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ARTICLES

Development Policy

Improved Methods of Analysing Projects

by Dr Udo Hein, State Secretary, Ministry for Economic Cooperation, Bonn

In the course of the coming months, preparatory talks will be held about the Second Development Decade of the United Nations. The first ten years devoted to the aim are on the point of coming to their end. Since the beginning of the sixties, an annual total of about DM 40,000 mn has been transferred by all donor countries and supra-national organisations to developing countries for the purposes of development aid – to what effect? By and large, it may be stated that an average growth rate of the GNP of about 5 p.c. p.a., which had been aimed at, was achieved, but that half of it (i.e. between 2 and 3 p.c.) was absorbed by population growth. GNPs per head thus rose only by between 2 and 3 p.c. annually. For countries like India, this means that their purchasing power per head has increased annually by about DM 5, an almost unnoticeable improvement in view of the "explosions of rising expectations" and of higher growth rates in industrialised countries, which causes the familiar "scissors" between the poor and the wealthy countries to open the gap between the two blades progressively more and more. In a number of developing countries, including Greece, Israel, the Philippines, and Taiwan, it has been proved that speedy economic development, assisted by outside aid, is not unattainable. Also the economies of Mexico, Chile, Turkey, South Korea, Thailand, Tunisia, Yugoslavia, and others, display a steady and brisk expansion of their production. There are, on the other hand, also a number of countries whose development marks time or advances at an unsatisfactory pace.

Critical Bottlenecks

Critical bottlenecks for the economy of developing countries are of a threefold nature: firstly, many of them lack technical knowhow and skills as well as the aptitudes required for successful organisation; secondly, there is a gap between the desirable level of investment and the volume of savings available locally, and thirdly, their balance of pay-

ments shows growing deficits. However, these forms in which developing countries' economic weakness find expression are only outward symptoms of an underlying lack of structural strength in ethical precepts for actions and habits of behaviour, for development above all also presupposes cultural and social changes: developing populations must be willing and prepared to learn to use advanced techniques, to move from agricultural to industrial work, to adopt the way of life of industrialised societies, to practise family planning, to modernise their institutions in a democratic spirit, to adapt their legal standards to the needs of economic development, to establish new forms and methods of public administration, and to differentiate the machineries of public power and of resolving conflicts. Countries which have conspicuously failed to meet these requirements are those whose economies are suffering from perpetual political tension and unrest, and which display low growth rates from a point of departure which shows low incomes per head of population.

Among the development countries, too, a growing gap has been opening between those with relatively high and low incomes per head. At the top of the scale are Israel, Greece, Panama, Hong Kong, Yugoslavia, Nicaragua, Peru, Mexico, and Venezuela, with annual growth rates of national incomes of between 5 and 7 p.c., and annual incomes per head of DM 1,500–2,000, whilst at the other end of the scale are countries like India, Bolivia, Egypt, Ceylon, and almost all the developing countries of tropical Africa, whose growth rates hover between 3 and 5 p.c. p.a. and whose incomes per head range from an annual DM 400 to DM 800. The countries at the top are usually able to offer to world trade a widely diversified production and export offer of products, ample mineral resources, tolerably efficient systems of public education, modern habits of personal behaviour among their peoples, and sufficiently developed economic, social, and political institutions.

Far behind on the track are left those countries whose economies are dependent on exporting one or a few commodities — e.g. coffee, cocoa, rubber, etc. In many cases, their home markets are not yet even in permanent communication with the modern world circulation of currencies. It is characteristic for them, that their populations have little education and vocational training, that large groups of these populations are not participating in economic and political developments, and that their public institutions are underdeveloped and of poor efficiency. The mere size of a country is often already a determining factor of the development chances. There are, of course, countries which are simply too small for accumulating sufficient savings, raising ample numbers of skilled workers, and building up markets of sufficient absorptive capacity for modern production plants, without their joining up to form larger regional economic associations or unions.

There are two obvious and incontrovertible truths:

There is no alternative to continuing and strengthening the work of international economic cooperation;

the decisive efforts must be made by the developing countries themselves. Foreign aid can only assist these efforts but never replace them, both through finding the funds for building up a developing economy, and through the limited possibilities for interfering from the outside with the economic and social structure of any given development country. But foreign financial aid could be made more effective.

A Schedule of Systematic Steps

Development policies, as all other policies, are basically also a process of learning new things perpetually. What we in the Federal Republic of Germany are learning in this context mainly teaches us to adopt a more efficient and more effective development policy. Advanced analytical methods for increasing the effectiveness and efficiency of projects and programmes have been worked out in the Federal Republic mainly by the Deutsches Institut für Entwicklungspolitik (German Institute for Development Policy)¹. It was found that the cost-benefit-analysis is particularly useful for evaluating infrastructural projects which cannot be subjected to the usual scrutiny as to profits earned in a market².

During the administration of President Johnson in the United States, similar forms of evaluation have

¹ cf. the studies on problems of method, e.g. Klaus Billerbeck, *Kosten-Ertrags-Analyse. Ein Instrument zur Rationalisierung der administrierten Allokation bei Bildungs- und Gesundheitsinvestitionen (Cost-Benefit-Analysis, a Contribution to Rationalising Public Fund Allocation to Educational and Health Projects)*; Berlin, 1968; Burghard Claus, Peter Michael Rügner, and others, *Evaluierung von Gewerbeschulen, Fallstudie: Die iranisch-deutschen Gewerbeschulen in Teheran und Täbris (Iran) (The Evaluation of Technical Schools, A Case Study: The Iranian-German Technical Schools in Teheran and Tabriz/Iran)*; Berlin, 1969; Helmut Bräuer and others, *Estimation of Foreign Capital Requirements as a Guide to Economic Policy. (The Case of Ghana for 1968-1972)*; Berlin, 1968.

been made mandatory since 1965 through a directive of the President for all decisions on spending public money³.

In practice, it has been found that the following schedule of systematic steps is useful for evaluating projects, in this order:

- a comprehensive description of objectives;
- a precise description of subordinate aims;
- scrutiny as to compatibility between various objectives and between subordinate aims, and between those and the main objectives (compatibility);
- drawing up a list of priorities of the various aims and objectives (priorities);
- conclusions as to criteria able to measure the effectiveness of public fund spending ("operationalisation of objectives");
- listing of all alternative projects and programmes capable of leading to fulfilment of accepted objectives (alternatives);
- selection of the optimal alternative with regard to objectives and limitations by using analytical yardsticks;
- control of success achieved by expenditure;
- conclusions from results of analysis and control. Redrafting of aims, reforming of criteria, and choosing of new alternatives.

Precise Description of Objectives

In the detailed application of this schedule, a number of problems will be found which have never yet been fully appreciated in the use of analytical procedures, on the one hand, because some of them have not yet been resolved by economic theory, and on the other hand, because not all development aid has yet been subjected to such methods of analysis. Objectives of development aid are usually stated in such general terms that it will be found necessary to define them more precisely and to "operationalise" them. The vagueness of aims makes analysis more difficult, but this is unavoidable in political systems which require a minimum degree of general agreement before political decisions can be made. If we define objectives precisely, this means that we show up the conflicts involved, whilst objectives which have been kept vague deliberately make it easier to find a common denominator for the far-flung and also non-consistent motions of different groups. Among such notions are the

² cf. Günter Elsholz, *Cost-Benefit-Analyse, Kriterien der Wirtschaftlichkeit öffentlicher Investitionen*, in: *Hamburger Jahrbuch für Wirtschafts- und Gesellschaftspolitik (Criteria of Economic Efficiency of Public Authority Investments)*, in: *Hamburg Annual for Economic and Social Political Questions*, Tübingen, 1967, pp. 286 passim.

³ cf. Gerhard Colm, *National Goals Analysis and Marginal Utility Economics*, in: *Finanzarchiv (New Series)*, Vol. 24, No. 2, 1965, pp. 208 passim; Murray L. Weidenbaum, *Economic Analysis and Government Expenditure Decisions*, in: *Finanzarchiv (New Series)*, Vol. 25, No. 3, 1966, pp. 463 passim. Dieter Weiss, *Das Planning-Programming-Budgeting-System in der amerikanischen Bundesregierung (The PPB-System within the American Administration)*; Deutsches Institut für Entwicklungspolitik, Berlin, 1968.

slogans: "a policy of peace", "economic growth", "securing free and democratic structures", and "the economic integration of the world". Taking the last-named slogan as an example: it can easily be imagined what keen conflicts would break out if we but tried to name, and work for, precisely defined aims, e.g. to decide which European industries ought to be transferred to developing countries, and/or which particular obstacles to imports of specialised products ought to be dismantled in order to enable developing countries to earn a major part of the foreign currency they need through engaging in international trade, instead of closing the foreign exchange gaps with growing development aid⁴.

When we define objectives and aims more precisely, an unavoidable effect will also be the discovery of incompatible aims, and the need to draw up an order of priorities. Priority listing is a process which is needed for drawing up any budget, whose estimates are nothing but accurate financial priority lists without, however, openly proclaiming the conflicting nature of different objectives and their practical effects. When people fight for increasing budgetary estimates, most interested parties possess only insufficient information in detail for being able to judge accurately the likely effects of any given decisions about spending, e.g. what will be the consequence of quantitative "trade-off" between a sum of DM 100 mn for either financing additional defence equipment, or additional educational spending, or new hospital beds, or on control of air pollution through industry.

Operationalisation of Objectives

To "operationalise" objectives means defining them in a form which makes their execution amendable to measuring. The yardsticks by which they will be measured should be quantitative, as far as possible, but this need not mean that the quantities must always be measured in money terms. Measuring the success or failure of any project or programme also means that they become comparable with alternative projects or programmes. Progressive accuracy in defining the aims of a technical school provided under a German technical aid programme, and operationalising them may proceed as follows: Superordinate objectives of German foreign and development policy (e.g. economic cooperation, laying the social foundations for economic development, etc.); contribution to economic growth; supply of the required skilled workers; comparison between the number of trained skilled workers with the monies spent on their training⁵. This sum is a

⁴ cf. Heinz Bachmann, Zollpolitik und Entwicklungsländer (Tariff Policy and Developing Countries); Tübingen and Zurich, 1965, pp. 43 passim.; Klaus Billebeck, Die Konsequenzen der Industrialisierung der Entwicklungsländer für die Industrieländer (Effects of Industrialisation of Developing Countries upon Industrialised Countries), Cologne and Opladen, 1964, pp. 27 passim.

⁵ cf. Claus and Rügner, l.c., p. 10.

criterion which will permit the assessment of the degree to which an objective has been reached at given costs (in many cases even under conditions of restricted budgets), and the weighing of the results against those of alternative schemes. Should it not be possible to apply direct measurement methods to results of aid spent, criteria of approximation have to be developed and applied. Thus, in the cases of noise abatement and of air pollution control, psychological pressures and deterioration can hardly be measured directly, but it is naturally possible to determine the volume of the noise level by either the number of phons reached and the volume of air pollution by stating the percentage of irritants and noxious gases and dust in a given atmosphere.

Logically, it should be only a step from here to examine all possible or, at least, all relevant alternatives for reaching given objectives, but in most estimating procedures for public authority budgeting such methods are still considered an innovation. What actually happens is usually the following:

- Emerging of a new project;
- examination whether funds are available;
- political feasibility test;
- economic feasibility test;
- decision to spend.

It is rare that a case is subjected to examination whether there may be alternatives, and which costs and beneficial results would be likely to be caused by such alternatives, during the whole period of their operation, not only for the current budget year. Instead of input/output analysis, inputs alone are usually being considered (input meaning here, budgetary funds). Costs and beneficial results do not include only monetary sums but also other variables which are measurable in actual quantities (decibels, pollutant contents of the air, etc.) and variables whose changes can only be assessed qualitatively (e.g. amenities of a landscape or neighbourhood).

Alternative for Projects

Using this new concept for evolving practical policies has first led to the search for any alternatives to existing suggestions for new projects and programmes. This again produced a type of activity known as "measures for finding projects"⁶, on which experts are asked to give their opinions. This is intended to lead government departments and agencies to evolve their own analytical initiatives, instead of simply waiting for project applications being submitted to them from

⁶ Christian Heimpel, Projektvorschlag für Technische Hilfe Ceylon (Project Proposal for the Technical Aid to Ceylon), Deutsches Institut für Entwicklungspolitik, Berlin, 1968; Arend Hübener, Der Einsatz deutscher Kapitalhilfe für direkt produktive Vorhaben in Aethiopien (The Use of German Capital Aid for Directly Productive Projects in Ethiopia); Deutsches Institut für Entwicklungspolitik, Berlin, 1968.

outside. Notwithstanding this change, the formal procedure of dealing only with "applications" for aid remains in force, which means that project concepts must naturally be agreed to and desired by the recipient countries, who have to request their institution and formalisation before they are carried out.

After an optimal alternative has been selected in relation to operationalised aims, the next logical step is, of course, the assessment of success or failure of expenditure. Such evaluations after the event present a task that is easily solved in practice since project development and execution have then reached a point which offers empirical facts to analytic processing. This was also the reason why such assessments after the event have, above all, been applied by preference to the training of new staff for German development activities⁷. Measuring units and measuring techniques were tested and gradually developed further especially in assessing the so-called "intangibles" determining the success or failure of projects for educational and public health aid, and of assistance to modernising the social struc-

⁷ Burghard Claus and others, Die Evaluierung von Gewerbeschulen (Evaluating Technical Schools), Deutsches Institut für Entwicklungspolitik, Berlin, 1968; Stefan A. Musto, Deutsche Freiwillige in der Elfenbeinküste (German Volunteers in the Ivory Coast), Bestandsaufnahme und Versuch einer Evaluierung (Inventory and Tentative Evaluation); Deutsches Institut für Entwicklungspolitik, Berlin, 1967.

ture, using as measuring objects relatively transparent units, e.g. an East African hospital with 100 beds, or an aid project of the German Development Service in Latin America⁸.

Conclusions from Test Results

The last step of evaluation consists in drawing conclusions from the preceding analytical work. Objectives, criteria, and alternatives will be re-defined or defined more precisely than before. During recent years, German development practice has led to the evolution of the following procedure:

□ expert opinions that have been produced by advisers and consultants are commented on by the groups and institutions involved and responsible for given projects (project managers in the developing country, or the Federal Ministries responsible, etc.);

⁸ cf. K. Billerbeck and F. O. Höring, Feleghe Heiwot Hospital in Bahar Dar/Godjan/Aethiopien; Deutsches Institut für Entwicklungspolitik, Berlin, 1968; Stefan A. Musto, Deutsche Freiwillige in der Elfenbeinküste, l.c.; Stefan A. Musto and Klaus Esser, Deutsche Freiwillige in Bolivien (German Volunteers in Bolivia), Deutsches Institut für Entwicklungspolitik, Berlin, 1968; Albrecht Kruse-Rodenacker and Christian Heimpel, Studie zum Projekt Palmkernölmühle Cotonou/Dahomey (Study of the Project for a Palm Nut Oil Mill), Institut für Empirische Wirtschaftsforschung (Institute for Empirical Economic Research) and Deutsches Institut für Entwicklungspolitik, Berlin, 1967; Christian Heimpel, Kartoffel- und Gemüseanbau in Ceylon (Potato and Vegetable Growing in Ceylon), Deutsches Institut für Entwicklungspolitik, Berlin, 1968.

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by Wolfgang Reisener

In 1961 government regulation of liner shipping in the US was considerably tightened by the amendment of the Shipping Act of 1916. Since that time American shipping policy, carried out by the Federal Maritime Commission (FMC), is perpetually causing sharp discussions in international shipping quarters. The present publication examines these relations for the first time in a comprehensive and critical manner. It is of highest topicality in view of the governments' growing interference with shipping.

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- joint discussion of the same expert opinions by an inter-departmental working group in Bonn;
- evaluation and assessment by the decision-making bodies in the civil service;
- drawing up of a final report to Parliament.

In applying this method of analysing projects as systems of relations, several problems have not yet been resolved in practice, including the still disputed question of discounting future costs and yields (opportunity costs, social time preference)⁹, of how risks and uncertainties are to be assessed¹⁰, and of how intangibles are to be accounted for. In practical life, when time may also be pressing, evaluators must often use methods of approximation, estimates, or even "educated guesses", for the better answer to a question will be useless and without value as against a merely approximated one, unless it can be produced within a given time and in a form which helps to solve a given problem about which a decision has to be made. Unpunctuality in supplying answers to questions that require settlement within a set time, tinkering with the terms of reference set by the authority which asks the questions, and ignorance of the pertinent points under investigation, these are the three mortal sins of expert consultants to political authorities which are committed more frequently than is good for the reputation of consultants and for the quality of political decision-making. Designing a "matrix of achievement for given compound objectives" has also been found very useful¹¹. Such a matrix displays multiple goals separately, which makes them easier to judge. It permits the marking of degrees of attainment for each objective separately, by comparing it with a selected alternative project or programme, which is lost by the usual method of assessing a vaguely defined, undifferentiated bundle of compound aims. It is, for example, also possible to elucidate alternatives that are based on different basic assumptions of uncertainty by simulating the problems in a computer. Simulation of this kind was, for the first time in German development work, used in 1969 for evaluating an energy grid system in North Africa¹².

Political Action With Risks

In spite of the impressive accumulation of research findings, political action appears to be more than ever fraught with risks. Government budgets are growing. One third or more of the GNP is channelled off by government and other public

authorities for redistribution. Political action occupies an ever wider field and its impact on life grows stronger steadily. Interdependence between different sections of the economy and of society grows through their merging with each other, but this also increases their sensitivity against disturbances in contiguous sectors. The more complex economic and social structures will become, the bigger will be the risks that threaten them, and this increases the need for defence measures against uncertainties by using advanced methods of analysis and forecasting.

Civil service administrations are in train of being transformed into units of efficient management, though in many places this process is slow-moving, with a high degree of viscosity. Out-of-date experiences from the days of "cameralistic" administration are no longer applicable to novel tasks. The old-style civil service used to make out cases for occasional state interference, whilst the new civil servant has been given tasks which require the administration of processes. The volume and the intensity of government spending programmes require the application of advanced tools for assisting decision-making on three different levels:

- through assistance by experts in working out projects and programmes;
- through compounding problem combinations across and beyond traditional borders of research disciplines, in order to make such compounds mature for decision-making;
- through help being made available for drawing up concepts for acting under conditions of restricted freedom of decision-making, making use of practicable alternatives for acting, and not neglecting the political, administrative, and budgetary climate and restrictions.

This will make for an enforced violation of two established frontier lines: that between expert consultancy and political decision-making which has been drawn in the Federal Republic of Germany, in complete contrast to the practice of consultancy, for example, in the United States, and the borderline hemming in the acknowledgment and acceptance of research findings by the politician and the civil servant, which may be especially firmly fixed in Germany, because of the quarrel about whether so-called value-judgments may be produced by the social sciences or not, and its after-effects, and because of the remnants of administrative traditions from the period of "cameralism" (which developed in the continental monarchies under "enlightened absolutism"). Co-operation between the two groups is unavoidable, this cooperation has been practised and tested already for a number of years in all those fields where the civil service has to compete internationally in tackling novel tasks. This testing practice is fertilising the brains and the imaginations of both sides.

⁹ cf. William J. Baumol, On the Social Rate of Discount, in: American Economic Review, Sept. 1968, p. 788 passim, containing also a bibliography of the relevant literature.

¹⁰ cf. H. Schneeweiss, Entscheidungskriterien bei Risiko (Criteria for Decision-Making under Conditions of Different Risks); Berlin, Heidelberg, and New York, 1967.

¹¹ Morris Hill, A Goals-Achievement Matrix for Evaluating Alternative Plans, in: Journal of the American Institute of Planners; Vol. 34, No. 1, Jan. 1968, p. 19.

¹² Dieter Weiss and others, Ex-post-Evaluierung der Hochspannungsleitung Tunis-Stax-Metlaoui (Evaluation after Completion of High Voltage Grid.), unpublished manuscript, Deutsches Institut für Entwicklungspolitik, Berlin, 1969.