Overseas Development Institute

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STAG PLACE LONDON SW15 5DP

Construction in Overseas **Development**

A search for appropriate aid and OVERSEAS DEVELOPMENT-INStrade measures for the 1970s PORTLAND HOUSE

Charles Cockburn

Foreword by Lord Campbell of Eskan



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Construction in Overseas Development

Construction activity plays a very important role in economic and social activity. Without construction there is no development, and an often unrecognised fact is that more than half (and sometimes nearer two-thirds) of fixed capital formation is in construction. Construction, as a result, is the second biggest economic sector in most countries second to agriculture in the developing countries and to manufacturing in the more advanced. It is also a very important employer.

One of the major problems facing developing countries is that of achieving large public construction programmes with an acute shortage of professional skills, lack of capital, and an inexperienced local construction industry. In spite of this, the precise nature of the construction problem in these countries, and the appropriate trade and aid measures to help solve it, receive little attention.

Charles Cockburn argues that in view of the extensive 'development' experience of British builders and architects in the United Kingdom since 1948, and of their already considerable involvement in export activity, they are in a particularly strong position to help solve this problem.

Construction in Overseas Development is based on a series of seminars held in 1969 by the Overseas Development Institute at the suggestion of the author. Representatives from the construction industry and associated professions, and experts concerned with development, discussed the relevance of British experience to the situation in developing countries, and suggested appropriate measures for the coming decade.

Charles Cockburn, AADipl, ARIBA, of Building for Development, is presently engaged in an Intermediate Technology Development Group project for the advancement of technology and procedures in the construction industry of developing countries.

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The Lebrary Overseas development institute Portland House STAG PLACE LORDON SW15 51P

A search for appropriate aid and trade measures for the 1970s



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Charles Cockburn

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Foreword by Lord Campbell of Eskan¹

This pamphlet is a distillation of the ideas which were put forward at a series of four symposia on Building for Overseas Development in late 1968 and early 1969. The concept of a study of the contribution which the construction industries should make to overseas development was that of Mr. Charles Cockburn and, with the backing of the Overseas Development Institute, an impressive amount of wisdom and expertise was mobilised. Much progress was made in identifying specific paths for action and indicating those areas where further hard thought was needed.

Some of them are not new. Throughout Mr. Cockburn's report there are echoes of Sir Harold Banwell's classic *The Planning and Management of Contracts for Building and Civil Engineering Work*, familiar to me from my three years as Chairman of the Economic Development Councils for Building and Civil Engineering. The proper programming of work, the early association of the contractor, the importance of training and of continuity of work for the contractor are all Banwell themes of especial validity for the developing countries. The government of a developing country has a great opportunity to be an enlightened client; our symposia showed that being an enlightened client can start at the very genesis of construction work, in the drawing up of long-term development plans.

Other themes of the report will be readily appreciated by those who, like myself, have been intimately concerned with primary producing countries. The building industry of developing countries needs to develop along lines suited to the circumstances of the country. This means that long-term development plans must take account of the building potential of the country concerned and have regard to its proper development. Developing countries cannot fail to be aware of the problems which excessive dependence on expatriate contractors places upon them. There is the strain on foreign currency resources; the problems, first of finding, collecting, and training the labour which the expatriate contractor recruits locally, and the even more agonising one of re-employing and dispersing that labour when the project is completed and the expatriate contractor leaves. It is perhaps not surprising that there is sometimes a resentful attitude towards international contracting firms. This would be greatly assuaged if the contracting industry of the developed countries were to assist in the establishment of a contracting and sub-contracting capability in the developing

I. Lord Campbell of Eskan is Chairman of Milton Keynes Development Corporation (responsible for planning and building Britain's first New City).

countries. This would not, in my view, affect the direct commercial interests of those international firms who alone can undertake the largest projects.

I hope that no one who is actively concerned with construction, whether in the professions or as a contractor, will feel that this pamphlet holds nothing for him because some of these difficult questions are raised but not fully answered. The problems are there and the developed countries cannot afford to ignore them for long if there is to be the world economic health on which the construction industry so much depends for its well-being.

This short pamphlet should be read and discussed wherever there is contact between the construction industries and the needs of the developing countries.

Introduction

Construction in planned growth

The world's first Development Decade has come and gone. In the course of these years we have become used to thinking in terms of development planning.

Where was *building* in this scheme? The main contention of this paper is that, while construction featured prominently in development, the construction industry was largely absent from the planning.

This, of course, simplifies the reality. But many people working for increased standards of living, higher food production, better levels of welfare, more industrial output have become aware of the constraint imposed on this advance by the lack of planning for the construction industry.

Construction is fundamental to development. More than half, and often nearer two-thirds, of capital formation in most countries is in construction. This building and civil engineering work comprises power stations, roads, dams, and ports—the country's basic infrastructure. It includes factories and agricultural buildings; shops and offices; schools, colleges, clinics, and hospitals to serve the social plan; and houses to improve the lot of the new urban population. The construction industry is, as a result, the second largest economic sector in most countries.

We know that more people with higher hopes can only be satisfied by a planned development of the world's resources and skills. And we know that development relies on capital investment, of which usually more than half is in construction. Yet construction work and the construction industry have been curiously neglected in past planning.

Development has been seen on the one hand as a social programme: the raising of incomes, increase in food production, improvement of health and education. On the other hand it has been seen in economic terms: the investment of capital, the creation of infrastructure, diversification of products, industrial growth. Building was there in the social context. People were aware of the need for the provision of shelter, as well as for more food and medical services. The work in technology and design of buildings went on. But in the economic context relatively little attention was given to the element of construction in capital investment, or to the construction industry in industrial development. The demand for building and civil engineering work that underlies every chapter of any country's development plan has seldom been added up and made explicit. Even more rarely has the growth and increased efficiency of the construction industry been planned to meet it.

A new emphasis for British aid ?—the ODI seminars

As the developed nations are urged to increase overseas aid in coming years to 1% of GNP, they will depend, as before, on both official action and investment by the private sector. In the next decade a much greater part of this effort than hitherto, both British government and private effort, should be directed to alleviating the constraint on development in many countries that is imposed by the inadequacy of the construction industry.

A corollary is that economic research, both here and abroad, should concentrate more attention than before on the nature of construction activity and its relationship to development.

In late 1968 and early 1969 a series of seminars was organised by the Overseas Development Institute in London. They brought together representatives of the British construction industry, the architectural and engineering professions in both public employment and private practice, groups with export promotion interests, and economists whose main concern was with development planning. A list of the themes and speakers appears in the Appendix.

The aim of the seminars was twofold. First, to explore the facts about construction and the construction industry in economic development; current British involvement in construction work overseas; and British experience in the management of public building programmes at home. Secondly, it was hoped that out of this exploration might come some practical and well supported proposals for an appropriate contribution by the British construction industry, professions, and government in the coming decade towards the alleviation of the world's construction problem.

The programme of seminars succeeded in the first respect, but was less successful in the second. The papers that were given, and the discussions that followed, outlined clearly enough the real nature of the problem and its size, and how much it had been neglected. But they also revealed the conflict between short-term (commercial) and long-term (development) interests that lies in the way of its solution.

The construction industries of the world are so large and so backward, and the increase in the work required of them so great, that government aid alone cannot hope to satisfy more than a very small part of the need for money and skill. Nor is the problem going to be solved, in the long run, by the private industries of the developed world selling their services and their products in the conventional way to the less developed countries. The burden that importing materials and employing foreign contractors lays on an underdeveloped country needs no emphasis. Yet in Britain it is in the private sector that the most important resources of skill and experience reside. They should be tapped to assist the modernisation of construction industries in developing countries, but industry has not yet found the means to reconcile its immediate commercial interests with overseas development interests. This is why no British action for the 1970s was committed at the seminars. The way forward was not identified.

This paper is mainly a restatement of the problem as it was described at the seminars, and of ideas generated by the discussions. A wide range of subject matter was covered there, however, and in preparing the paper I have been selective in what I hope were the interests of coherence. I do not think any essential parts of the argument have been omitted, but the responsibility for this pamphlet is mine.

The paper draws extensively on the words of the speakers at the seminars, and in addition I am indebted for many of the points made to those who chaired the meetings and others who attended and shared their ideas in discussion. In one sense, however, the present paper goes further than the seminars. The draft has been patiently read, re-read, and commented upon by a number of those concerned with the seminars, and out of the activity of this informal 'working group' has emerged a series of general recommendations and a number of more specific proposals. They are summarised below.

Summary of recommendations

1 General recommendation. Greater recognition is urgently needed of the importance of construction in economic and social development. More effort should be devoted to alleviating the constraint on development that is imposed by inadequate construction industries in many countries. More appropriate aid and trade measures in construction for the 1970s should be sought and discussed as a matter of priority.

2 *Economic research*, in the UK and abroad, should concentrate more attention than before on the nature of construction activity and its relationship to development.

3 The search must be intensified for means of reconciling the immediate commercial interests of *private construction firms* (including materials manufacturing firms) of exporting countries with the development interests of overseas countries.

4 Greater emphasis should be given to industrial, commercial, and administrative aspects of construction by the *building research institutions* of the world, the greater part of whose work has until now concerned construction technology.

5 Governments of developing countries should be encouraged to recognise and use their influence as clients of construction to create conditions for the modernisation of construction practices. They might act to remove outmoded constraints on their emergent building industries, for instance, by

(a) the repeal of outdated building regulations;

(b) the modernisation of contractual relationships in the public sector;

(c) the modernisation of syllabuses and textbooks used in training for building.

More positively they can

(d) seek to bring about regional continuity of demand for building;

(e) make credit available to small contractors to make possible their growth;

(f) provide appropriate training for contractors, both technical and managerial;

(g) sponsor technical innovation.

6 Aid agencies of the developed countries, in particular of the UK, should help to create in governments of developing countries an understanding of their dependence on the construction industry for the achievement of their plans and of their power to influence the improvement of its performance, and should aim to generate a demand for assistance in this task. Conversely, they should help to create the response by mobilising appropriate skills in the aid-giving countries, and devising methods whereby the transfer of these skills may be achieved.

Finally, three specific proposals are made as a first step towards fulfilling these more general recommendations.

First, it is proposed that the Ministry of Overseas Development of the UK establish an internal group or division concerned with aid policy for construction. Secondly, the professions and administrators of the public sector might combine to form a standing team of individuals who have had relevant experience on public building programme work here in the UK and who are interested to serve developing countries. Thirdly, a new kind of agency is proposed that might act as a focus for contracting and manufacturing firms wishing to offer advisory services to public clients in developing countries.

1 The Building Problem

How far are we justified in talking of the building¹ problem? The developed countries have industrialised and built without thinking of this construction activity as a problem. But in today's developing world there are two particular features of construction which compel us to think in terms of a definite building problem.

First, the actual amount of building that is going to have to be done, as these countries move towards the standard of living of present-day Europe or America, will represent important increases in annual output over current performance. The scale of the building effort is going to be very great.

Secondly, the type of activity involved is peculiarly complicated. Some of the characteristics of construction in a developing situation produce an inefficiency that causes the construction industry to be a constraint on development. An important contribution towards more rapid economic growth in the less developed countries could, therefore, come from the introduction of technology, and above all procedures, that help to remove this constraint.

The magnitude of the coming building effort

International figures published by the United Nations allow of a very approximate total annual sum of 'value added' by construction in the world as a whole: that is to say the unique contribution that construction activity makes to the sum of Gross Domestic Product, excluding the goods and services that construction buys from other sectors of the economy. This total for 1965, the latest year obtainable, is very roughly \$100,000m.²

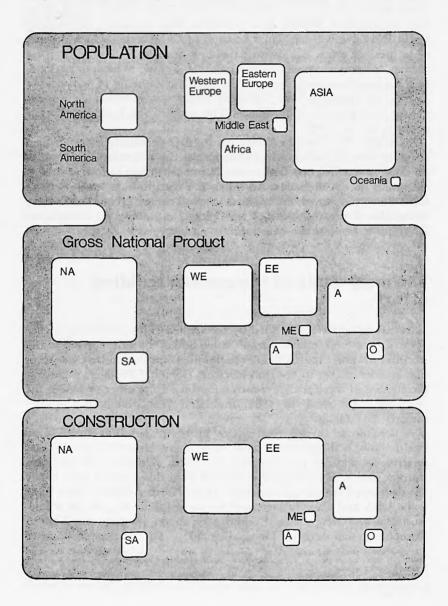
A breakdown of this total figure by geographical regions of the world shows a disproportionately large share of world construction, relative to population, occurring in North America and Western Europe, and a relative impoverishment from this point of view of the less developed regions of Asia and Africa. North America alone (that is the USA and Canada) accounts for no less than 32% of the whole. Australia and New Zealand add a little more. Western and Eastern Europe together account for another 50%. The remainder (a mere

^{1.} Because of the cumbersome nature of the word 'construction' I have sometimes used the word 'building', quite incorrectly, as shorthand. Both building and civil engineering are intended to be included in both words.

^{2.} These figures, and the illustration on page 12, are derived from work carried out by the Building Economics Research Unit (BERU), University College, London, under the direction of Professor D. A. Turin.

Population, GNP and Construction, The World, 1965

Note The area of the square corresponding to each major region is proportional to that region's share of the world's total.



15%) is the meagre share of the rest of the globe, which includes the vast territories and rapidly expanding populations of Asia, Africa, and Latin America.

Even allowing for the approximate nature of the figures, the truth is plain. A high rate of building goes along with a developed economy. Whether an increased rate of building is a cause or effect of development does not matter. Most likely it is both. All we need to know is that an increasing amount of building *will* be done in the now underdeveloped countries as they advance.

In addition to the rough geographical distribution described above, the total figure of world construction can be distributed by economic groupings of countries according to their level of development (measured in per capita Gross National Product). The figures are striking and confirm the conclusion above. The richer countries, those with a per capita GNP above \$800 a year, together account for between 80 and 90% of world output in construction. The per capita income range in the world is itself very great: from \$3,130 per capita in the North American region to an average of only \$133 in Asia and Africa -a ratio of 24 to 1. But the range of capital formation in construction per head of population is even greater: something like 37 to 1. The inequality of distribution of building in the world is greater even than the inequality of wealth. And yet the developing countries' building requirements are as big as, if not bigger than, those of the developed world. The rate of increase of building activity in those countries can therefore be expected to exceed the rate of increase of wealth.

The special features of construction

These figures, approximate as they are, indicate something of the magnitude of the building effort that is required by development. This quantitative problem is vexed by a number of qualitative features¹ of building activity that hinder output and operate as a block to modernisation.

1 The nature of employment

The first feature is the significance of construction as an employer. Because of its importance in employment, governments often use the industry to absorb unemployment at the expense of productivity.

Construction employs anything between 6 and 10% of the total² labour force in developed countries and rather less, but still a substantial proportion, 2 to 6%, in developing countries. Again, as development advances the proportion can be expected to increase. But this is

^{1.} These features of course apply also to construction in developed countries. But they are more exaggerated and a potentially more serious impediment to change in the developing world.

^{2.} A definition of terms will be found in the work of BERU (see note page 11).

only employment in the contracting industry itself; if one takes into account the workers extracting raw materials, manufacturing building components, engaged in transport and distribution for the industry, the result is a total of as much as 10% of the civilian labour force in less developed countries, 15% in more industrialised countries.

Secondly, the nature of employment in the construction industry is rather different from other types of employment. The intensity of unemployment, for the majority of countries both developed and undeveloped, for which such an index can be calculated is between two and three times higher in construction than the national average. This is related to a number of other factors. Construction activity is seasonal, influenced by weather. The construction labour force is largely casual, large numbers of labourers leaving and joining the industry from month to month. A high proportion of workers employed in construction are unskilled. In developing countries the wages of construction workers are lower than manufacturing wages.

Building is often a transitional rather than a life-long job for workers. It is a step on the road from rural, unskilled, agricultural work on the one hand, to urban, skilled, permanent manufacturing jobs on the other. These factors taken together are particularly harmful in a developing situation where the construction industry itself is only in process of formation and can ill afford the wastage of expertise, of the opportunity of learning by experience, that they imply.

2 Fluctuations in demand

Another characteristic of construction in developing countries is the tendency for the industry's output (its effective demand) to vary widely from year to year. In such countries there is a large sector under government control, and this can be and often is manipulated for all kinds of political and economic purposes. Then again, the construction sector is often still relatively small and often the very many small jobs it comprises are overshadowed by a few outsize projects. There is only one Kariba Dam in an area. While it is being built, output is high. When it is finished, output falls dramatically. Another reason is that, in developing countries as everywhere else, capital formation is related to confidence. Many drastic falls in output may be related to periods of political uncertainty. These fluctuations in demand inhibit the steady growth of production capacity of the industry.

3 The geographical scatter of work

Much of the building work of poorer countries is in rural, agricultural areas, and in small towns, separated from each other and the cities by inadequate roads. This applies as much to government building programmes—in which improvements in efficiency must be sought first—as to the private sector. A multitude of small scattered jobs lends itself less readily to modernisation than a programme of sizeable contracts at easily accessible locations. It is striking, however, that the clearest signs of rural development are also the signs of modernisation of construction: all-weather roads, the cement bag, and 'pan' roofing.

4 Dependence on imports

There is a great dependence on imported construction materials and skills in most developing countries. It has been estimated that 60% of all construction materials used in Africa are imported.¹ Often building is held up by the specification of foreign materials whose import is restricted by shortage of foreign exchange. And use of imported materials can wastefully raise the unit price of building.

Great advantages can be gained for construction by substituting locally made for imported materials. The making of building materials and components, even cement, is a low-technology industry, quite suitable for introduction in the early stages of economic development. Simple building materials can be made practically anywhere, even in the most barren circumstances (for instance, sand-lime bricks in Kuwait).

Less developed countries are not only dependent on material imports, but also on the import of skills. There is, it is true, an impressive increase in the numbers of professionally qualified people. The most serious shortage remains in the middle ranks, where there is an urgent need for technicians and foremen. These are the people whose training is the most difficult and most prolonged. Such people are, of course, relatively expensive to import. The situation is not unhopeful, however, because supervisory skills tend to depend less on training than on experience, and the lack may be made good as construction activity grows.

There is another need, for something that may be described as a skill, but is more accurately a skill combined with a kind of temperament: entrepreneurial expertise. Much more construction work in developing countries is carried out by European and other expatriate firms than is healthy from the point of view of the importing country. But the growth of a competent local construction industry waits in many countries for the appearance of a body of management-minded businessmen. Incentives and adult education programmes for contractors and building materials manufacturers are badly needed.

5 The need for a progressive client

Finally, underdeveloped countries very often lack the one thing that is a prerequisite to much of the potential improvement in construction efficiency: experienced and enlightened clients—in particular, public

1. Economic Commission for Africa, Housing in Africa, United Nations, 1965.

clients. The role of government in the development of a construction industry is discussed further below.

Neglect of construction in economic planning and research

Those who prepare the national plans of developing countries talk about education, about health, housing, agriculture, and communications. There is usually a chapter on each of these. There is normally a section on the manufacturing industry, under which may be a brief mention of cement or bricks. But an examination of a considerable number of recent development plans of countries at different levels of economic development revealed very few indeed that singled out the construction industry as one of the economic sectors for which targets are defined and whose relationship with other sectors of the economy is examined in detail. If there is a mention of the construction industry at all it is usually in connection with 'housing' programmes. It is an anomaly that there is usually a heavy emphasis on housing in such plans, even though the sum committed for housing is rarely more than a very small part of the total commitment for all types of construction in the capital budget.

A recognition of the construction industry's importance to development, presenting the problem and examining the solutions, is rare. The failure to think about the contracting industry as a distinct entity in industrial development, and indeed the failure often to see construction work itself as a distinct item in capital investment, is a serious omission. Apart from the volumes of national development plans, texts on economic development also neglect construction. In many of the major works on the theme, the rare mentions of construction are oblique, not frontal. In the 2,000-page, 3-volume epic by Gunnar Myrdal, *Asian Drama: an Enquiry into the Poverty of Nations*, the index reveals one mention of construction relative to one country: the Philippines. In many economic texts it is considered sufficient to record construction's characteristic of constraint on investment. There is little idea as yet of planning the growth of the industrial resources of construction to match construction demand.

The neglect of industrial and commercial aspects of construction in building research

The building research stations of the world, of which many are in developing areas, have achieved an impressive output of work in the last twenty years. But it is worth noting how much of this is strictly concerned with technology and design, and how little is concerned with industrial, commercial, and administrative procedures for improving construction output. The development of the construction industry, and the education of the public client in the use of its power for purposes of modernising the industry, have been much neglected.

Here, then, is an odd situation. The construction industry provides a vitally important service to development. It is beset by peculiar problems, including a pressure to increase its output rapidly. But it is as yet almost entirely neglected by the economic planners of governments in both the developed and the developing world.

2 Government and Construction

Degrees of government involvement in construction¹

What is the extent of government involvement in construction, and how can it be used to further construction efficiency?

Most governments' concern with construction is to some extent unconscious, certainly unplanned, and often ineffective as a result. Nevertheless, governments all find themselves relating to the construction industry at some point, even if involuntarily.

The first responsibility of governments is the welfare of people, and at this level of concern they are interested in construction activity as an element in national income. They are interested too in its product (houses, factories, roads, etc.) because these buildings shelter and make possible people's activities.

Because of this primary responsibility for welfare, some governments are committed to providing finance for construction, lending capital for housing or other purposes over long repayment periods.

The next degree of participation involves the public authority as client. Central and local government programmes in all countries account for a large part of total construction demand. As client the central or local government provides funds for, and commissions work from, the construction industry. Government is thus concerned for the standard of the building it commissions. Often this concern is extended to all construction work, or to particular types of building, such as housing, for which it lays down and enforces planning, building, and safety regulations. To supervise these programmes, sometimes to effect them, most countries have a central department—and usually regional and provincial offices—of public works. The government's importance as client is paramount: it is the only promoter of building likely to have a long-term and continuous (even if interrupted or oscillating) capital investment programme in construction.

A subsequent stage of government involvement in building is the actual design of buildings for its own programme. Ministries of works, education, housing, etc. may have their own architects and engineers preparing plans and specifications. In doing this work, government often emerges as the largest or the only significant employer of highly skilled or professional manpower in the construction industry.

Finally, governments are sometimes involved in the production of building, employing their own operatives and supervising their own

^{1.} For a more thorough study of the scale of government involvement in construction, see the work of BERU (see note page 11).

jobs, or setting up national corporations to compete with private contractors for government work.

Although these different kinds of participation can be ranked on a continuous scale, from a diffuse, general, indirect concern to an intensive, particular and direct involvement, these degrees of involvement are not necessarily sequential. What is important is to recognise that at any point along the scale there is some possibility of action, either remedial or positively inventive, to improve the efficiency of the construction industry and the quality and cost of its output.

Action open to governments

First, remedial action—the undoing of traditional constraints. This is usually a piecemeal process.

Governments could repeal irrelevant or outdated building regulations, often thirty or forty years behind current practice, which are sometimes found in developing countries.

They could modernise the restrictive, ill-conceived contractual relationships, often borrowed from the metropolitan powers, with which developing countries are burdened. Public works departments, over which government has direct control, are often guilty of blocking development by adhering to what they feel to be necessarily high standards (complete specifications, and over-complete bills of quantities, for example) which are often quite unrelated to the skills and capacity of the country in question. Indeed, revision of the role and responsibilities of the public works department by government amounts to putting its own house in order, and is one of its most urgent remedial tasks.

In education, government can do much to modernise the syllabuses and textbooks used in training for building, which are often modelled far too closely on unsuitable practices of former colonial powers.

Remedial action is an urgent necessity, and there is much that can be done even in this passive way. But there is a limit to the effectiveness of government until the moment at which it accepts responsibility for construction planning as a comprehensive activity; and this acceptance will not come before an understanding that the achievement of national economic and social objectives depends upon it.

A turning point in government attitudes to the industry often arrives with the government ceasing to be merely a client and beginning to take responsibility centrally for *design* of building and engineering work. It enters the construction process then at a much higher level of responsibility. Once the government is designer of part of its construction work, the way is open to 'designing' the management of its own programmes. While design may often be commissioned from consultants, control over implementation cannot be so delegated. A concern with implementation is the new phenomenon which has evolved in Britain since the war, which is discussed below, and from which stem really important changes that have occurred in the relationship between the participants in the building process, in the role of the professions and of the client.

The government and the industry in partnership

Very few developing countries' governments have yet embarked on this active, modernising role in the construction process. When they do become so involved, governments are bound to find themselves acting in the interests of the construction industry.

What actual steps can governments take to improve private building practice? First, they can create positive incentives. They can try to ensure *continuity of demand*, not only at national but more important at regional and local levels, which are those which actually affect the builder and manufacturer most. They can try to ensure continuity of demand, not only for the industry as a whole but for its different specialised trades which arise in increasing numbers as demand grows more sophisticated. It is not easy to switch men and investment from one skill or specialisation to another.

Secondly, governments can make *credit* available for the small contractor. The whole system of credit is, as a rule, geared to benefit the big contractor who can give securities and guarantees, and to exclude the local, emergent builder who really needs help.

Again, the government can introduce *training opportunities* more closely reflecting needs. The contractor himself, because of high labour turnover, is not interested in paying for training for his employees. Recruitment to the industry may be at a poor level. This may be due to the bad *image* the industry has in many countries, and governments can take an active part in making construction employment more attractive to a higher level of manpower.

Particularly important, they must provide management courses for the small- and medium-scale entrepreneur. Too often, the contractor or manufacturer is inexperienced and almost always uneducated. Frequently he has less training than his skilled employees. His greatest lack is a knowledge of the simplest techniques of office and site management and job planning. A special kind of adult education is needed, and the best incentive to the entrepreneur to attend such courses is the knowledge that he will be rewarded by government with contracts.

Finally, and most important, governments can sponsor *technical innovation* that will increase productivity and improve the standard of building. Concrete technology offers an example of a steady con-

tinuum of development, from the most elementary uses of cement in mortar or sand-cement blocks, through *in situ* concrete, to pre-casting of reinforced elements, and eventually to pre-stressing and posttensioning of concrete beams and slabs. The industry will not necessarily move from one level of concrete technology to the next without the active encouragement and help of government. Only the public sector in a developing country can afford investment in technical research and development; as a rule only government employs the high-calibre staff capable of carrying it out; and only governments have the power to see it introduced into everyday practice.

The underlying role of economic research

The government of a developing country may engage in short-term development activity with the construction industry simply as a response to an evident constraint on its achievements. Where it ought to invest its greatest effort, however, where, when, and of what kind the industry ought to be, are questions that should be answered by economic research.

The planning departments need to know, but rarely do know, the amount and cost of building and engineering work, type by type, region by region, and year by year, that is going to be required of the industry if the country's development proposals are going to be fulfilled. This means doing the construction sum. This sum must not exclude the implications for future maintenance of current new construction, and should include some estimate of private as well as public demand for building.

Likewise governments need to assess the capacity of public administration units (such as Ministries of Works) and industrial units concerned with construction, and to assess the available men, materials, and finance for building. It is not only in developing countries that basic statistics on construction are inadequate or altogether lacking. One of the first needs in construction planning is to set up at least the fundamental statistical series covering construction output, material and component production, the structure of the construction industry, and manpower. Construction activity is typically *local*, and statistical series giving spatial distribution are therefore particularly important. In developing situations, national, regional, and local data of this kind may be lacking for many years to come: techniques must be developed for by-passing them, by making do with sample surveys and example studies of the industry's capacity and needs.

Only such economic research into construction demand and construction resources can provide a basis for long-term development of the industry. To this point we have thought about the massive building problems faced by the poorer areas of the world, and some of the techniques that must be developed to meet them.

Now the questions must be asked: are the governments, professions, and industries of the developed countries, and in particular Britain, qualified to assist the less developed areas in such action, to help them to develop the construction industry and remove the constraints on increased construction output? And how, in the current circumstances of aid and trade, can this transfer of skills be made?

3 Britain's Contribution

Recent experience in the United Kingdom

In the UK, to take this country as an example, it is certain that we have, in the public sector, the private professions, and the industry, a resource of skill and experience that could be of service to development situations elsewhere.

In the last two decades, the stimulus of urgent public building programmes has met with a response of just the kind described above, from government, industry, and the professions.

The year 1962 was a turning point for the then Ministry of Works, which was renamed the Ministry of Public Building and Works. It had been, in the main, a gigantic repair and maintenance shop for government buildings. Then two things occurred. Responsibility for construction for the Service Departments (Army, Navy, and Air Force) was transferred to the new Ministry, thus greatly increasing its new building programme. Secondly, a Director-General of Research and Development was appointed with the duties of co-ordinating and extending the activities of the various R and D groups throughout the government service; assuming direct responsibility for R and D within the Ministry itself; encouraging and developing the use of new and rapid methods of construction; standardising the use and production building components to the greatest possible extent; and securing the widespread dissemination of the best modern practice. And at this moment the Ministry took on the acknowledged role of sponsor to the construction industry. (Though the Ministry has been further reorganised since 1962, the important acceptance of a sponsorship role toward the industry still stands.)

In 1964 the National Building Agency was created to encourage the use of new techniques of design and construction. Beginning in the 1950s, official architects in other building ministries, such as those of housing and education, and in some county, city, and borough councils and consortia of local authorities, reacted to the responsibility for increased expenditure of public money in continuing programmes of building by innovation, in the roles and relationship of the members of the building team, client included.

The architects and their teams responsible for public programmes devised techniques of organisation and method whereby standards could be specified and maintained within determined cost limits. The professions in private practice collaborated in this work. Contracting and component manufacturing firms responded with the development of new building elements and methods of assembly.

The post-war school-building programme

It may be useful to take as a successful and 'export-worthy' example of public sector development techniques the achievements of the school-building programme in post-war England and Wales.¹

The achievements of this programme have been, primarily, that schools were built in sufficient quantity and with sufficient speed to overcome the war-time backlog, to accommodate the birth-rate bulge of the late forties, and to meet the need of new suburban and town growth. This was done, not only without sacrifice of quality, but with an improvement so great that there has even been criticism that schools are too lavish. Certainly the high standard of building has encouraged the spread of great advances in educational method. The programme was executed at cost levels which were so low that the cost in real terms of a school built in 1956 was exactly half that of one built in 1930; and for nearly 15 years school-building costs were held down, in comparison with general building costs, to such an extent that costs per square foot were only about 65% of what they would otherwise have been. And overall, these results were achieved in a period of recurring financial crisis and shortage of conventional materials and craft skills.

Three elements of success

Three elements contributed to this achievement: technological, professional, and administrative. The technological success was the development of constructional systems, largely prefabricated, which minimised the use of scarce site labour, maximised speed of construction, conformed to predetermined levels of cost, and at the same time were capable of producing buildings which were tools designed positively to aid the educational process, and not mere boxes which educators would have had to adapt as best they could.

This technological success would not have been possible without the professional element. This was, in the main, the architects acting in a professional capacity on behalf of user organisations. Without the know-how and goodwill of the manufacturers with whom they collaborated, and, more important, their risk capital, the endeavour would not have succeeded. But it was essentially the professional control of the operation which obtained the cost levels and assured the educational interest by equally intimate collaboration with the educators concerned (teachers, Directors of Education, and HM Inspectorate of Schools), and which used the building systems to the best advantage on the individual schools which were designed.

Thirdly, neither professionals nor producers would have succeeded 1. The following pages are based on the contribution to the ODI seminars of Professor Guy Oddie. without the third element, the administrative element, for which the Ministry of Education (now the Department of Education and Science) from 1948 onwards was responsible. It was they who invented the three crucial devices of annual investment programmes, determined and announced well in advance of execution so as to give time for adequate preparation; maximum standards of cost; and minimum standards of accommodation. These together guaranteed the level of return which a given annual investment would secure. These three devices were and are the three essentials of forward construction investment planning, whether in developed countries or less developed countries, and were at once both the incentive and the precondition for the technological and professional elements of success in the UK school-building programme.

The 'development group'

The focus and spearhead of the programme of school building in post-war Britain was the 'development group', more aptly termed an 'innovation group'. The core of these groups consisted of multidisciplinary teams of professionals, but associated with them were educators and administrators. Their objective was to find out what new requirements were arising as a result of educational change and innovation, to examine and evaluate current building techniques in the light of both experience and changing economic and technical circumstances, and to devise new solutions to the problems thus uncovered. These solutions were then incorporated into developments of the building system and also into development projects, that is to say individual school buildings which acted as trend-setters for other schools which followed them in the same or subsequent investment programmes.

By means of these development or innovation groups' work, carried on in both the Ministry of Education and the more forward-looking local education authorities, experience was accumulated and spread throughout the country. At the same time costs and standards were kept under regular and realistic review, and the volume of each investment programme was related not only to the finance available but to possible and realistic rates of production.

Relevance of development group methods to overseas situations

In spite of the apparent differences in degree between the UK situation and that of less developed countries, there is a demonstrable similarity of kind. The need to make savings in the money spent on buildings, and to make the most effective use of scarce skills, are universal. Such development¹ work as that described above, then, is an exampleperhaps one of many possible examples-of an activity evolved in the United Kingdom that could produce experience useful to a less developed country. Such an export would be a transfer of know-how, of procedures, that is mainly, though not exclusively, in the hands of the professionals in public employment and the central and local government administrator. The public sector, however, does not traditionally concern itself with the world abroad, and this expertise has not been seen to date as an 'exportable' commodity. Similarly, its value is insufficiently recognised by buyers for it to be commissioned as a service. This lack of awareness may be made good in time. Meanwhile, if these skills are to be applied in developing countries, they need to be transferred as part of the technical assistance programmes of aid agencies.

The present involvement of the British consultant overseas

The private sector architect and engineer and the construction industry itself are, however, engaged in activity overseas. To what extent can their work serve development interests?

First, private sector professional practice. Many architectural and engineering firms in the UK serve as consultants to public clients in less developed countries. Some already are given, or interpret, briefs to go further back in the process than the straightforward design of a building or complex of buildings. But this is rare; commissions are too often restricted to one-off projects.

In bold contrast to this limited approach to construction consultancy is the work of *agricultural* consultants. 'Much of their work consists of feasibility studies and is concerned with the planning of development from initial regional appraisals onwards. Agricultural consultants, therefore, tend to come in early in the planning process, at the stage when the object is to identify the areas of the country and the sectors of agricultural and natural resource development in which investment ought to be concentrated. This can then lead on to individual projects.'²

In contrast to the grand scope of the agricultural consultant's work, the architect, with a few notable exceptions, tends at present to plant one field of wheat at a time. Yet in a development situation he has a remarkable power to influence for the good the construction planning and building processes in which he is involved.

^{1.} This use of the word 'development'—to mean on the one hand the planned economic and social advance of poorer nations, and on the other the planned improvement of construction efficiency—may be ambiguous. But it may also be seen as underlining the applicability of the latter, as technique, to the former, as goal.

^{2.} Charles Young, Consultancy in Overseas Development, Overseas Development Institute, 1968.

Overseas work by contractors

As to the United Kingdom contracting industry, it is already deeply and increasingly involved overseas.

The value of contracts obtained during the year ended 31 March 1969 was $\pounds 233m$. The value of work done by 108 firms in more than 100 different countries rose from $\pounds 180m$ to $\pounds 204m$ in this year. (Materials, fitments, and components exports totalled $\pounds 170m$ in the calendar year 1969.) These figures illustrate the *scale* of the British construction industry's engagement outside this country, much of it in the developing world.

Similarly, the industry's involvement can be described more qualitatively. There is no avoiding the fact that those contracting firms that operate in developing countries, though they may see themselves as working from one contract to the next with little idea of permanency, are nonetheless actually part of the industry of those countries in which they work. As such, they can, if they have the motive, take a dynamic part in construction planning and development for those countries.

Take Nigeria as an example. There is in Nigeria what amounts to a three-tier industry. Leaving aside the traditional village builder and his private client, at the bottom are the emergent Nigerian contractors, often doing part-time jobbing work to supplement agriculture or trading, picking up one or two small contracts a year from the local works department. There is a second tier, comprising those few Nigerian firms that have emerged as competent to handle bigger contracts for state, even federal, public works programmes; and operating alongside them, a fair number of expatriate firms that are nonetheless local in operation. In Nigeria these are typically managed and owned by Lebanese or Italian entrepreneurs. This second tier of the industry, incidentally, plays a very important part in development work. It handles much of the middle scale of contracts, including most of the building, as opposed to civil engineering, work.

The third, or upper tier, consists mainly of expatriate firms. The British examples that come to mind have their head offices in Britain and branch offices in Nigeria or elsewhere in the West African region. These firms tender for the biggest contracts of all: often road and bridge building, port and dam construction, and those parts of the building programme that are organised into large contracts.

This picture is of course schematic. But what is certain is that all these types of contractor *together* represent the construction industry of Nigeria, the UK firms no less than the others. They are in the market for a common pool of labour and materials, and to some extent for a common programme of construction contracts. They share between them the job of carrying through the construction element of the development plan into solid fact.

The exporter of building materials and components

Along with the professional consultant and the contractor, the British manufacturer of building components is also engaged in the overseas scene: as exporter. We exported around \pounds 141m of building materials, fitments, and components in 1968, and \pounds 170m in 1969 (Ministry of Public Building and Works definitions).

Figures do not show readily how much of this total went to developing countries, but it was certainly a sizeable proportion.

Iron and steel bars, rods, angles, and sections play an important part, along with galvanised iron and steel sheets. Glass, cement, ceramics, building board, and metal window and door frames also feature in the export statistics.

4 Business and Development

A development role for expatriate firms

The question must be asked, to what extent, and by how much, does this work by the British construction industry abroad, while it benefits the UK balance of trade and the prosperity of our own enterprises, also further long-term overseas development?

Our export activity serves development by producing physical infrastructure. To what extent does it also advance local enterprise, skills, and management experience in building in the developing countries? What long-term policies could our industries devise and carry through that might so further economic development, beyond the provision of quality infrastructure, the well-designed bridges and glossy hotels?

The economic planner with development priorities would probably like to see the professional consultant seek wider and deeper briefs than are implicit in commissions for one-off design jobs; to see, and to help public clients in developing countries to see, individual design problems as part of a bigger problem; and also to recognise the remarkable power of the designer to influence the planning and building process, in his specification of materials, the building skills for which he designs, and the pattern of relationship he establishes with the public client, all in addition to the accommodation or infrastructure he helps provide.

What is it the economic planner would ask of the contracting firm in their overseas operation? At the very least, perhaps, that the industrial leaders take a positive role in the planned achievement of construction programmes beyond their individual contract by measures such as a training policy for their local managers, site agents, and operatives; a support policy towards local sub-contracting enterprises; the development of continuing local component manufacturing units; above all, an introduction to the public sector client, through their contractual relationship, of construction planning, programming, and development expertise.

Similarly, the development planner would like to see expatriate manufacturers invest in local plant, and lend production and management skills, in place of exporting ready-made products from Britain. Contrary to some fears, it is likely that the creation of local industries could ultimately expand, rather than diminish, international trade, by broadening the range of products required and increasing their sophistication.

Business or charity?

What is the response of the businessman, whether contractor, manufacturer, or consultant, to such propositions? From his point of view, the fact that it is overseas development with which he is involved is irrelevant. He calls it overseas trade.

In summary, his response has to be 'What's in it for us?' It is in the nature of business that the profit motive must be satisfied first, and the altruistic motive, where it exists, later.

But here is the dilemma. Only the *industry* of construction in developed countries has the skills, experience, and opportunity to make any kind of impact on the increasingly formidable building problem of the less developed areas of the world. The world's building needs, both technological and managerial, are far too extensive to be met by government aid alone, even if the scale of all our aid budgets were to be greatly increased. By far the greater part of our skills and our goods reside in the industrial sector with contractors, manufacturers, and professional people. Technical assistance programmes and the loan of experts under aid agreements can never be enough.

As things are, the rich and poor sectors of the world are, for better or worse, closely bound up with each other. We inevitably interact. The fact has to be faced, however, that the free, undoctored operation of world trade has proved to have been and to remain to the disadvantage of the poorer countries of the world. And by the test of market forces, development by whatever means is often in the short run an uneconomic use of resources.

Is there any common interest, then, uniting the construction industries of developed countries and the governments of poorer countries? In broader terms this question is the central interest of UNCTAD, the United Nations Conference on Trade and Development. It was the theme of a conference in London under the sponsorship of the Overseas Development Institute in May 1968.¹ Those who attended this conference were asked what to conclude from, and what to do about, the disadvantage at which the poorer countries find themselves with regard to the richer half of the world. The poorer countries' representatives claimed the world's economic arrangements to be rigged or tilted against their interests, and put the case that this should be corrected in the face of market forces.

The representatives of the richer countries denied the existence of a built-in bias. They 'asserted the primacy of economics and the touchstone of the market'. But they also recognised the existence of poverty and the terrible predicament of the greater part of the world. They recognised the moral necessity (but also, with the prospect of much widened world markets of the future, the expediency) of building in a bias the other way, in the favour of the poorer countries.

1. Donald Tyerman and Ernest Parsons, The Business of Development, Overseas Development Institute, 1968.

Thus, however poverty is viewed, by the poor themselves or by the rich, the conclusion is the same. The play of market forces must be amended, tempered, in the short run at least. It is certain that such action will not be, in the long run, to the disadvantage of the developed world.

Export possibilities or import needs?

The present approach to much of the developed world's overseas business in general, and construction business in particular, is outdated and is certainly inadequate for the future. The mere export of hardware, or the winning of one-off contracts by *ad hoc* trade missions and exhibitions of merchandise, is short-sighted. It is comparable to oldtime dealings in beads and mirrors, gin and shotguns. We tend to sell what we can most readily get rid of.

This cannot last. In most independent Third World countries very soon, if not already, the purchasing of goods and services and the placing of construction contracts for development programmes will be in the hands of administrators and planners who are looking for a comprehensive understanding of their problem. They will recognise an exporter or contractor who can visualise his exports as their needed imports, who can match his goods and services to long-term changes within that country as they occur; someone who can offer not just a pump, but a new thought about irrigation; not just a building, but a new thought about construction.

Trade ethics will change. Those firms that change with them, help them to change, will build up that confidence in their client countries that cannot but stand them in good stead in future trading years. We must learn to look far beyond the 'first sale'. We must try to understand the fabric of each developing society with which we have dealings, country by country, and to provide an appropriate response, tailored to meet their individual needs. The mutual dependence of business and development is clear: it hinges on confidence. Business is based on confidence, confidence comes with development, and development needs the assistance of business.

Construction is a very complex industry, involving a multitude of materials and skills, and tens of thousands of firms at a wide range of levels of technological development. As the industry in the UK overcomes its fragmentation under pressure of technological and administrative demands, it may find itself ready to evolve a comprehensive, co-ordinated, development-oriented policy towards the poorer countries with which it is engaged in business. The fact that the British industry comprises many firms of moderate size and at an 'intermediate' level of technology should be no disadvantage. Rather it should make us more aware of, and able to help to solve, the problem of countries at lower levels of industrialisation than our own.

5 Proposals for the 1970s

What can we do now?

The Third World, then, is confronted with an increasing demand for building and an inadequate machinery to supply it. We have the means, the experience, and the contact with developing countries, to help to improve that machinery.

As individuals it is difficult for us to know where to begin. The key, I think, rests in institutional adjustments that may enable us to make the transfer of skills that is necessary. Among the many possibilities there are three measures that would have the merit of being feasible with relatively little cost or disturbance to existing structures, and which would, I believe, have quick and far-reaching effects.

I What could be done by the Ministry of Overseas Development?

The Ministry, as the department responsible for official aid policies, could establish a group or division concerned with construction. At the time of writing, although the Ministry is advised by an Engineering Adviser, the Crown Agents, the Road Research Laboratory, and the Overseas Division of the Building Research Station, its only internal construction specialists are concerned with evaluating the design of proposed construction projects in the aid programme. The Ministry could begin, during the 1970s, to give to construction the emphasis that has in the past been given to agriculture and manufacturing industry. It should undertake

(a) to sponsor research into the construction industry's role in development;

(b) to stimulate discussion of the problem so as to ensure that construction work and the construction industry are not overlooked in development planning;

(c) to awaken in public building clients in developing countries the realisation of the possibilities open to them to modernise construction practice, and encourage requests for co-operation from Britain;

(d) to give backing to attempts by the British industry and professions to achieve a more appropriate involvement in construction for development;

(e) to devote more technical assistance funds to projects in this field.

A specific proposal that the Ministry might consider is the possibility of linking money from technical assistance funds with major construction contracts obtained in developing countries by British firms, to enable them to carry on local training schemes and development work in the course of their contract.

2 Making use of experience in the public sector

Secondly, the professions and administrators of the public sector might combine to form a *standing team* of individuals who have had relevant experience on public building programme work here in the UK. Such a team would comprise architects, engineers, and surveyors in government departments and local authorities and consortia, and those administrators who have been responsible for building programmes. These individuals would represent a kind of collaborative of expertise in the particular field of government action for the advancement of construction.

Dispersed in individual employment, the team could be given corporate identity by some central unit, which could serve as a clearing house for requests from governments, aid organisations, and financing bodies such as the World Bank, for specialists in the management of public building programmes to go abroad for short periods to cooperate with government departments in less developed countries.

3 A new kind of consultancy by construction firms?

Until now contractors and manufacturers of building components have been involved in overseas work almost entirely on the one hand as builders, on the other as exporters. The professions, for their part, have operated as consultants—but consultants on the design of buildings and civil engineering works.

I believe the way is open to construction consultancy. This means that contractors and manufacturers would move into the consultancy field too, representing a more appropriate contribution to development and also a profitable step in the long run for the industry. Instead of doing the work or making the goods, contractors and manufacturers would offer their advisory services to overseas governments, contracting firms, and manufacturers. Instead of exporting hardware, they would export know-how, in management and production.

Perhaps this could best be promoted by some new kind of agency acting as a focus for interested firms and interested clients, an ancillary of some existing body such as the Export Group for the Construction Industries, or the British Consultants Bureau. The ODI seminars on Building for Overseas Development provided a platform for discussion of the existing situation and possible measures to improve it.

This pamphlet is not a theoretical or academic treatise. By organising and presenting the facts arising at the seminars, and the issues discussed then and afterwards, it aims to generate action.

Who will take the next step?

Appendix

The series of seminars on 'Building for Overseas Development in the 1970s' was organised by the Overseas Development Institute. The four meetings took place between December 1968 and April 1969, and their themes were as follows:

1 The British construction industry and the less developed countries

Chairman: Lord Campbell of Eskan, Chairman of the Milton Keynes Development Corporation

Speaker: Charles Cockburn, Building for Development

2 British public authority building experience and its relevance to overseas development

Chairman: Sir Donald Gibson, Controller General, Ministry of Public Building and Works

Speaker: Professor Guy Oddie, University of Edinburgh

3 Government and construction in developing countries

Chairman: A. L. Adu, Deputy Secretary-General, Commonwealth Secretariat

Speaker: Professor D. A. Turin, University College, London

4 The business of construction: possible new initiatives in aid and overseas trade

Chairman: Sir Geoffrey Wilson, Permanent Secretary, Ministry of Overseas Development

Speaker: Donald Tyerman, formerly Editor, The Economist

The seminars were attended by a total of some 150 representatives of the following groups:

(a) leading contracting and manufacturing firms with overseas interests;

(b) professional practices engaged in consultancy work overseas;

(c) individuals from government departments, local authorities, and consortia with public building programmes;

(d) institutions representing the construction industry and professions in both public and private practice;

(e) institutions concerned with overseas trade;

(f) the Ministry of Overseas Development and other organisations concerned with overseas aid;

(g) economists and others with development interests.

Brief reports of each seminar were published in the journal *Building* on 28 February, 14 March, 21 March, and 23 May 1969.



Overseas Development Institute

The Overseas Development Institute (ODI) is an independent non-Government body aiming to promote wise action in the field of overseas development. It was set up in 1960 and is financed by donations from British business and by grants from British and American foundations and other sources. Its policies are determined by its Council.

The functions of the Institute are:

- 1 to provide a centre for research in development issues and problems, and to conduct studies of its own;
- 2 to be a forum for the exchange of views and information among those, in Britain and abroad, who are directly concerned with overseas development in business, in government, and in other organisations;
- 3 to keep the urgency of development issues and problems before the public and the responsible authorities.

ODI Review-4: British Development Policies, Needs and Prospects 1970

Editor: Andrzej Krassowski

The fourth in a series of annual reviews of British development policies. (80pp., 1970, \pounds 1)

The Business of Development

The three contributors to this publication were all participants at an ODI international conference 'The Outcome of UNCTAD II— Problems and Prospects', held in London in May 1968. Brazilian, American, French and British speakers included representatives of the OECD, the Group of 77, the World Bank, and of commerce and industry. A foreword by Lord Aldington, who gave the conference opening address, is followed by an essay by Donald Tyerman embodying his reflections on the talks and discussions; a concluding paper by Ernest Parsons reviews UNCTAD II at New Delhi. (20pp, 1968, 10s, 50p.)

The Aid Relationship

by Andrzej Krassowski

A study concerned with the contribution donors can make to maximise the effectiveness of the aid they provide. Special attention is paid to the role of permanent aid missions and the considerations which should guide donors in selecting projects and aid forms, techniques, and terms appropriate to the development needs of recipients. (124pp., 1968, 25s, \pounds 1.25.)

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