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*for a sustainable future*

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INSTRUMENT

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United Nations Industrial Development Organization

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Development Meeting on the Manufacture  
of Radio and Television Equipment  
(including low-cost receivers for sound  
broadcasting and television)

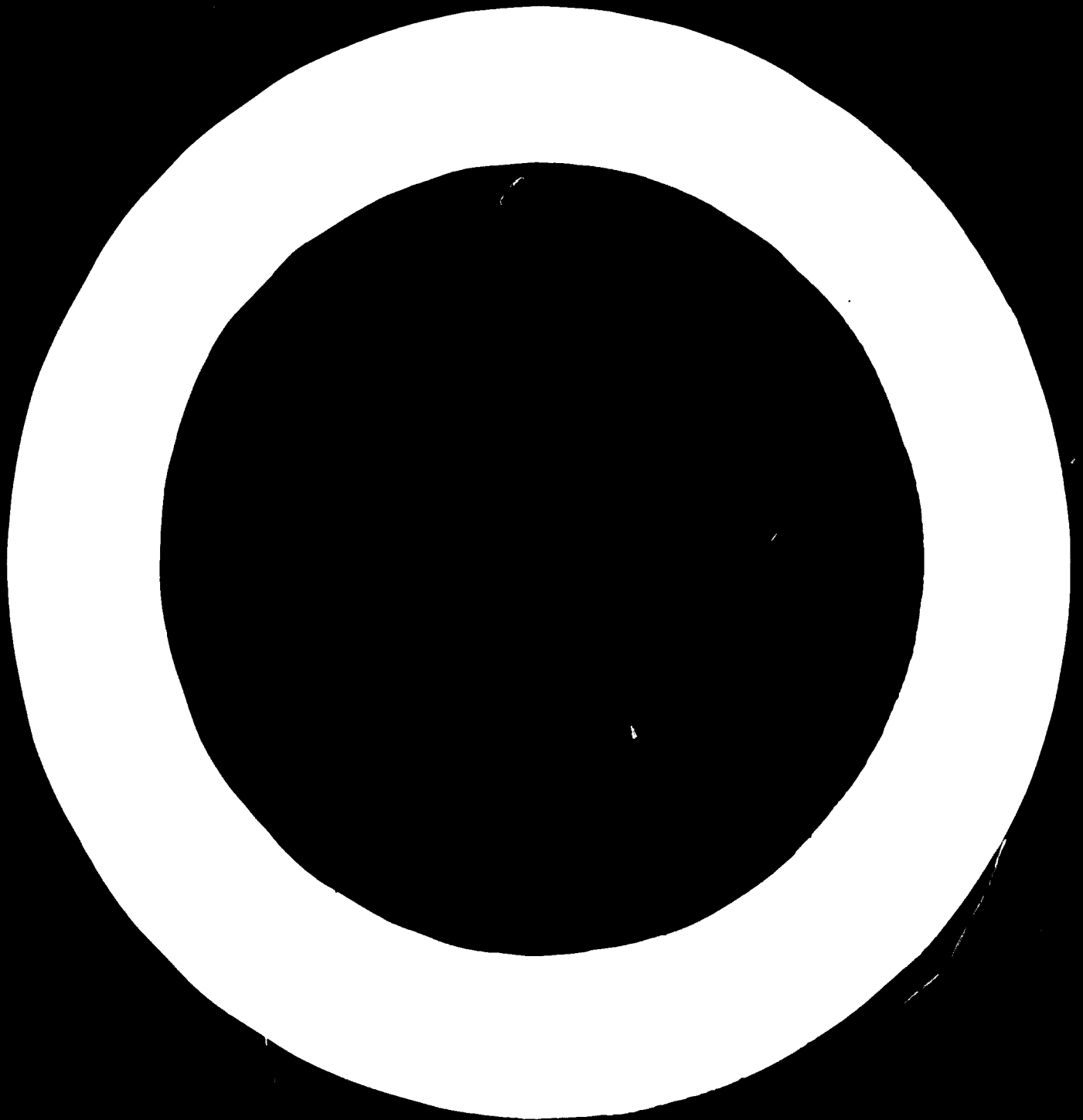
Vienna, 13 - 24 October 1969

FINAL RECOMMENDATIONS<sup>1/</sup>

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The Development of the Infrastructure of Telecommunication Equipment  
(including low-cost receivers for radio broadcasting and television)

Considering

- a. the importance of establishing a strong base of development in the electronic and telecommunication field which take into account the increasing market requirements in the developing countries;
- b. the importance of this industry in stimulating economic development, through saving or generation of foreign exchange, development of industrial technology and creation of employment opportunities;
- c. the part played by this industry and more particularly in the development of radio and television receivers in aiding social development and international co-operation;
- d. the high cost involved in carrying out basic research and development of more sophisticated electronic and telecommunication equipment but the relatively lower costs in applied research;
- e. That in many cases developing industries have complicated customs and import tax structures not fully in line with those systems already existing in more industrialized countries;
- f. That in many cases when clearing merchandise through customs confusion arises as regards the correct nomenclature of the products under consideration as well as the application of the relevant duties and taxes.

Suggests

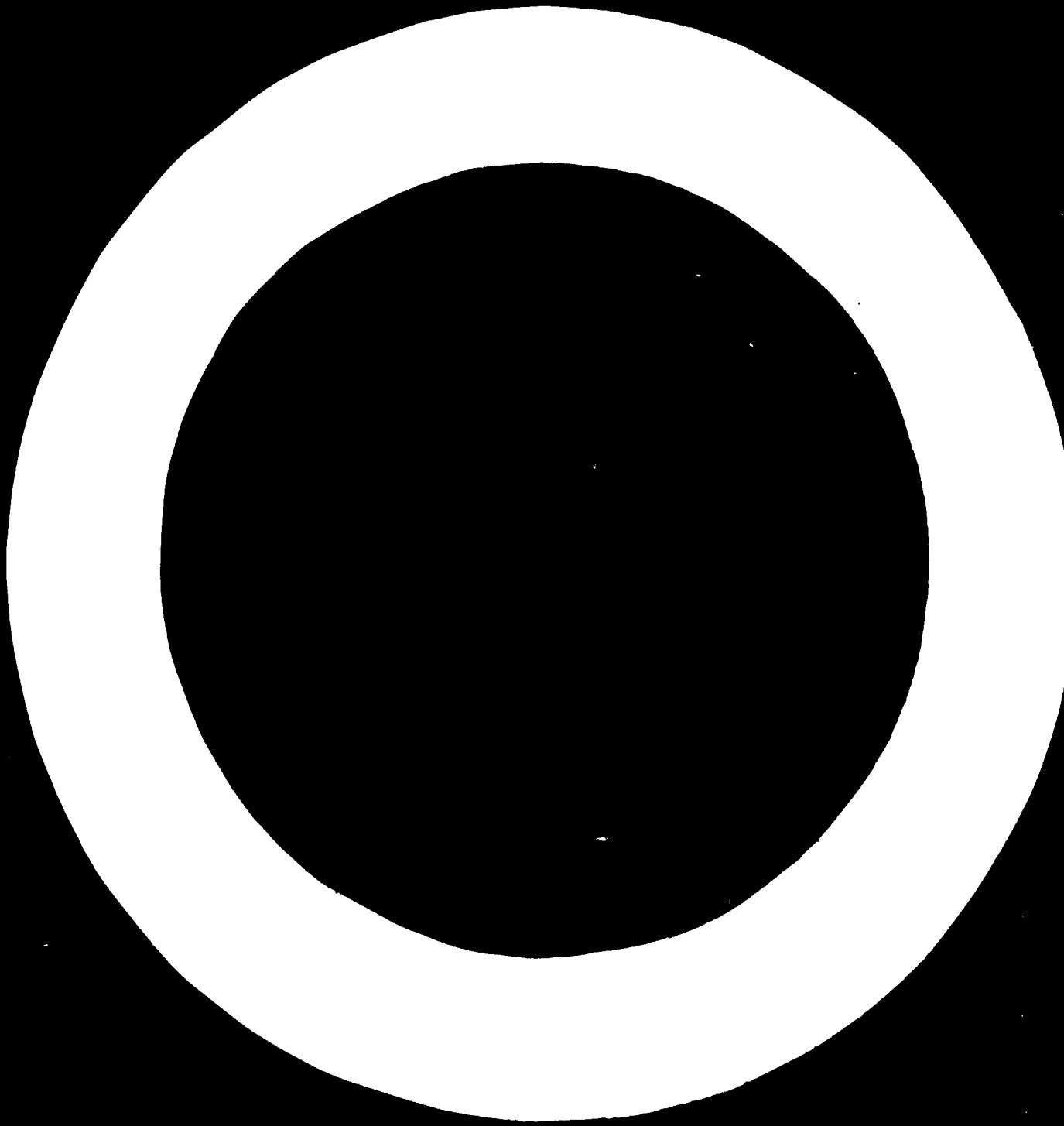
1. that developing countries give highest priority within their national economic and industrial plans for the telecommunications and electronics industry particularly that involved in the production of low-cost radio and television receivers;
2. that developing countries give serious consideration to starting up local assembly and/or manufacture of telecommunication and electronic equipment even when quantities are initially below minimum requirements for economic assembly and/or manufacture. In this regard consideration should be given to saving or generation of foreign exchange, the development of technology, the setting up of an industrial base, and local employment possibilities;

3. that developing countries should encourage and support local production and sale of equipment through such incentives as tax holidays, customs exemptions, assistance in financing and adequate protective tariffs. Particular attention might be drawn to one of these aspects. The need to allocate adequate amounts of foreign exchange annually for importing components for the product to be manufactured and at appropriate intervals for factory equipment and machinery needed for expansion or replacement of existing equipment and machinery;
4. that developing countries should not discourage, but should allow where necessary the importation of technology through licensing and payment of royalties as it provides a faster means of stimulating the development of technology and of the industry. However, local design and development facilities should be built up at the same time with a view to exploiting locally available raw materials and the gradual reduction of imported technology;
5. that developing countries should give serious consideration to regional or sub-regional development of this industry on a co-operative basis through pooling of requirements, resources, and production capabilities to attain the following:
  - a) increase in output to reach a more economic production level,
  - b) a freer exchange of technology and training within the region
  - c) lower costs and increased market potential through exports,
  - d) an equitable distribution of industries throughout a region.
- 6.(a) That developing countries take appropriate steps to ensure co-ordination among the various government branches involved and to promote the earliest application of universally accepted nomenclature such as that laid down by the Customs Co-operation Council in Brussels
- (b) to rationalize as far as possible the national procedures when reclaiming import duties and taxes wherever such problems exist.

Recommends:

And that upon request of countries or groups of countries

7. UNIDO should, in collaboration with the regional Economic Commissions, tabulate and analyse all factors leading to problems associated with and benefits accruing from the establishment of both local and regional telecommunication and electronic industries in developing countries and should disseminate this information to all these countries and other organizations interested in these industries;
8. UNIDO should be prepared to render technical assistance and aid in the financing of telecommunication and electronic industries in developing countries. In particular UNIDO should collaborate with the UNDP in setting up small model industrial plants for the manufacture of modern telecommunication and electronic equipment.
9. UNIDO should study means of encouraging the establishment of export oriented industries in developing countries;
10. UNIDO should also co-operate with major professional and manufacturing associations in the gathering and dissemination of up-to-date information on the manufacture of telecommunication and electronic equipment, modern small scale production techniques and marketing.





INTERNATIONAL  
.....  
(1950-1951)

The Development of the Electronics Industry in Developing Countries  
(Including low-cost receivers for sound broadcasting and television)

Recognizing:

- a. the importance of radio communication in the development of a free culture and democratic institutions, and the dissemination of information and news and for entertainment;
- b. that radio is a medium which is particularly suited to areas that require little or no electricity;
- c. that the benefit to which mankind is entitled by radio is derived from the wide reception of radio programs, and that this is only when radio receivers are available to all the people;
- d. the work carried out by IRE, through the CCEC, in the field of recommended specifications for low-cost radio and television receivers.

Considering that

- e. the major impediments to wider use of radio are the relatively high cost and/or non-availability of suitable radio receivers;
- f. the extent of the importation of radio receivers is restricted by the need for the strict control of foreign exchange conditions;
- g. developing countries, particularly those where a significant local market exists, can benefit directly from telecommunications and electronic industries;
- h. the manufacture of radio receivers can begin with small-scale assembly using parts from the larger manufacturers;
- i. technological personnel and facilities can be developed without direct government financing through the development of telecommunications and electronic industry.

Suggests

1. that developing countries consider establishing or supporting radio receiver assembly/manufacture, for which joint venture agreements and technical assistance might be sought, if required;
2. that developing countries consider the extension of radio receiver manufacture to include television to meet the country, sub-regional/regional needs;
3. that developing countries in the fostering of radio and television receiver manufacture could start with a simple robust low-cost unit with the minimum number of models based on the performance specifications and design characteristics set forth in the annex to this recommendation;
4. that developing countries should plan and initiate afterwards, or when possible in parallel, the manufacture of the component parts, if desired, in co-operation with other countries. For this, the advantages of large quantity production are very important and the manufacture and distribution of components on at least a regional/sub-regional basis should be encouraged;
5. that developing countries should give serious consideration to the incentives mentioned in the general recommendations, together with special arrangements for eliminating or reducing listeners' license fees,

and recommends that upon request of a country or groups of countries

6. UNIDO should provide technical assistance in surveys, studies and setting up of small industrial plants as outlined previously, particularly for radio receivers and television receivers and their component parts.

## RADIO AND TELEVISION RECEIVER SPECIFICATIONS

- A. The performance specifications and design of low-cost radio and television receivers are given in the ITU, CCIR Recommendations 415, 416 and Study Group Doc. XI/246 of 12 September 1972. The frequencies for the broadcast transmission are in the low frequency (LF), medium frequency (MF), high frequency (HF), very high frequency (VHF-F1), together with television emissions in the VHF and ultra-high frequency (UHF) bands. These are assigned by governments in accordance with the ITU Radio Regulations (radio receiver reception bands range 150 kHz to 26 MHz\* for amplitude modulation and 57.5 - 108 MHz for frequency modulation)

\* This limit is still under study by the ITU

### RADIO RECEIVERS

- B. Radio receivers best meeting the requirements of the developing countries (estimated by UNESCO to be 400 million sets at \$5 each) must be simple, robust, transportable, have ease of tuning, reasonably good sensitivity and selectivity with good electric qualities and operate with low battery drain from standard dry cell batteries. As a guide it is suggested production be initiated with radio receivers of one or more proven designs as follows:

- C. (i) One band set LF - 525 to 1605 kHz  
(ii) One band set HF  
(iii) Two band set LF and HF, MF and HF, or 2HF

Note: the HF bands could be chosen between 3-26 MHz, the range of frequencies not to cover more than 3.5 times the lower frequency.

- D. The output power: at least 350 milliwatts.

### TELEVISION RECEIVERS

- E. The CCIR specifications for type B or better as available today are recommended for first consideration. However, the need is to produce these television receivers at a minimum cost, and therefore the initial production should be for receivers for the VHF bands only.

- F. In view of the different television standards and conditions in the various countries, a low-cost television receiver may not be further defined but has to be left to the countries to follow their national interests but otherwise in accordance with the CCIR guide-line performance specifications.

RECOMMENDATION

(Reliability)

The Development Testing on the Manufacture of Telecommunication Equipment (including low cost receivers for radio broadcasting and television)

Considering

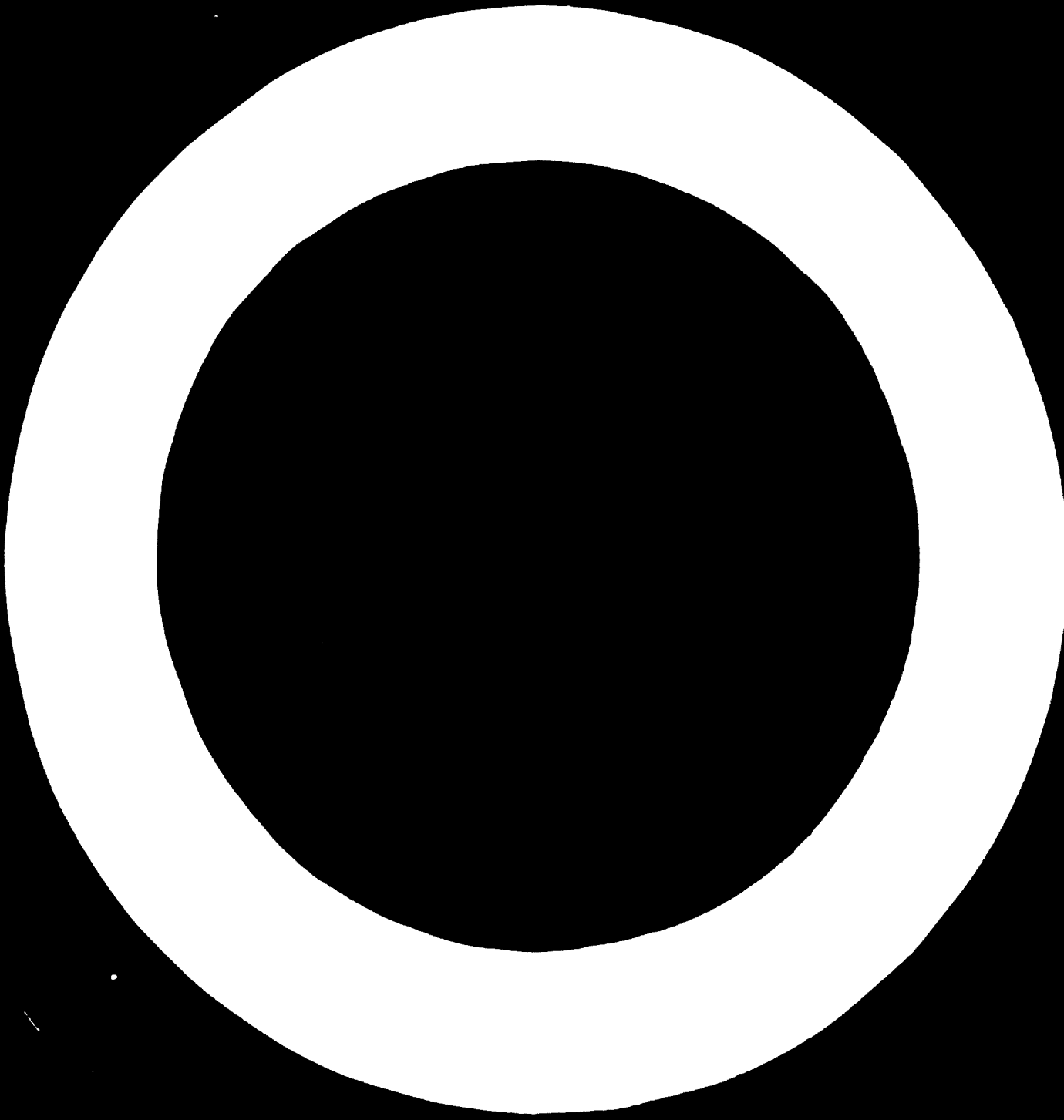
- a. the growing importance of the reliability of equipment used in telecommunications in developing countries, especially in sparsely populated areas, where access to equipment sites is often difficult and time consuming, and where there is often a lack of skilled personnel;
- b. the importance of reducing the incidence of equipment failure and the simplification and repair of such failures;
- c. that the ITU and IEC, the regional economic commissions and perhaps other organizations are already actively studying these problems;

Recommends that UITL and ITU should, in their respective domains

- 1. in consultation with telecommunication administrations and in co-operation with the organizations mentioned in paragraph (c), foster the study of the causes of faults and equipment failures and propose methods whereby their incidence may be eliminated or reduced;
- 2. disseminate this information in the form of guide-lines for the benefit of developing countries, to manufacturers, and users of telecommunication equipment;
- 3. examine the desirability and feasibility of establishing design and test centres for component failure analysis and associated investigations concerning reliability;

and that manufacturers

- 4. continue their work in this field and particularly in simplifying fault finding through improvements both in design and equipment and in the preparation of instruction manuals.



RECOMMENDATION

(Rural Telecommunication Equipment)

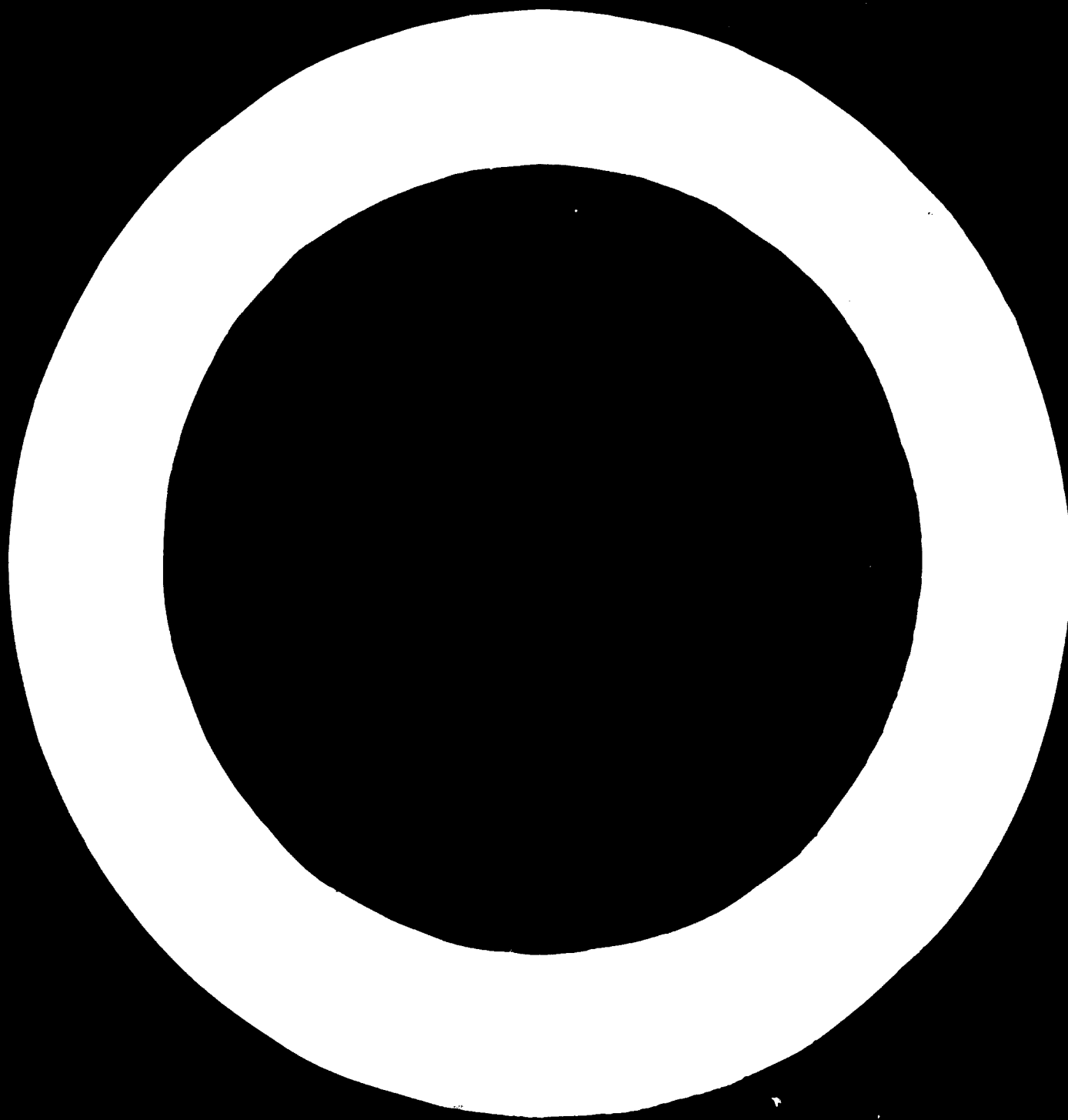
The Development Meeting on the Manufacture of Telecommunication Equipment  
(Including low-cost receivers for sound broadcasting and television)

Considering

- a. the importance and special needs of rural telecommunications in the more sparsely populated areas of the developing world

Recommends

1. that UNIDO should collaborate with the IIT and IEC in preparing a study for rural telecommunication systems to foster the design, development and manufacture of suitable equipment. Particular attention is drawn to the requirements of rural networks (e.g. reliable power supplies at low cost and tropicalization).





RECOMMENDATION

(Service)

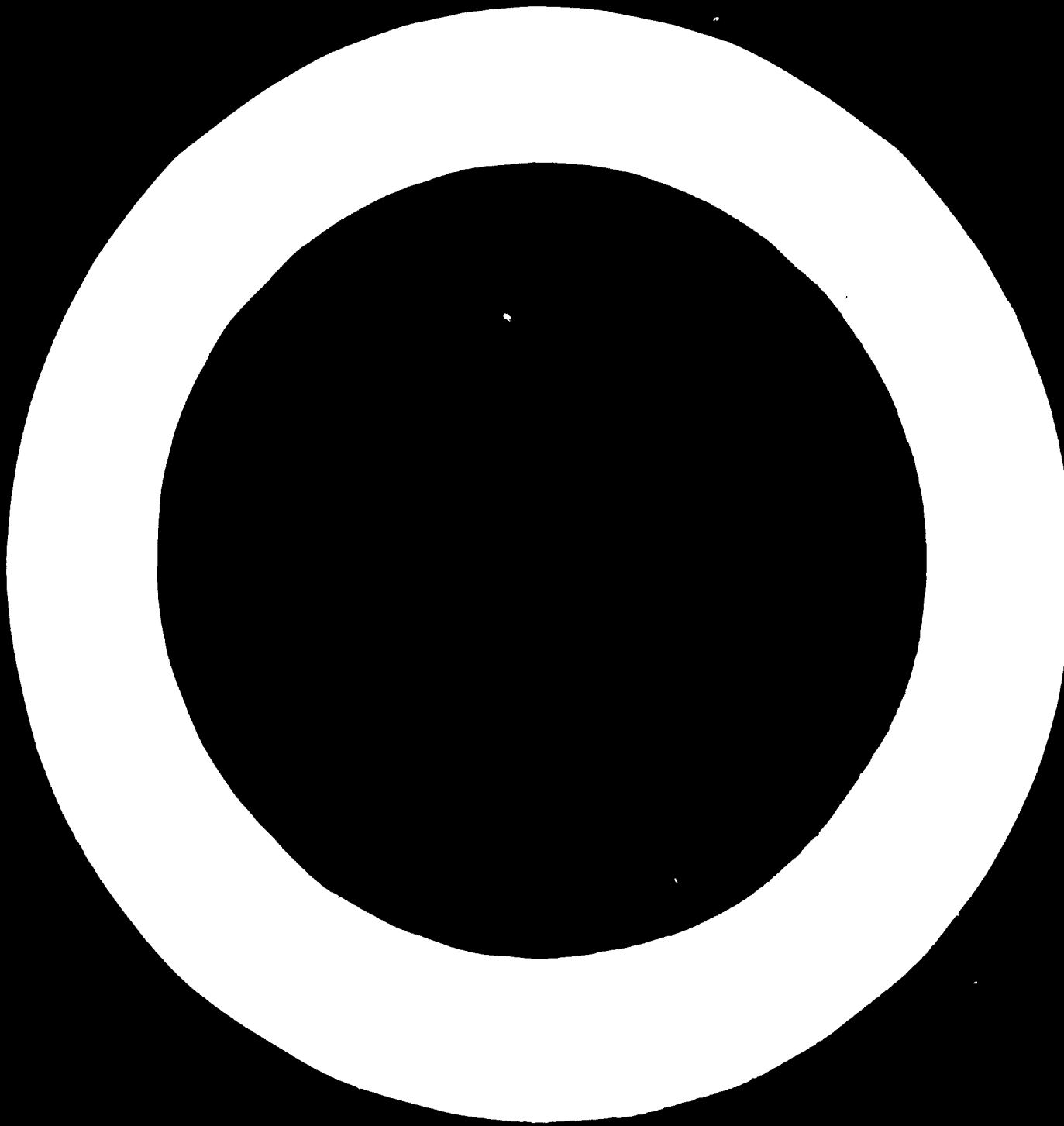
The Development Resulting on the Manufacture of Telecommunication Equipment  
(Including low-cost receivers for sound broadcasting and television)

Considering

- a. the necessity of delivering to users sets in perfect working condition;
- b. the necessity of organizing installation, maintenance and after-sales services in an efficient manner in order to ensure the correct operation of the equipment

Recommends

- 1. that local manufacturers should devote particular attention to the packaging, storage and delivery of radio and television receivers in order to ensure that the receivers reach the user in good condition;
- 2. that manufacturers, wholesalers and retailers should realize the basic importance of organizing installation, maintenance and after-sales services and of providing them with technically competent staff, measuring instruments and the facilities necessary to ensure good service to users.



RECOMMENDATION

(Training)

The Development Meeting on the Manufacture of Telecommunication Equipment  
(Including low-cost receivers for sound broadcasting and television)

Considering that

- a. industrial activities can be developed only if personnel possessing the appropriate qualifications are available;
- b. successful and competitive production of electronic equipment requires on the part of the engineers and technicians an awareness of the many factors that influence the possible choices, economic and technical

Suggests

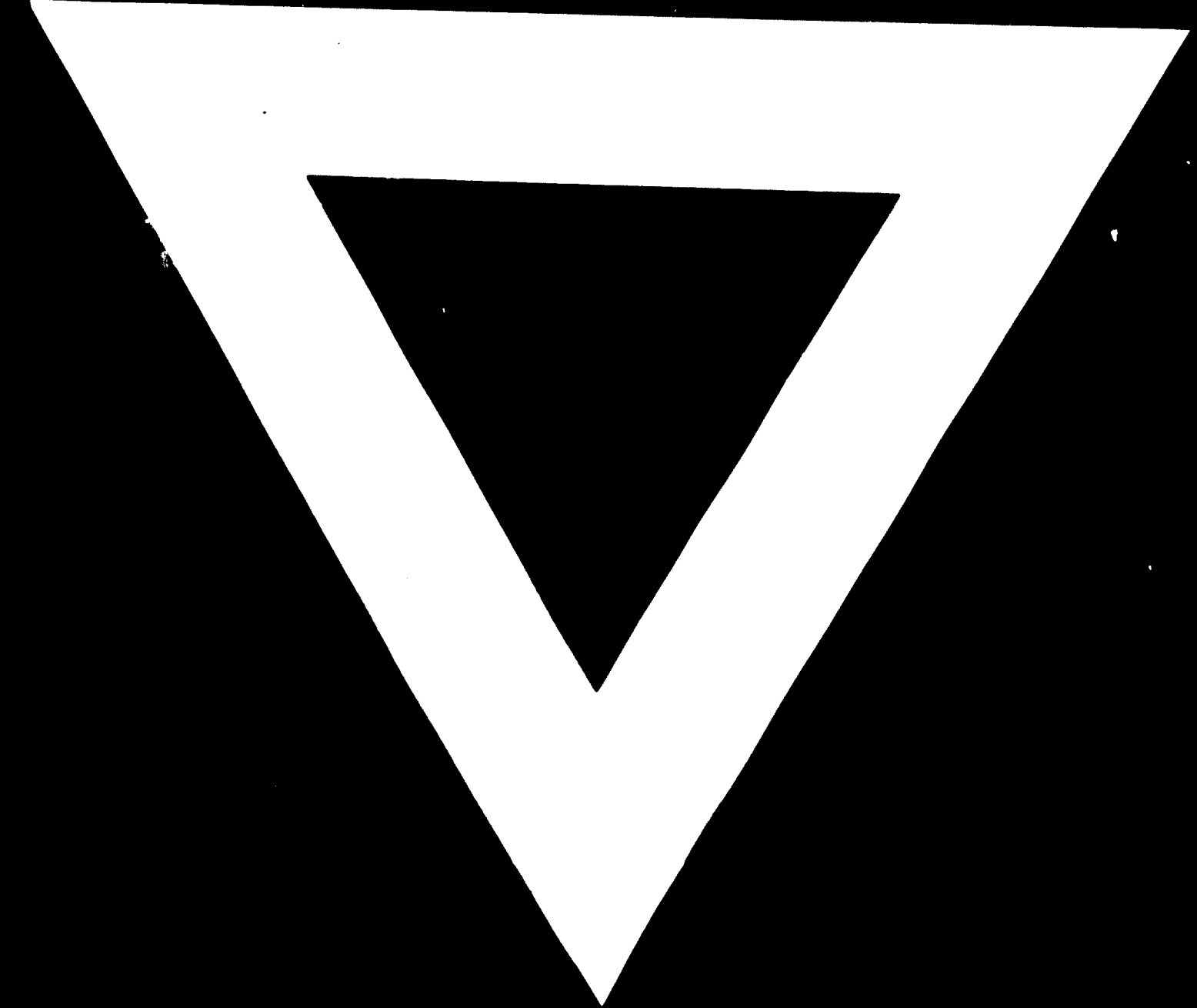
1. that countries strive to arrive at an appropriate balance of skilled labour, technicians and engineers, in relation to their present industrial situation and their development plans, thus allowing for adequate staffing of their industries, while fostering their technological progress. Particular attention should be given to training at the lower levels and in-plant training of graduate engineers;
2. that countries should favour development of local institutions to train people at the necessary levels, thus rendering it possible to have a better matching between studies and application within local conditions;
3. that in training of engineers and technicians particular attention be given to the development of technical discernment applicable within the economic, social and material conditions prevailing in the countries;
4. that industry should play a more important part in the training process, not only during schooling but also after technicians and engineers start their work in industry, through in-service training schemes, seminars, etc.;

5. that the governments and industry alike should note that organizations of the UN family such as UNIDO, UNESCO, ILO, ITU, WMO and ICAO operate technical assistance programmes within their own terms of reference, in the fields of electronics, telecommunications and mass communication; and that the Inter-Agency activities of the International Centre for Advanced Technical and Vocational Training (Turin Centre), comprises courses in technical subjects, methodology and management, especially designed to train teachers and for the conditions prevailing in the developing countries.

and recommends that upon request of countries or groups of countries:

- 6 UNIDO should expand its activities in the field of in-plant training at graduate level.





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