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Criteria for the Assessment of the Feasibility of Specific Projects

Critères d'évaluation de la faisabilité de projets particuliers

Kriterien für die Beurteilung der Zweckmässigkeit von Bauvorhaben

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1. INTRODUCTION

At any time, in any country, an almost infinite number of construction projects could be advanced in the public interest. Many would be mutually incompatible and some would be positively undesirable, but a large number - far larger than could be supported by available resources - would doubtless be both desirable and compatible. All societies are faced, and always have been, with the problem of identifying not only the good projects, but the best, and deciding how large a portion of the community's resources should be committed to their realisation, i.e. determining the "opportunity cost" of using capital in a particular field rather than in the best alternative fields.

This is an exceedingly difficult problem, to which no intellectually satisfying solution has ever been found. Nevertheless a practical answer has got to be, and always is, found. Intellectually the problem is the same in both developed and developing countries and is the same for whomsoever is making the decision. In practice, however, the solution is affected very much by where and by whom it is produced. We shall therefore describe first the theoretical approach to a solution, and the difficulties involved, and then some of the practical questions arising particularly in developing countries.

Logically, a solution requires that all possible projects should be assessed together in order to arrive at an optimum programme extending over a long period of years. This is impossible, of course, and in pratice projects have to be assessed singly or in small groups. In every case, however, the assessment of feasibility is a comparison between two or more alternative future situations, of

which one is a "do nothing" situation and the others are alternative "do something" situations. The assessment of feasibility is a systematic comparison of the relative advantages and disadvantages of these alternative situations, and they may be conveniently considered in seven sets: technical, financial, economic, social, environmental, administrative and political. These comprise seven sets of basic or "secondary" criteria, which we shall briefly discuss before coming to the "primary" criteria, which translate these basic criteria into common units.

2. BASIC CRITERIA

2.1 Technical

All project proposals depend upon technical assumptions for credibility that they will achieve their objectives, and the assumptions are not always entirely valid. Although projects may be fully satisfactory as engineering structures, it is common for them to fail to perform exactly as intended. They may not provide their design capacity, they may prove unexpectedly dangerous, they may lack customer appeal. There are many ways in which proposals to build roads, bridges, airports, hospitals, schools, etc. may not fully achieve their purpose.

Clearly the first step in any feasibility assessment is to check the reliability of the technical content and to appraise the risk of failure, the degree to which the project will fulfil its objective and the risk of failing to do so.

2.2 Financial

Two crucial financial questions must be answered: how can the capital be obtained? and how much revenue can be expected from the project after completion? Clearly the answer to the former question may depend on that to the latter. If a project is expected to yield a good profit there will not often be much difficulty in obtaining either finance or approval. This is a reflection of the free market philosophy, deeply rooted in the histories of most developed and developing countries, which holds that if the customers are willing to pay the costs of the project, it must be good. This is not necessarily true but there is no doubt that projects such as power stations and railways will normally enjoy a far easier passage if they hold prospects of profit than if they do not, and they will often be accepted on that criterion alone.

There remain, however, a large number of projects which do not satisfy the profitability test. They are one of three types: first, those that could be profitable if prices and price structures were fixed with that objective, but other objectives supervene, e.g. some hospitals and motorways: secondly, those which could not make a profit, no matter what prices were charged e.g. some urban transit systems; and finally those where practical difficulties prevent the charging of prices, e.g. roads with unrestricted access, flood protection and certain public health projects.

It is these non-profit making projects which must be judged by other criteria although, to be logical, profitable projects should also be made to satisfy non-financial criteria. In some countries ways have been found to force major development agencies, both public and private, to observe environmental and social criteria as well as financial criteria, but it must be admitted that in most developing countries the task of forcing such agencies to accept lower profits in order to gain environmental or social benefits is difficult and not likely to succeed.

2.3 Economic

Most of the research put into project evaluation since the War has been concerned with economic criteria. The differences between the economic and the financial test is that whereas the financial test measures only the money gains accruing to the "enterprise", i.e. to a defined corportation or group of corporations or individuals, the economic test measures the value of all material gains - in money or in kind - to all members of the "community". The definition of community depends upon who is carrying out the study: to a national government it may be the nation, to a city government just the residents of the city, and so on, but it always embraces a much larger number of people than that covered by the financial test, and the total material effect - not just the money effect - of the project on all these people is assessed.

The prediction and measurement of the economic effects of a project encounter numerous difficulties, both theoretical and practical, which have engaged the attention of economists for a long time. When the whole community is included in the analysis there can be no such thing as a financial gain (except between the community and other communities) since all payments represent a gain to one pocket and an equal loss to another. But the prices that people are willing or not willing to pay, and the way that people respond to changes in prices, enable one to estimate what values people attach to goods and services and by how much they gain or lose when a project changes the prices or qualities of certain goods and services. The theory of consumer's surplus is employed in making these estimates.

Economic evaluation has been forced upon us by the inadequacy or impossibility of using conventional financial (i.e. commercial) criteria. But the search for acceptable methods of conducting such an evaluation has stumbled upon many difficulties, which it would not be appropriate in this introductory report to discuss in detail. The difficulties generally arise from the lack of market prices for certain things of value such as time, peace and quiet, safety, etc., or from their failure to reflect the true value of things, such as labour or foreign exchange when their respective prices are manipulated by the actions of governments or trade unions. These difficulties give rise to the use of "shadow prices" intended to represent the true values.

Most big civil engineering projects have a long life and are undertaken more in the interest of future generations than of the present, but what value should be attached to the satisfaction of future generations or to the future satisfaction of our own? Although simple answers are necessarily given to these questions, noone can pretend that they are very convincing.

A financial evaluation arrives at a financial rate of return on the capital investment, which may be compared with a minimum required rate representing what could be obtained by using the capital elsewhere in the economy; and an economic evaluation arrives similarly at an economic rate of return (which may be expressed as a "present value"); but there is no way of comparing these two rates. One cannot say that a 10 % economic rate of return is equivalent to any particular financial rate of return, or vice versa. Consequently there is a fundamental difficulty in knowing how the total national investment should be allocated between the two sectors, which are broadly the public and private sectors although some

public enterprises adopt financial criteria just like private enterprises. Nevertheless, the economic rate of return is often treated as if it were exactly comparable with the rate of interest.

2.4 Social

Although public projects are designed in the public interest they inevitably benefit some sections of the public more than others, and they may be positively damaging to some sections. It has often been presumed or hoped that, taking all such projects together, the benefits would be fairly spread through the community. This now appears unduly optimistic, especially in developing countries. Increasingly the question is being asked: who will benefit from the project? Whatever rates of return may be calculated, projects cannot be recommended if they give too much - in the light of the overall programme of public investment - to some classes, sectors or regions, and too little to others.

In particular, of course, there may be a general requirement that public investment should be used to help correct the inequalities of wealth and income produced by the private sector.

2.5 Environmental

Scarcely a single big project gets under way today without a deal of discussion, if not argument, over its impact on the environment. Although much of the discussion, in the past, has proved to be little more than lip service, many projects have paid serious attention to the environment and their feasibility studies have placed high emphasis upon it, e.g. the Third London Airport projects.

It must be admitted, however, that despite considerable research there are still great difficulties in knowing how to interpret the environmental data pertaining to project proposals. More data are now available than ever before - of noise levels, pollution content and nuisance measurements - but it is not easy to know how much significance to attach to them. And on visual issues, which may be very important, there seems to be not satisfactory way even of measuring the phenomenon.

It is often said in developing countries that "environment" is a luxury that cannot be afforded until other more pressing needs have been met, and one can readily agree that it is more important to feed the hungry and house the homeless than to reduce the levels of noise and pollution. But this is a false argument because there is usually no direct choice between food and housing, on the one hand, and environmental improvement on the other. The majority of people in the developing countries are neither hungry nor homeless, but the environmental conditions in which they live are frequently abysmal. Is it really right that developing countries cannot afford to pay attention to the environment?

2.6 Administrative

It is easy for planners to forget that in the end, if planning is to mean anything, it has to be implemented. Often this means legislation or the issuing of regulations, with subsequent enforcement. The police may be involved, inspection may be needed, licensing officers may be required. Most important, especially in some developing countries, the success of a project may depend upon an honest bureacracy. Many a fine project, in its realisation, has cost more than it should have or has been rehashed, as a result of improper influence upon those responsible for its implementation.

2.7 Political

Few major civil engineering projects manage to escape political involvement. Since the final decisions are normally made by politicians it is natural that the political implications should influence the decisions. In developing countries, where infrastructure is generally very inadequate, the political importance or prestige of a new road, harbour, airport, or industrial estate may be immense and may be of greater influence on the final decision than any of the other criteria mentioned above.

3. WEIGHTING OF CRITERIA

Until the last 20 years project decisions were of two kinds. They were either commercial decisions based on technical and financial criteria alone, or social decisions based on "hunch", "judgement", "far-sightedness" or some similar vague mental process purporting "to take all factors into account" and "to arrive at a balanced decision". Of course, all projects are designed to satisfy some need, which in most cases is real enough, but there are always fare more needs than can be satisfied and the whole purpose of project assessment is to sort out those which should receive priority. Without doubt the traditional ways of assessing public projects were based perforce on singularly inadequate knowledge of the present and purely visionary views of the future.

During the last 20 years or so, great efforts have been made to develop a more rational approach to project assessment through cost-benefit analysis, the essence of which was - and perhaps still is - to quantify all the secondary criteria described above and express them in common units (e.g. money units) so as to be able to add them up and arrive at a single-figure answer. Logically, in order to do this, further criteria or weightings are required, which may be called "primary criteria". These criteria consist of rules which enable the costs and benefits expressed under the seven sets of secondary criteria to be weighed together.

There are three sets of primary criteria: first, those which give weights to different values affecting a given group of people, e.g. noise, leisure time, income, security, etc.; secondly, those which give weights to different groups of people; and thirdly, those which give weights to different time periods.

It has to be faced that very little progress has been made in obtaining objective values for any of these criteria. Intangible costs such as noise and leisure time have been subjected to intensive research but have not yielded convincing values. Even with the value of leisure time, which has received the most attention, we are really not better able now to say what value or values should be adopted than we were before the problem was first treated in a quantitative manner. Very few studies have even attempted to give different weights to different groups of people, and the weighting of different time periods is always highly arbitrary.

Cost-benefit analysis has made most progress in the area of economic criteria, and for this reason perhaps there has been a strong tendency for such analyses to be heavily biased towards economic factors. Many studies have entirely ignored, or made only passing mention of, non-economic criteria, even in situations where they clearly could be important.

This is well recognised now and few analysts are prepared any longer to ignore social and environmental criteria simply because they are difficult to quantify. Just as financial criteria yielded ground to economic criteria in the recent past, so will economic criteria yield ground to social and environmental criteria in the near future, if present trends continue. But whereas the emphasis in the developed countries will be on the environment, in the developing countries it will probably be on the poor and the underemployed.

4. PROJECT SELECTION

We have discussed at a very general level some of the problems of assessing project feasibility. But what exactly should be the final objective of a feasibility study? Should it be to recommend a decision or, more modestly, to provide vital information relevant to a decision? The final decision is never taken by the people who make the study, and one could produce a long list of such studies where recommendations have been rejected or ignored by their recipients.

It might be thought, from what has been said above, that feasibility studies have encountered so many difficulties that their results are often unreliable and are commonly ignored anyway if they do not conform with the predetermined views of politicians. Cost-benefit analysis, it might be concluded, has failed to reach its bright goal and we are still no further forward than in the age of "hunch".

In our view, however, this is not the right conclusion. It would be more reasonable to say that the goal was set too high and should be sensibly lowered. Those who once believed that cost-benefit analysis could lead to objective decision-making, in which the decision was, to all intents and purposes, reached solely by a rigorous measurement and analysis of facts and figures, have been proved over-optimistic. It is fairly clear, after all the experience which is now behind us, that judgement and subjective evaluation will continue to play an important part in the selection of projects and, if they are to be realistic, in the feasibility studies too.

This does not mean that we are back in the age of "hunch". Cost-benefit analysis has made two important contributions and could yet make a third. First it has forced analysts to set out systematically all the important ways in which a project might affect the Community, and the interractions between them. Thus a more comprehensive understanding of the problem has been obtained. Secondly, it has led to an enormous amount of statistical measurement, giving far more reliable assessment of magnitudes than was ever possible before. Thus, at the very worst, we have substituted well-informed "hunch" for "hunch" based largely on prejudice and dogma.

The further advance which could still be made by cost-benefit analysis requires first the recognition that some values cannot be obtained by objective means; they must be and will be determined subjectively. For instance, the social value of reducing unemployment is an important item and should never be ignored in any study where the level of unemployment is affected, but the actual values to be assumed can only be a subjective decision. The value of life, relevant to safety measures, is another example. What cost-benefit could usefully do with such items is to recognise that subjective values are unavoidable and to insist that values or weights be specified and written down for all to see. Nothing is more conducive to the rational making of decisions than to get the person who "takes everything

into account" to set down, for his own benefit as well as that of others, exactly how much account he is taking of everything.

This brings us to the question of whose values are relevant. Presumably the body that provides the capital funds is bound to have some influence but this may not be the same body that exercises political control over the final decision; in developing countries this may be an international lending acency such as the World Bank. There may be several political bodies whose agreement is essential, and the cooperation of commercial interest may also be necessary.

Clearly these various bodies may attach different weights to the various criteria, and the project analysts may have their own values too which they wish to advance. There is no "solution" to this problem. A clash of interests is often unavoidable and eventually, after a process of diplomacy, some sort of compromise will be reached reflecting the relative power or skill of the various parties.

5. DEVELOPING COUNTRIES

In principle, as we have said, there is no difference between project assessment in developed and developing countries. The differences are partly practical and partly of emphasis.

Practical difficulties arise because the level of information is usually lower in developing countries. Many statistics which might be available in Europe are not available in the Third World, and those statistics that are available are sometimes highly unreliable. Other kinds of information such as maps, regulations, property ownership, discount rates, programmes and forecasts are generally less available and less reliable than in the developed countries.

A basic rule for project analysts is not to incorporate more detail and refinement in the analysis than the data can justify. The poorer the data, the simpler and cruder must be the analysis. It follows that in the developing countries one must be prepared to simplify one's methodology, not because it is impossible to use more sophisticated methods but because it is a waste of time and money to do so if the data are not good enough.

Differences of emphasis arise in developing countries simply because they are at an earlier stage of economic development than in the developed countries, and this is normally associated with less developed educational and political systems too. Their priorities are obviously different in that, the basic necessities of life have not yet been provided for the great majority as they have been in developed countries. This means that lower standards must be accepted, indeed insisted on, for such things as transport, drainage, electricity and water, in order to release resources for basic housing, sewerage and elementary facilities for health and education.

The other side of the same coin is the lack of resources with which to satisfy the pressing needs of the developing countries. By definition, capital is desparately scarce, except in the oil-rich states with small populations, and labour is relatively plentiful and therefore cheap. It follows that a suitably high price (i.e. rate of interest or rate of return) must be placed on capital, although in practice this is not easy to determine, and labour-intensive pro-

duction methods must be used whenever the low price of labour (and the high price of capital) makes it cheaper to do so. Whether one should go further than this and use labour-intensive methods even when they are more costly, in order to relieve unemployment, is a question for debate. Before doing so one must look deeply into the implications elsewhere in the economy.

Shortage of capital is closely linked with shortage of foreign exchange since much capital equipment has to be imported. The balance of payments position is of crucial importance but this can vary greatly from one developing country to another. Where there is a chronic shortage of foreign exchange, which is the usual case, this may be an important factor to take into account, in contrast with the developed countries where it is usually ignored.

Differences of education mean that some systems, e.g. traffic and parking systems, which work well in Europe or America cannot be contemplated in certain developing countries. Public opinion in these countries is also very different, being highly sensitive to the prices of basic necessities and quite insensitive to issues of equity of environment.

Finally, and perhaps most important, every major project in a developing country will have a political aspect. One cannot generalise about the political environment because it varies enormously, much more than within the developed world. There are dictatorships of left and right, powerful monarchies, various brands of democracy, influential aristocracies, military governments - in fact, every possible kind of political arrangement at both national and local level. Any study which fails to take careful account of the political pressures and constraints is liable to prove a waste of time.