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Symposium on Maintenance and Repair in Developing Countries

Duisburg, Federal Republic of Germany, 10-17 November 1970

ISSUE PAPER

SESSION II

ITEM 5 OF THE PROVISIONAL ANNOTATED AGENDA

ECONOMIC ASPECTS OF MAINTENANCE ✓

Prepared

by

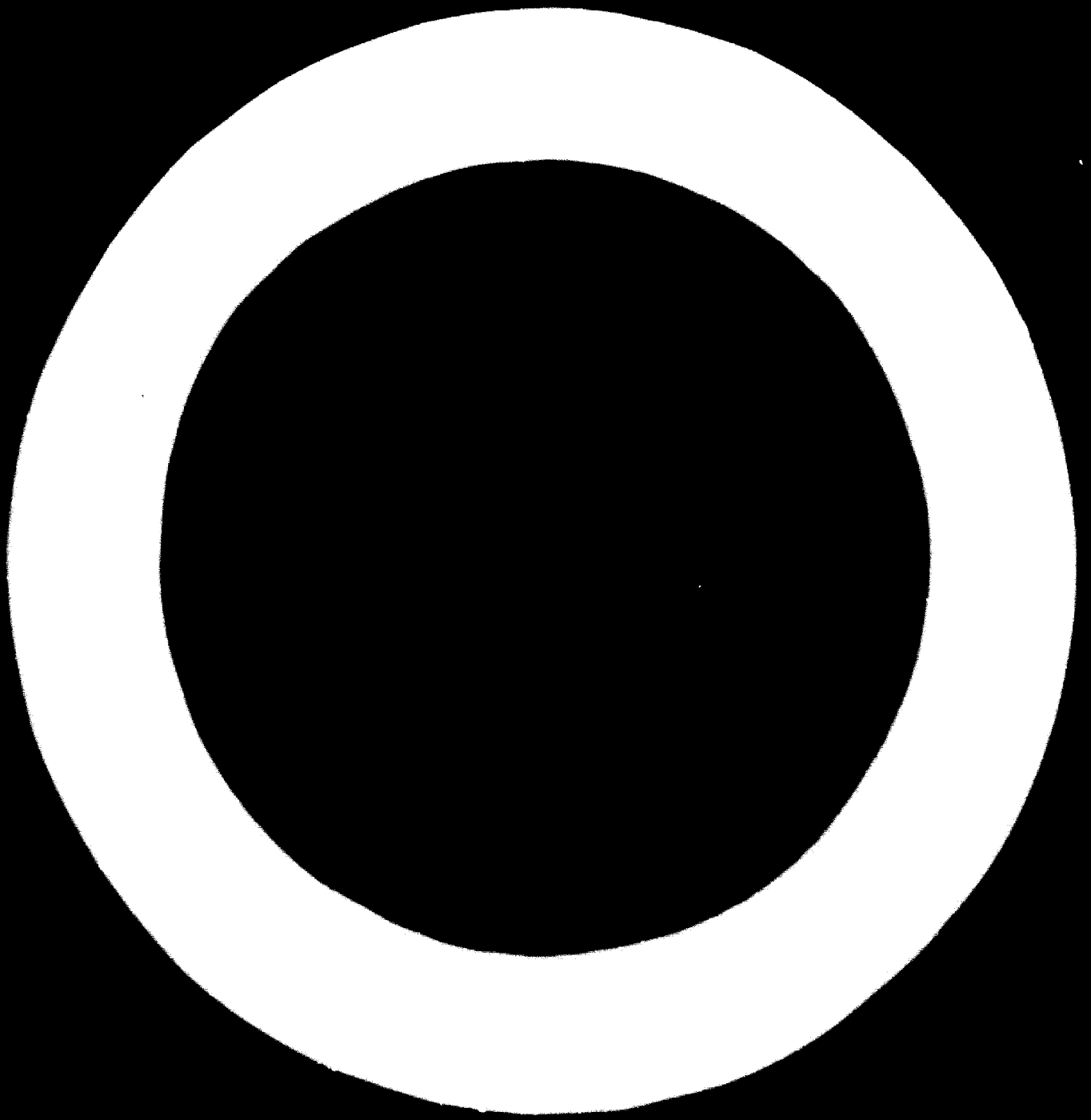
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From the economic point of view, maintenance and repair of equipment may be regarded as part of the investment in such equipment. Without proper maintenance, no equipment can perform its assigned functions or yield the expected output. Thus, the cost-benefit considerations applicable to capital investments are equally valid for decisions on maintenance. In addition, complex issues have to be resolved in a number of cases as to what combination of investment in equipment and outlays for maintenance would, in the long run, be optimal for achieving production targets at lowest cost.

Maintenance planning should, therefore, take fully into account the economic aspects. Such planning must reflect production and maintenance costs including outlays for new and second-hand machinery, modernisation of equipment and amortization of capital, availability of financial resources, and such additional factors as risks and losses due to breakdowns or deterioration of equipment and production stoppages. An overall estimate of economic aspects would, therefore, require the examination of each of these issues.

The economic aspects of maintenance are closely related to the engineering and managerial aspects of maintenance, both at the enterprise and national levels. This inter-relationship is recognized only in rare instances in developing countries. In most of these countries the tendency still prevails to conceive of maintenance mostly in technological or managerial terms, with little regard to the economic aspects of the problem. However, if maintenance is to make its full contribution to the progress of industrialization in developing countries, its economic aspects must be given the appropriate emphasis. Inadequate maintenance inevitably lowers production, both as regards quality and quantity, and such losses may, in the aggregate, seriously, if not fatally, affect the economy as a whole. In economic terms, poor maintenance will, in the long run, lead to the waste of a country's assets. In addition to direct losses, any disruption of the productive process entails indirect losses for the country's economy as a whole.

It is proposed that the Symposium review the economic aspects of maintenance with particular emphasis on the following issues:-

(a) The importance of maintenance to industrial development.

In order to establish a basis for a clearer understanding of the economic aspects of maintenance, the role of maintenance at the enterprise level, at the sectorial level and in the economy as a whole, including the inter-relationship of maintenance activities in these three areas, should be reviewed. Such a review would also serve to establish guidelines for allocation of resources for maintenance and for determining industrial and economic policy measures in this field.

In this context, the following issues may deserve examination:-

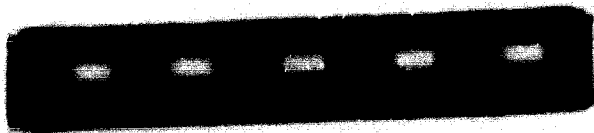
- actual and potential economic losses resulting from poor maintenance and repair;
- the role of governments in fostering proper maintenance and repair through economic measures;
- economic factors which have to be taken into account by governments in deciding upon maintenance policies (scarcity of capital, foreign exchange, skills, etc.);
- the role in maintenance and repair in the formulation of development strategies and planning;
- data requirements for maintenance and repair problems at the national level.

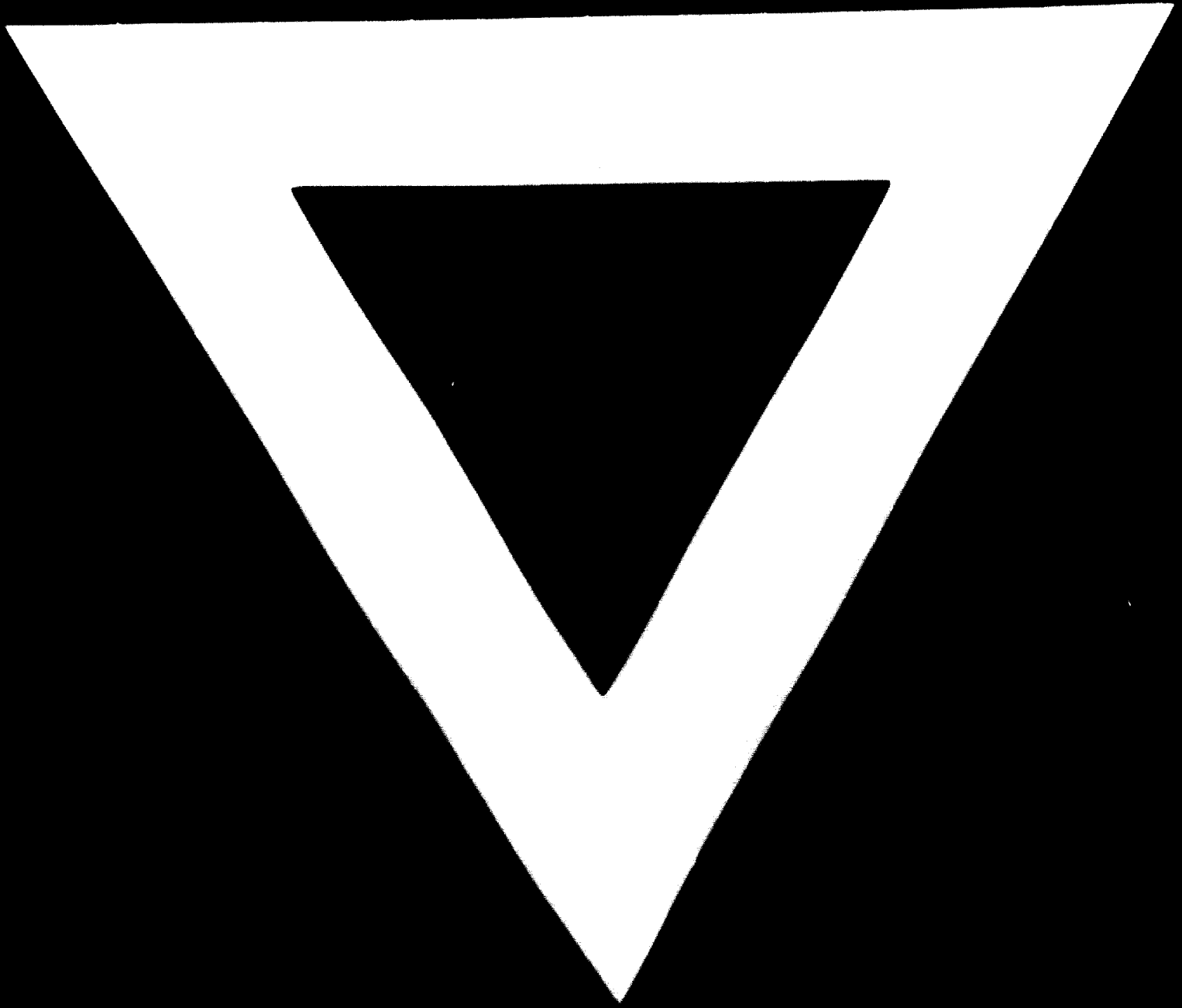
(b) National economic policy instruments.

In promoting the creation of facilities for proper maintenance and repair, including adequate supply of spare parts, the government has at its disposal various policy instruments, e.g. tax measures, subsidies, tariffs, special credits, etc. These instruments could serve to promote domestic manufacturing or import substitution of spare parts, training of personnel, influence types of equipment purchased as well as the purchase of other materials required for maintenance. The choice of particular instruments and the framework within which they are to be applied, will depend on the country's economic structure, its level of development and available resources. The Symposium may wish to review and examine the application of economic policy measures and their impact on maintenance and repair and recommend the application of specific instruments for establishing maintenance facilities.

In the Symposium discussions certain economic aspects of maintenance and repair at the enterprise level may also be dealt with under "Management Issues" since management decisions must often take into account economic considerations. However, the following two economic aspects may be selected for particular attention:-

- the renewal decision, and
- the costing system.





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