programme beneficiaries are also crucial, as are methodologies to assess the impact of proposed

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[1]   This is the case, for example, of across-the board subventions to universities.

programmes and to identify needs. In all these areas, considerable progress has been made in various countries.

3.5.4 Investment programming system

Efficiency in public investment is an objective to which every Government seeking to enhance its country's development should aspire. However, it is of little use to be efficient in carrying out a project if the project is not useful to society. Moreover, the project may be useful, but have lower piority than others that would have to be postponed if it were executed. Similarly, it is of scant benefit to the country to carry out a project efficiently if the solution selected is not the one that costs the least, or achieves better results at an equal cost.

It is thus necessary to have tools and methodologies to identify investment needs (project identification), choose the best way of meeting these needs (project formulation) and assess whether the meeting of these needs is conveniente to society (social appraisal of project).

In the second stage, methodologies and tools are needed to select the most urgent or profitable projects. It is usually possible to carry out this task according to project typologies, but it is much more difficult where projects of different sectors must be ranked within a single package.

Training public-sector staff to identify, formulate and appraise projects is an obvious contribution to enhancing the efficiency and effectiveness of this system. However, for the staff to carry out their work satisfactorily, they must have methodologies for identifying, formulating and appraising projects. They must also have a method for selecting the projects with highest priority.[2]

It is also important to have information systems that show the degree of progress of all ongoing projects and studies. The former involve commitments of resources in order to complete them, while the latter help determine future investment requirements. Similarly it is important to be

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[2] Note that the selection and ranking of projects is generally carried out in order to provide government officials and/or the legislature with recommendations as to which projects to undertake. These officials are the ones who are called upon to take a final decision in this respect. What is important is that the decision be as well supported as possible.

able to prepare different investment programmes with ease, and to study their added impact. Only in this way is it possible to submit alternative scenarios to the final decision-making authority, outlining the advantages and disadvantages of each.

3.5.5 Current budget allocation system

The current budget or operating cost of the Government usually represents more than half the total resources of the public sector. Rarely, however, has the allocation of this budget been subject to a detailed study such as that carried out for large investment projects. Its amount and distribution among institutions is generally determined on the basis of what was allocated to each institution in previous years.

Moreover, the fact that most of these expenditures are used to pay the salaries of public officials makes them highly inelastic to reductions in public-sector income. If income falls, investment projects will probably be postponed or paralyzed, and social expenditure may decline, just when it could be most crucial. The last action to be taken would be to dismiss public officials or cut their salaries. This is true because, in countries where the public sector is a major employer, to reduce the remunerations of public officials would be political suicide, while to increase them might ensure reelection. As a result, there is a permanent tendency for government operating costs to rise, to the detriment of investment and social expenditure.

Consequently, for efficient management of public-sector resources, it is necessary to have a technical team that is constantly striving, especially in periods of economic boom, to reduce, or make more flexible, the cost of operating the public sector. The country will thus increase its growth rate, thanks to public sector savings, and will be prepared for difficult periods, all at a minimum social and political cost.

The current budget allocation system must therefore be concerned not only with deciding how much each institution needs in order to keep functioning, but, more importantly, studying how operating costs can be cut through institutional and procedural reforms. Questions must be asked such as where can the costs of renting or maintaining offices or vehicles be reduced, what services can be subcontracted to the private sector, what entities duplicate or carry out similar functions and

can be combined into one, or how informatics can be used to streamline attention to the public and reduce staff.

This system may be difficult and tedious to implement, requiring a solid political base. However, its contribution to promoting national development may be of equal or more importance than that obtained by improving the investment programming and social expenditure systems.

This task requires highly trained, motivated and imaginative staff. It also requires detailed information on current expenditures, organigrams of institutions, staffing tables, functions of institutions, supply of private-sector services, labour laws, public organic laws, etc.

4. PUBLIC INVESTMENT MANAGEMENT TOOLS

The complexity of problems faced by planners in trying to achieve optimal allocation and use of available resources has led to the development of a series of information methodologies and systems designed to facilitate this task. Below are presented some tools applied in various countries and their relationship with the systems comprising the public investment management function in the proposed scheme.

4.1 Project data banks

One of the main existing support tools whose use has already spread to several countries in the region is the project data bank, whose aim is to buttress the follow-up and control of investment projects and studies, pre-investment planning and the execution of ex post project evaluations. Consequently, in respect of the above conceptual framework, they constitute a mainstay for the budget follow-up and control system and for the investment programming system.

Although project data banks were initially conceived only as information systems on proposed and ongoing projects, practice has demonstrated the usefulness of implementing national investment systems based on the concept of project data banks. The implementation of a system of this type

requires developing four simultaneous components, namely, methodologies, information systems, legal and institutional reforms and training.

The information system, usually known as the project data bank, registers the principal data on ongoing or proposed projects and allows for a detailed follow-up of these projects throughout their life cycle. However, the results delivered by an information system depend on the quality of the data received. This means ensuring that data is reliable, standardized, complete and timely.

That the data collected is sufficient and standardized is ensured through methodologies for project formulation and appraisal (at least at the profile level). Their application may require determining social prices to allow for the social appraisal of projects.

However, these methodologies are not enough to guarantee the flow of data on projects. Procedures must be established for budget formulation that are adapted to the requirements of a national investment system based on a project data bank. Moreover, it may be necessary to redefine institutional roles to avoid conflicts and fill gaps. For all these reasons, and in order to ensure that the information is complete and timely, legal and institutional reforms must be carried out, whose extent will depend on each Government's structure and procedures.

Lastly, a broad programme must be developed to train public-sector staff to apply the methodologies and procedures of the system and the use of the project bank. This is a key component, because, failing this, it will be very difficult to make the system function properly. Training must be carried out in the shortest time possible for all public-sector staff involved in the investment process.

A number of Latin American countries have successfully created national investment systems based on project data banks. Special mention should be made of the cases of Colombia and Chile, where project data banks have become pillars of the entire budgetary process.

4.2   Technical cooperation information systems

Technical cooperation information systems are designed to support the management of technical cooperation. These have been developed under the same principles as project banks, but are geared towards supporting the follow-up of technical cooperation projects, identifying technical cooperation sources for project finance, and handling the required legal and administrative formalities.

Since technical cooperation projects form part of the investment managed by the public sector, the creation of technical cooperation information systems supports the budget follow-up and control system and the investment programming system. These information systems thus represent a particular kind of project data bank, and should be developed in coordination with them.

4.3   Social stratification records and surveys

Another area that uses modern tools to improve management efficiency is the allocation of social expenditure. To support the targeting of social expenditure, two approaches are basically applied.

The first approach is based on the use of social stratification records, which contain the main features of current and potential beneficiaries of social programmes, classifying them according to socio-economic level. When a social programme is launched, the desired profile of beneficiaries is determined, and only those whose record show this profile will receive the benefits of the programme.

This approach has the advantage of being directly targeted to individuals or families whom the system desires to help. However, families and individuals that for some reason were not surveyed (and therefore have no record) are excluded from the programmes. In addition, the system may lend itself to abuse, since those surveyed may slant their replies, or those who complete the record cards (social workers, interviewers) may manipulate the survey to favour given individuals or groups. Lastly, these records must be kept up to date, since a family's socio-economic conditions may vary significantly depending on whether its members have a stable job.

An alternative tool is the social stratification survey. The purpose of this tool is to ascertain rapidly, through surveys whose levels of representativity have been previously established, how effective current social programmes are and to what extent they reach the target population. When it is observed that the programme beneficiaries do not belong to the desired strata, the programme is redesigned so as to remove incentive for those who are not part of the target population. In other words, the self-targeting of beneficiaries is sought through modifications in the programme's features.[3]

These two approaches require that their design and implementation be thoroughly studied. It is also necessary to have appropriate information systems and staff trained to use the method and interpret its results.

Under the proposed scheme, these tools are crucial to the functioning of the social expenditure allocation system. They may also represent a significant contribution to the macroeconomic projections system in terms of intersectoral allocation of resources.

4.4   Macroeconomic models

A key tool for the macro-economic projections system is a macroeconomic model that predicts with some reliability the evolution of the economy and, in particular, the evolution of public-sector income.

Nearly all the countries have macroeconomic models, in their ministries of finance, economic affairs or planning or in private universities or institutes. However, there is rarely a linkage between these and the other tools mentioned above. Therefore, to enhance their operation and efficiency, it is important to develop models that take advantage of the accumulated information generated from project data banks and social expenditure allocation systems. Only in this way will it be possible to analyse the macroeconomic impact of various public-sector investment programmes.

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[3] For example, in a nutrition programme, the provision of milk may be restricted to children being treated in public clinics, thus removing incentive for those belonging to high socio-economic strata to receive the subsidy, since they prefer to take their children to private clinics.

The operation of macroeconomic models requires highly specialized staff, computers and data. The first two elements usually exist in all Governments, with availability of adequate data being the main constraint on the building of models that are more complete and that can predict more accurately.

4.5   Computer systems for investment programming

The preparation of investment programmes is slow, tedious work. Projects must be selected that will be included in the programme, calculating their financing needs and allocating them resources within budgetary frameworks. This task is usually so time-consuming that only one investment programme is prepared, with no possibility whatsoever of analysing the possible impact of alternative programmes.

To streamline this task, computer systems have been developed for investment programming. Their purpose is to allow for a smooth, efficient preparation of investment programmes, using data from project data banks, macroeconomic models and technical cooperation administration systems.

Computer systems for preparing investment programmes, are the core of the investment programming system. Their operation requires the prior existence of a project data bank and a macroeconomic model. It is also necessary to have information on the Government's objectives and targets, to enable projects to be ranked. Lastly, computer equipment and staff trained in the use of the system are required.

4.6   Computerized government accounting systems

Project data banks include in their design a module for following up the physical and financial execution of projects and studies. However, it is also necessary to ascertain the expenditures made in social programmes and the operating costs of institutions. This information, together with data on investment, is handled by the government accounting system.

Government accounting systems are usually seen as monitoring systems. However, their main function should be to provide useful information for decision-making. This means that staff working with the system must be able to devote more time to analysing information and less to processing it. Also, information must be timely and complete. The development of computerized government accounting systems have been aimed at this objective.

These systems usually operate in computer networks that connect all the institutions with the finance ministry. Accounting systems are structured on the basis of institutions, their programmes or projects, and the spending target. Data is entered by each institution and is combined, through the network, in the finance ministry.

5.   SUMMARY AND CONCLUSIONS

A scheme has been presented for conceptualizing public investment as a process that produces goods and services. It distinguishes the processes of pre-investment, investment, social expenditure and operating costs, all controlled by a "management function".

The management function is then discussed, characterizing the systems that should comprise it in order to meet the objective of efficiently and effectively managing public-sector investment and expenditure; these are the budget follow-up and control system, the macroeconomic projections system, the current budget allocation system, the investment programming system and the social expenditure allocation system. The interrelationship of these systems is also studied, in each case analysing the inputs it requires and the information it produces.

A relationship is established between this theoretical model and the typical institutional set-up of the public sector, distinguishing the different functions of its components. Lastly, some tools are presented which have been developed to support the operation of the systems making up the public investment management function. These include project data banks, technical cooperation information systems, social stratification records and surveys, macroeconomic models, investment programming support systems and government accounting systems.

Conceptualizing public investment as a production process allows for establishing analogies to help define actions and tools to improve government management and promote national development. In the first place, it is obvious that resources are fungible, and can be allocated to various processes (pre-investment, investment and social expenditure) or to the operation of the State bureaucracy. Thus, action to improve the efficiency of the use of public-sector resources should be concentrated not only on aspects such as socio-economic appraisal of investment projects, but also on action to target social expenditure and reduce current expenditures (operating costs) and make them more flexible.

In the second place, it is clear that, although each of the support tools mentioned may be used independently of the others, the highest benefit will be obtained only when they are developed and implemented in a coordinated way. The complementarity among the various systems required by the management function makes each capable of using, besides its own information, related data contained in the other systems. This also prevents duplication of efforts by eliminating the repeated recording and processing of data.

The document points out that in order to be successful in introducing new support tools for the management of investment and public expenditure, it is essential to undertake, simultaneously, the development of the tool, institutional and legal reforms to implement it, the creation of procedures and methodologies for its operation and an adequate programme to train staff about it structure and operation. If any of these components is lacking, the probability of success in using the tool is very low. It is possible to make the necessary changes only where there is political will to do so. Therefore, a prerequisite to the use of any of the aforementioned tools is to convince the authorities of its potential benefits and usefulness, ensuring that they will support it.