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ORGANIZATION AND ADMINISTRATION OF 1/
INDUSTRIAL SERVICES IN THE PHILIPPINES

by

Felipe Ll. Santillan
Director, Industrial Research Center
National Institute of Science + Technology

and concurrently

Officer-in-Charge, Philippine Inventors Commission
National Science Development Board

Manila, Republic of the Philippines

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4. We look forward to a more crucial decade of the 1970's with its burgeoning economic and social implications, especially as they concern the poor teeming millions in the Asian continent. But we should hopefully face the multifarious tasks of nation building in the sincere belief that those in the developed nations would help and share with us in the developing countries their experiences and stronger capabilities for industrial development without too much strings attached. For the broader spectrum and stronger pillars of universal peace and understanding would be impossible to achieve if only a few has almost everything while millions have almost nothing. This is the still wide gap that has to be bridged.

5. International or regional and multi-lateral collaboration in relevant areas of science and technology, being essential instruments of industrial development, is now recognized as one of the effective means to help bridge this global economic and social gap.

Organizational Aspects of Industrial Services, Expansion and Policies

1. There are four major items on the Agenda for this Seminar as outlined by the Seminar sponsors. They are well-chosen topics clearly identified as the basic parameters necessary for the industrial development of developing nations. While developing countries have attained varying levels of industrialization, one common denominator of their economies is that they are still primarily agriculture-based, hence their societal low-income generating capacities. Most of the countries in our region have not completely established the required public or private institutional infrastructures well-coordinated and capable of generating and providing efficient industry-wide services to facilitate industrialization. However, with regards to the seven functional types considered as critical industrial services (Agenda Item No. 4), many of the countries involved have already established them but are still short of the standards (know-how, expertise, facilities, inter-alia procedures) for effective support to industry, while a few have but partially started.

2. This Country Report will now be concerned with the aspects of the institutional infrastructures for industrial services, promotion and policies in the Philippines, their functional and operational inter-relations and key problem areas.

3. To us in the Philippines, the basic element of development, as in other countries, is the conviction of our people that there is opportunity, energy and purpose to our society, rather than inertia and hopelessness. Key factors of this element are dynamic and dedicated leadership and educated manpower. These factors represent the human resources. The other essential resources for development are natural and capital resources, the former we have in abundance, the latter being limited to an extent. The pre-requisite for the transformation of these basic resources (input) into useful economic commodities (output) is Science and Technology (S & T).

4. Philippine economy has been primarily agriculture-based from the traditional primitive farm culture of early times to the present more scientific or research-based agricultural practices. Because of the application of modern agricultural research, the Philippines has made a substantial take-off jump towards the "green revolution."

5. Agricultural industries provide most of the input materials for industry. Improved agriculture also helps provide a greater domestic market demand for manufactured goods. However, agricultural productivity is not viable and adequate in the long-term projection of our fast rate of population growth of about 3.2% annually. Hence, the necessity for rational planning, since the last world war, with the main goal of attaining a balanced agro-industrial economy. Industrial development was therefore given priority since the last two decades because our recurring economic problem was that we have been exporters of raw or primary and semi-processed products while we import the finished goods at more costs. This, we realized is an uneconomic and unscientific procedure.

6. Again, the pre-requisite for industrial development is R & D. By R & D, we mean emphasis on applied, industry or "product"-oriented research which in our agenda has been listed as the first type of the required industrial services. In the Philippines, about 90% of the national government allocation for the R & D sector of the overall S & T Development Program has been earmarked for applied research, 5% for basic or fundamental research and 5% for science promotion and information.

7. R & D, indigenous or adaptive, is the core of industrialization. R & D planning and programming first rely on a national (government) S & T policy and support and the appropriate institutionalized organizations to implement the S & T program geared to the identified national economic goals. These initial stages of development had been established in the Philippines.

8. Before the 1950's several government R & D agencies were operating, but their programs and activities were not coordinated, often were duplicated and not industry-oriented. They were of the lower bureau or division levels and communication links (except agricultural research) with private industry were weak. One of these was the then (pre-war) Bureau of Science, later Institute of Science and Technology, under the Department of Agriculture and Natural Resources. When the Philippines became independent (1946), the science policy of the State was incorporated in the Constitution. Section 4, Article XIV of our Constitution provides that "the State shall promote scientific research and invention... arts and letters shall be under its patronage and that the exclusive rights to writings and inventions shall be secured to authors and inventors for a limited period."

9. The above science policy was broadly amplified in the Philippine Science Act enacted in 1958 by our Congress (Republic Act No. 2067). Section 2 of the Science Act of 1958 states that "In consonance with the provisions of Section 4, Article XIV of the Constitution, it is hereby declared to be the policy of the State to promote

scientific and technological research and development, foster invention, and utilize knowledge as an effective instrument for the promotion of national progress."

10. The Science Act established a Cabinet level central organization, the National Science Development Board (NSDB), to supervise, coordinate, integrate and support science and technology development programs and activities in the country. NSDB average annual operating budget - P8 million regular fund plus P24 million starting 1969 from the Special Science Fund. (Current floating exchange rate is Philippine Peso P6.28 to US\$1 as of August 24, 1970).

11. The Act also re-organized and enlarged the functions and operations of the former Institute of Science and Technology and was renamed National Institute of Science and Technology (NISTP) and created the Philippine Atomic Energy Commission (PAEC). Both agencies are under the supervision of the NSDB. The other R & D organizations and technical function briefs will be given later under institutional case studies.

12. It is also a policy of the Philippine Government not to engage in production (manufacturing or mining) industries or trade where private enterprises have already established them or are interested in, so as not to compete, rather encourage them. In pioneering industries where the private sectors are reluctant to invest, government-controlled corporations have been established.

13. Philippine economy made a substantial leap during the last four years of the 1960 decade stimulated by accelerated industrialization as programmed in the Four-Year Economic Program starting 1967 and by investment incentives and selective controls. The framework of this Program stipulated the role of the private sector thus: The pace of development during the plan period will depend mainly on the initiative of the private sector, particularly the major portion of the required capital formation. To a lesser but still significant extent, the success of the Program will depend on the efficiency

of the Government in accommodating economic rationality in its political decision processes and in fostering the integration of the two sectors of the economy.

14. Our Economic Program includes Science and Technology as a sector under its Social Development Section. It calls for a program of applied research and development studies involving natural resources utilization, industry and engineering, medicine, foods and nutrition, the application of atomic energy and the development of scientific manpower. earmarked for this program is the amount of \$57.8 million for operating expenses, surveys, R & D training grants, the dissemination of results of scientific studies and to support funding requirements of foreign assisted projects. The National Science Development Board and its agencies have spelled out the details of the current Four-Year National S & T Development Program that is now being implemented.

15. The industrial program has three main objectives: (a) to hasten the change in the composition of manufacturing output toward basic and intermediate products, by providing long-term financial support to projects in the desired industry lines; (b) to alleviate the temporary credit shortages of industries which are especially viable; and (c) to create further employment opportunities in industry by means of an expanded national cottage industries program.

16. Industrialization policies of the government are now more solidly geared towards promoting vertical integration of the manufacturing, logging and mining ventures. Among the important policies to achieve a high rate of industrialization are: sympathetic tax privileges to new and necessary industries; favorable flow of investment, foreign and domestic; and systematic export incentives favoring industrialization.

17. The industrial projects of high priority under the industrial development section have been chosen by the following criteria: (a) support of the agriculture and public works programs; (b) provision of producer goods for further domestic processing (import-substituting); (c) further processing of export products traditionally sold

in primary form (export-oriented); and (d) generation of employment opportunities and other multiplier effects.

18. The Philippine average growth rate in the gross national product (GNP) at constant 1955 prices for the period 1965-1969 was 6.0 percent. At current prices (47 percent increase) this is equivalent to 10.1 percent. Last year the GNP was 6.4 percent. The 1970 target of the Economic Program is 6.2 percent. At the end of the decade, Agriculture average annual growth was 4.6 percent; manufacturing and mining 12.4 percent at constant 1955 prices, which are equivalent to 11 percent and 24.4 percent, respectively at current prices. At constant 1955 prices, the average annual contribution (1968-1969) of agriculture to net domestic product was 30.8 percent; manufacturing and mining was 20.0 percent with the projected trend next year of only a slight increase in the latter due to the still unpredictable status of the floating peso rate.

Systems and Procedures: Policy Making Bodies

1. The top-level bodies of the Government charged with industrial development policy determining and national planning are:

(a) Congress of the Philippines (House of Representatives and Senate) - enacts statutory guidelines and appropriates necessary funds.

(b) National Economic Council - spells out implementing details of economic statutes enacted; provides resources survey and statistics; prepares the four-year national economic development program in accordance with plans submitted by other bodies (departments, the Presidential Economic Staff, etc.) for approval by the President and Congress; recommends priorities in industrial projects; and coordinates foreign aid assistance. The council is composed of 13 members, e.g., a Chairman, appointed by the President but to be confirmed by the Commission on Appointments of Congress; 9 ex-officio members of which 3 are designated by the Senate, 3 by the House of Representatives (2 each from the majority and 1 each from the minority political parties); the Secretary of the Department of Commerce and Industry; the Governor of

Philippines; and 3 members-at-large representing the private industry and consumers sectors, appointed by the President upon recommendation of the sectors.

(c) Presidential Economic Staff - responsible to the President for preparing recommendations for or reviewing of the national economic program; makes feasibility studies and resource allocations, and recommends industrial projects. The staff, mostly consisting of young technocrats, is headed by a Director-General appointed by the President.

(d) Board of Investments - charged with the implementation of two laws: the Investment Incentives Act (R. A. No. 5186) and the Act establishing the formal rules for foreign investments in the Philippines (R. A. No. 5455). In carrying out the functions of the two laws, the Board has three main tasks: (1) to define the investment priority areas that are most critical and strategic in advancing the balanced economic development of the country; (2) to select from among individual proponents from all regions in the country of pioneer or non-pioneer but viable and export-oriented industrial projects within the priority areas those that will be registered and made eligible for incentives; and (3) to mobilize such assistance as may be necessary to promote, facilitate and support actual realization of projects in the priority areas. Board of Governors of the BOI is composed of a Chairman and three Governors (full time basis) all technocrats, appointed by the President/.

2. The Presidential Economic Staff serves as the liaison (coordinating) body in the communication or reporting links among and between the above policy-making bodies and the Office of the President of the Philippines.

3. Because of the growing impact of UNIDO-aided programs and the success of projects initially assisted by UNIDO in the Philippines, President Ferdinand E. Marcos, by Executive Order, created the National Committee on UNIDO Matters (NCUM) within the Presidential Economic Staff to serve as the local clearing house on UNIDO matters involving

the Government or any of its instrumentalities. This is one among the various contact links established to improve coordination in international technical relations and the reporting system thereof pertinent.

4. The implementing bodies of the economic program are the various government executive departments and their respective bureaus and sub-divisions (government sector) and the private industry and trade sectors.

5. As mentioned earlier, the top-level science-policy making and implementing body is the National Science Development Board (NSDB). The NSDB prepares the plan, work program and resource allocations for the S & T sector which will be recommended to the National Economic Council and the Office of the President. The NSDB Governing Board is composed of 11 members - a Chairman (cabinet rank); the Vice-Chairman; the Commissioner, National Institute of Science and Technology; the Commissioner, Philippine Atomic Energy Commission; the President of the University of the Philippines (State University) or his representative; The Secretary, Department of Education or his representative; the Chief National Planner, National Economic Council; and one representative each from industry, agriculture, the National Research Council and from national scientific associations or societies. All members, except the Commissioners of NIST and PAEC who are ex-officio members, are Presidential appointees, subject to confirmation by the Commission on Appointments of Congress. The representatives of the 3 private sectors are recommended by their respective sector.

6. The criteria for selection and appointment of the top-level posts in the aforementioned economic policy-making bodies are based on merit and pertinent qualifications (education and experience) especially for the highly-technical positions and Chairmanships (as stipulated in their Charters). However, there are few cases where political party patronage and influence count in the appointment of the Council or Board members. This influence, sometimes, has its advantages on the

Case Studies of Industrial Service Institutions

1. The principal government supported industrial research and development institute (multi-purpose type) established to provide industry-wide R & D and engineering and allied technical services to industry is the National Institute of Science and Technology (NIST), one of the S & T agencies under the NSDB. The nature and scope of NIST activities may be gleaned from the following integrated areas of functional research centers and divisions under it:

Technical:

- (1) Industrial Research Center - consists of the Chemical Research Laboratory and the Engineering Research and Development Laboratory
- (2) Food and Nutrition Research Center
- (3) Biological Research Center
- (4) Medical Research Center
- (5) Agricultural Research Center
- (6) Tests and Standards Laboratories
- (7) Scientific Instrumentation Division
- (8) Documentation and Scientific Library Division
- (9) Techno-Economic Staff

NonTechnical (support)

- (1) Administrative Division
- (2) Budget and Finance Division
- (3) Legal Division

2. The NIST is headed by a Commissioner and a Deputy Commissioner both appointed by the President subject to confirmation by the Commission on Appointments of Congress. The Research Centers are headed by Research Directors assisted by an Assistant Research Director all appointed by the NSDB Chairman upon recommendation of the Commissioner. Only the Industrial Research Center has two Assistant Research Directors - Assistant Research Director for Chemical Research and Assistant Research Director for Engineering Development. This indicates the emphasis of the NIST on industrial R & D

The NIST undertakes both "in-house" and contract-sponsored R & D projects from private sectors. The latter type, however has just been initiated. There is still the problem of effective transfer of technology (R & D results) from the NIST to potential end-users in industry. The coordinating and industrial extension work of the NSDB has not been very successful, as yet. Perhaps, in these areas we need foreign experiences that may guide us.

3. The NIST has some 500 regular and temporary employees, more than 200 of whom are professional-technical, 50 are skilled technicians and the rest are in administrative support and temporary laboratory helpers. The average annual operating budget of the NIST is P 3 million regular fund, plus NSDB assistance from the SSF of P 1 million. Aside from R & D work, the NIST also provides industry and the public such industrial services as testing, analysis and standardization and calibration of weights and measures, technical consultancy and information, in-plant trouble-shooting, techno-economic feasibility studies, scientific instruments fabrication, repair and calibration, and on-the-job technical manpower training.

4. A recently enacted law (1968) created a Special Science Fund ^{to be} (SSF)/administered and disbursed by the NSDB for assistance in the national scientific and technological development program. The 5-year period set for the fund will raise about P 40 million from the imposition of additional registration fees of privately-owned motor vehicles and from the sale of science stamps for travels abroad. This special fund will augment the limited general fund appropriation of the NSDB and its agencies. Some P 6 million of this fund has been earmarked for the site development and construction of new buildings for R & D and pilot plant laboratory complexes, acquisition of modern R & D and testing facilities, for expanded science information, library and documentation services, including computer systems and other capital infrastructures. These complexes will be made at the new centralized "Philippine Science Community" in the reserved government land (35.6 hectares area) at the outskirts of Manila. This NSDB project is now underway.

5. One problem still hampering R & D advancement in the Philippines is that the NSDB and its R & D agencies are still operating on the old bureaucratic set-up. They are not autonomous. Since autonomy is more suitable to an R & D organization, it was strongly recommended in the forthcoming reorganization plan of our government that the NSDB be made an autonomous industrial corporation to do away with inapplicable civil service rules involving personnel and with accounting and auditing practices applicable to ordinary routine service offices but not to an R & D laboratory. This is necessary, because of the lack of local private prestigious professional industrial and engineering consultant firms, industry has to rely on government R & D agencies, hence the need for strengthening these industrial service set-ups.

6. One key area of industrial development being undertaken by the NSDB thru the Philippine Inventors Commission (PIC) is the intensive promotion, technical, legal and financial assistance and development aid to Philippine inventors and inventions. This is also with the cooperation of the Philippine Patents Office. The policy of the NSDB on patents is to assist inventors and researchers in prosecuting their invention or projects and patenting them in the name of the inventors/researchers but assigned to the agency where they are working or which assisted them. If commercially developed, the inventors are entitled to incentive royalties.

7. Other S & T agencies created by pertinent statutes which are under supervision or coordination by the NSDB and whose S & T and industry functions are self-explanatory in their institutional names are:

- (a) Philippine Atomic Energy Commission (1958)
- (b) Philippine Textile Research Institute (1954)
(with textile industry support)
- (c) Philippine Coconut Research Institute (agricultural aspects) (1954)
- (d) National Water and Air Pollution Control Commission (1964)
- (e) Philippine Inventors Commission (1964)
- (f) Metal Industries Development Center (1966)
(with metals industry support)
- (g) Forest Products Research & Industries Development Commission
(reorganized 1966)
- (h) Philippine Science High School (Special Scholarships) (1963)

8. Government industrial corporations (for pioneering industries)

are:

- (a) National Development Corporation
- (b) National Steel and Shipyards Corporation
- (c) Philippine Coconut Administration (with coconut industry support)
- (d) Abaca Development Corporation (support)
- (e) National Power Corporation
- (f) Philippine Sugar Institute (with sugar industry support)
- (g) National Cottage Industries Development Authority

The above corporations are autonomous with their own Board of Directors.

9. Specialized agencies in-charge of testing and standardization services are:

are:

- (a) Bureau of Standards under the Department of Commerce and Industry, primarily for standardization and inspection of export products.
- (b) Tests and Standards Laboratories of the NIST/MSDS - keeps fundamental standards for weights and measures; physical, analytical and chemical tests on industrial materials and products (local or imported) to check confirmation with established and accepted standard specifications, specially those commodities and supplies purchased by the government.
- (c) Philippine Standards Association (private)-voluntary membership of members of the local Chamber of Industries and Chamber of Commerce and other entrepreneurs to establish and inspect the standards of their local products.

10. Other specialized bodies rendering industrial consultation and project studies are: Economic Development Foundation, Bureau of Mines, Bureau of Animal Industry, The Institute for Small-Scale Industries in the University of the Philippines, Fisheries Commission and the Philippine Tobacco Administration.

International Technical Assistance and Bilateral Aid

1. The Philippines has been the recipient of foreign technical assistance in varied forms, e.g., services of foreign experts, scholarship grants (masters and doctoral levels), training (on-the-spot-short term) grants and equipment. The bulk of this assistance has been given to the areas of agriculture, science and technology, education and industrial research, coming mostly from United Nations agencies (UNESCO, FAO, WHO, UNIDO, IAEA), Colombo Plan and US/AID (not necessarily in that order) and from some foreign governments on a bilateral basis.

2. In the case of the NSRF and its R & D agencies, the NIST for instance, we have been aided by UNESCO on two important and successful 5-year projects: modernization of the NIST scientific library and documentation center and the establishment (now in full operation) of the NIST Scientific Instrumentation Division - well-equipped for glass blowing, optics, fine mechanics and electronic workshops and laboratories. Under the UNIDO technical assistance scheme, we have pending projects proposals for modernizing and expanding the NIST Tests and Standards Laboratories and the setting up of pilot plants for the processing of coconut into protein-rich food products, industrial fuels from the husks and shell and on industrial micro-biological fermentation. From the Colombo Plan we received printing equipment, comics laboratory equipment and technical books, aside from training grants. The Philippine Atomic Energy Commission had received most of its technical assistance, especially in scholarship grants and equipment, from IAEA.

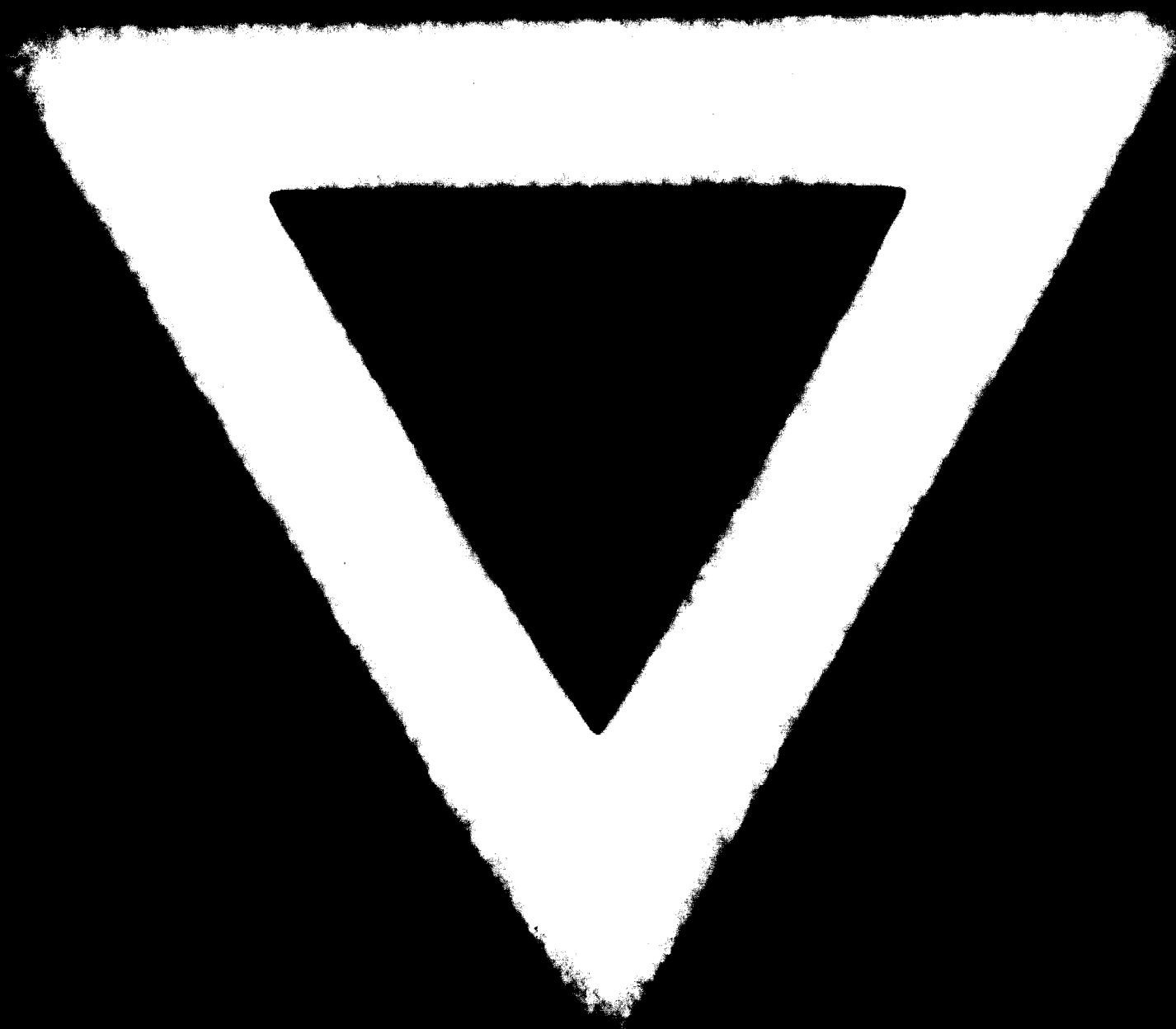
3. We will continue to seek international technical assistance whenever and wherever necessary on a selective basis on our part in order to gear such aids to our industrial development needs and within our counterpart capacity. We believe that for a short-term development program, the transfer of technology from a developed country to a developing one, under mutually beneficial arrangements, is a speedy means of industrial development, especially if they involve already developed capital-intensive processes and standard equipment for the big basic industries on turn-key pack-

formulas, etc., but here the legal matters concerned must not in the long run cripple or control the economy of the receiving country. This type of technology transfer can be effected through various mechanisms.

4. It is also advantageous, in some selective areas, to arrange for regional collaboration, that is transfer of technology (pooling of resources) from one developing country to another developing one. Example of this is the ECANE regional cooperation in undertaking joint ventures, among which are rice bran oil processing and coconut processing, in which the groundwork or mechanics of the project venture is now being worked out with Thailand as the coordinator for the rice bran project and the Philippines for the coconut processing project.

5. It may be necessary to suggest that international aid programs, insofar as their impacts to the economy of the receiving developing countries and problems encountered are concerned, be periodically reviewed and evaluated in-depth by both giver and receiver to find out as to whether the goals of such assistance have been attained or not.





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