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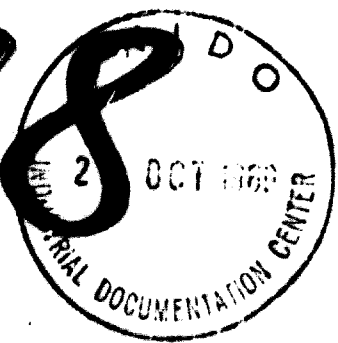
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ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL SERVICES
IN
SINGAPORE

Technological Division
Industrial Institutions Section

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

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ORGANIZATION AND ADMINISTRATION OF
INDUSTRIAL SERVICES IN SINGAPORE

The present report is one in a series of thirty-four country studies in Asia, Africa and Latin America, which attempt to identify those public and semi-public institutions important to the organization and administration of industrial development. This is not a study of the substantive aspects of the economy of Singapore, but rather a review of some aspects of the institutional framework for industrial development.

The study was undertaken by the Centre for Industrial Development after endorsement of this programme by the Committee for Industrial Development during its fifth session in May 1965.

To ensure some measure of uniformity in the country reports, the Centre for Industrial Development suggested a general outline for the use of the consultants responsible for the country reports. In accordance with these guidelines the Singapore report follows a functional breakdown of the institutions involved in industrial development, namely: (a) Objectives; (b) Planning; (c) Research and Standardization; (d) Promotion and Development; (e) Finance; (f) Manpower and Training; (g) Advisory and Extension Services.

This report has been prepared with the assistance of Dr. Lawrence W. Bass, who conducted the study in Singapore in December 1965, as a consultant to the Centre for Industrial Development.

I.

BACKGROUND AND OBJECTIVES OF INDUSTRIAL
DEVELOPMENT PROGRAMMES

1. The environment for the economic development of Singapore has recently changed as a result of the loss of entrepôt trade with Indonesia and the separation from Malaysia in the summer of 1965. The national policy, revolves around (a) the maintenance of Singapore's traditional position as a trading centre, and (b) the encouragement of increased industrial development in the private sector. The goal of the Government is to establish an economic basis for 8,000 to 10,000 new jobs in industry each year for the next several years.

2. The local market of 1,800,000 people does not offer adequate opportunity for the required rate of industrial expansion, particularly since the state does not have significant natural resources. The objectives are, therefore, to expand prospective markets for manufactures, (a) in highly developed countries; (b) in Africa and Eastern Europe; and (c) in those countries which have been running favourable balances of trade.

3. Since the future well-being of the state, both for maintenance of trading activities and the expansion of export markets, hinges on international relations, the expressed policy is that of neutrality, and the use of trade missions and trade agreements. The plan is to carry out careful analysis of manufacturing potential to create an addition in exports valued at 120 million Malayan dollars each year for the next five to seven years. (3.03 Malayan dollars are equivalent to one U.S. dollar.)

4. These objectives and policies were contained in the Budget Address of the Finance Minister on 13 December 1965, which provides the accepted basis for future industrial development. (15) The Finance Minister stated,

"...to obtain our objective in transforming Singapore into a modern industrial nation, Government action alone is not sufficient. There must be a concerted effort by Government, entrepreneurs and workers alike, the whole nation must work as one.

We have laid the infra-structure, we have provided the incentives, and we have shown the way ahead to more rapid industrialization. It is now up to the people of Singapore to respond to the call." (15)

5. Undertakings in the public sector are chiefly to provide the infra-structure and the economic climate envisaged as necessary to stimulate private enterprise. The efforts of public development agencies emphasize the offering of financial, managerial, and technical assistance to smaller enterprises, either existing or projected. For large industrial units, the major concern is to create a favourable investment climate, on the premise that they are in a position to supply the required managerial and technological skills themselves.

Socio-economic Situation

6. In 1964, Singapore's national income was equivalent to 2,811 million Malayan dollars, representing a 2 percent increase over 1963 (15). For the six years' period, 1959-64, the following table condensed from the 1964 Annual Report of the Economic Development Board summarizes the general situation.

<u>Year</u>	<u>Gross Domestic Product M\$ Million</u>	<u>Mid-Year Population in thousands</u>	<u>Per Capita National Income M\$</u>	<u>Gross Domestic Capital Formation M\$ Million</u>
1959	1,935	1,579.6	1,225	146.5
1960	2,016	1,634.1	1,236	138.5
1961	2,304	1,687.3	1,368	226.4
1962	2,407	1,732.8	1,389	255.1
1963	2,745	1,775.2	1,546	323.2
1964	2,782	1,820.0	1,529	402.2

7. These data reveal that during the period 1959-63 Gross Domestic Product has increased by 43.8 percent and per capita income by roughly 25 percent. Gross Domestic Capital Formation has risen from 7.5 percent of national income in 1959 to 14.0 percent in 1964.

8. Industrial Production accounts for about 13-14 percent of Gross Domestic Product as summarized in the following table. The figures for 1963 are based on the Census of Industrial Production for that year, while those for 1964 are estimates made by the Economic Development Board (7).

	<u>1962</u>	<u>1963</u>	<u>1964</u>
Establishments employing 10 or more workers			
Number	605	853	--
Total output	---	M\$843.8 million	M\$1,002 million
Value added	204.7	252.6	M\$298 million
Establishment with 5-9 workers			
Number	---	684	---
Total output	---	M\$45 million	M\$50 million
Value added	---	M\$16 million	M\$17 million

II.

PLANNING

Background of Planning and Development Activities

9. When Singapore became self-governing in 1959, the Government established an Economic Development Division in the Ministry of Finance, and this Division continues to have responsibility for the Development Plan. Analysis of the situation emphasized the problems of population growth, limited outlook for expansion of entrepôt trade, and the availability of considerable local capital for industrial enterprises.

10. While formulation of plans was in process, a United Nations Mission was invited in 1960 to assist the survey of industrial potential. It estimated that 214,000 new jobs would have to be created to achieve full employment, and of this number 98,000 would have to be found in the industrial sector. It also made an estimate of the capital investment that would be required to create these jobs.

On the assumption that one primary job in manufacturing industries would require M\$12,000 investment, and one job in service industries M\$6,000, the total requirement for new industrial capital for the ten-year period amounted to M\$800 million. The Mission also prepared an extensive list of industries which it felt could be considered for Singapore.

11. The Singapore Development Plan 1961-64 contemplated that the brunt of future industrial expansion would be left to private enterprise, both local and foreign. The role of the Government was chiefly to encourage a favourable climate for investment and to create the necessary industrial infra-structure. The Plan, was, therefore, centered on capital development expenditure in the public sector and proposed a total budget for the four year period of M\$871.02 subdivided as follows:

	<u>Million</u>
I. Economic Development	
1. Land and Agricultural Development	M\$ 53.27
2. Industry and Commerce	337.36
3. Transport and Communication	<u>117.32</u>
Sub-total	507.95
II. Social Development	349.88
III. Public Administration	13.19

12. At the end of 1964 the First Plan was extended for another year, with a contemplated increase in Government development expenditures from M\$571 million (for four years) to M\$944 (for five years) (15). Final estimates of expenditures (Finance Minister's Budget Address) are:

	<u>Plan 1961-64</u>		<u>Extended Plan 1961-65</u>	
	<u>M\$ Million</u>	<u>Percent</u>	<u>M\$ Million</u>	<u>Percent</u>
Economic Development	507.95	58.32	587.98	62.3
Social Development	349.88	40.17	342.82	36.3
Public Administration	13.19	1.51	13.26	1.4
	871.02	100.00	944.06	100.00

13. These figures reveal that the emphasis in implementation of the plan has increased the allotment to economic development, which rose from M\$132 million in the first year to about M\$242 million in 1965.

14. Private sector investment expanded up to expectation. In four years, Gross Capital formation rose from M\$137.3 million to M\$414.7 million.

Machinery for Planning and Development

15. The Minister of Finance has final responsibility for overall development policies. Within the Ministry of Finance the Economic Development Division is the administrative body for policy; whereas the Economic Development Board actively carries out these policies. The Economic Development Board was established in 1961 and it is the successor to the Singapore Industrial Promotion Board which was created in 1957 (6, 7).

16. The general functions of the EDU are as follows:

- (a) the extension of loans and participation in equity capital of new industries;
- (b) the promotion of industrial investment, provision of technical assistance, and performance of feasibility studies for prospective industrial projects;
- (c) the planning and execution of schemes to provide facilities and services through industrial estates;
- (d) the administration of the Pioneer Industries Ordinance (income tax relief) and Control of Manufacture Ordinance.

17. The Board of the Economic Development Board, appointed by the Minister of Finance, consists of eight members, including the Chairman and Director, the Chairman of the Housing and Development Board (ex-officio) as Deputy Chairman, and representatives of manufacturing, banking, commercial, labour, and professional and academic interests. It holds monthly meetings.

18. The specific activities of the EDB are the following:

- (a) Investment Promotion by dissemination of information about the economic climate; the handling of specific inquiries, of which 300 were received in 1964; and other specific promotional efforts such as trade missions, local representation, etc.;
- (b) Economic Investigation and Project Evaluation for pointing out new industrial opportunities, consolidation of industries already established, and implementation of projects previously evaluated;
- (c) Administration of Pioneer Industries programs including investigation of applications;
- (d) Evaluation of loan applications;
- (e) Development of industrial estates;
- (f) Provision of technical consultant services.

19. The organization of the EDB is shown in the following chart. The number of personnel in each activity as of the end of 1964, is shown in parentheses.

Chairman

Deputy Chairman

Director -- Administration and Secretariat - (47)

Deputy Director

—	Finance - (9)
—	Investment Promotion - (9)
—	Industrial Facilities - (64)
—	Projects - (20)
—	Chief Engineer - (164)
—	Technical Consulting Service - (14)
—	Industrial Research Unit - (28)
—	Light Industries Service.- (29)

III. RESEARCH AND DEVELOPMENT, TESTING AND STANDARDIZATION

Industrial Research

20. The Industrial Research Unit, a division of the Economic Development Board, was established under the Colombo Plan in 1963, with the assistance of the New Zealand Government. It now has a staff of over 35 persons. It is organized into the following groups: Chemical Section, Electrical Section, Mechanical Section, Physical Section, Standards Section, and Workshop (2, 10, 14).

21. Services offered by the Unit are listed as the following:

- (a) Introduction, development, and adaptation of new processes and methods;
- (b) Research on utilization of raw materials;
- (c) Pilot operations for transfer of laboratory processes to larger scale;
- (d) Testing of raw materials and finished products;
- (e) Maintenance of standards;
- (f) Servicing of optical, mechanical, and electrical and electronic equipment;
- (g) Maintenance of a technical library.

22. This Unit by the end of 1964 was handling an average of 62 "jobs" per month, an increase of 38 percent during the year.

Mechanical testing and chemical analysis constitute the major activities, but it also carries out development projects on local problems. It has conducted detailed surveys on the paint and electronics industries and paint testing has become a regular function.

23. The Light Industries Services also a unit under the Economic Development Board, was opened in 1964, to assist small manufacturers in modernizing and expanding their enterprises. It has the assistance of ILO and United Nations Special Fund in providing technical, management, and financial services. (12)

It now has the following staff:

Director and Administration	- 12
ILO Consultants	3
Economic Investigation and Planning	3
Extension Services	13
Loans Service	3

24. During July-September 1965, there were 67 requests for assistance and advice, of which 20 were for technological advice on machinery, process, and layouts; 32 for loans for working capital and for machinery and equipment; 2 for designs; and 13 for sites. (14) Since its establishment in October 1963, it has received 720 requests. Funds for loans, amounting to over M\$1 million, have come from EDB, except for M\$50,000 from a private bank.

25. The unit has also carried out surveys of the woodworking and plastics industries. Technical appraisals have been made on a variety of inquiries, and technical assistance carried out for a number of other firms. A Food Industries Demonstration and Extension Section has an active programme.

26. The University of Singapore has a well-established faculty of science with a total registration of 502 students in 1963, constituting 20 percent of the total student body. This includes 41 graduate-level students.

27. Some of the science departments have been carrying out research on basic problems relating to the industrial environment of Singapore. The department of chemistry has an active research programme with extensive laboratories and pilot plant facilities. Also a course in applied chemistry was recently started.

28. Singapore Polytechnic was established about ten years ago to provide for studies, training and research in technology, science, commerce and the arts. Full-time and part-time courses are conducted in accountancy; architecture and building; and civil, electrical and mechanical engineering. In 1963-64 the Polytechnic had a student enrollment of 2,241 of whom 1,219 were in the School of Engineering. Professional and Technician Diplomas will be conferred by the University of Singapore to those students meeting appropriate academic standards.

29. Singapore Polytechnic also has extensive shops and testing facilities which are used by its staff plus the Industrial Research Unit and the Light Industries Services, which are located in neighboring buildings. Some public and private organizations have requested consultative help from the faculty on technical problems.

Testing and Standardization

30. Activities under this heading are being carried out on an expanding scale by the Industrial Research Unit and the Light Industries Services (14). The former conducts testing for a fee and a large percentage of its earned income is derived from such work, chiefly in connection with construction materials.

31. The Economic Development Board is taking steps to establish a Standards Unit to promote a programme for standards and quality control. A reference library has been set up and three employees are receiving training abroad.

IV. THE PROMOTION OF INDUSTRIAL DEVELOPMENT

32. A major activity of the government is the promotion of private investment. This is being done in a number of ways.
33. Pioneer Industries Programme. The programme to encourage industrial development by issuing pioneer certificates was initiated in September 1960 (67,8, 9). These certificates provide for exemption from taxation for a five-year period. The applications are evaluated by the Economic Development Board.
34. At the end of 1964, certificates had been granted to 113 industrial firms, of which 56 had commenced production by that time, while the rest were in various stages of implementation, with 30 scheduled to commence production in 1965. A number of new industries commenced production while their applications for pioneer certificates were still being processed.
35. Industrial Estates. A major project of the Economic Development Board is the development of industrial estates to provide advantageous locations for setting up new industries. (7, 11) The estate at Jurong, involving 16,000 acres on the southwest coast in the complex of an industrial satellite town, is well underway. The first phase is the development of 2,000 acres, with a deep water wharf and a railway link, with housing and a community centre. An additional 2,000 acres will be developed within five years. Jurong is planned to serve chiefly heavy and medium industries, but there will be facilities also for light industries. Other smaller industrial estates for light industries are being developed on other parts of the island.
36. Listing of Recommended Industries. Stimulation of industries thought to be most pertinent to the improvement of the economy is encouraged by preparing lists of recommended types of undertakings.

Declared "pioneer" industries are itemized (3) under the following categories: (a) food and beverages; (b) textiles and garments; (c) leather, leather products and rubber products; (d) wood and paper products; (e) petroleum products; (f) chemicals and chemical products; (g) non-metallic mineral products; (h) metal working; (i) machinery and transportation equipment; (j) electrical products; (k) miscellaneous products. Another listing of "feasible" industries (4) gives some details of import volumes and suggestions as to types of enterprises that might be established.

37. Product and Design Centre (5). This Centre was established by the EDB in 1965 and has a location with display space in a mid-town location. It has a staff of eight and has two major objectives:

- (a) To promote "made-in-Singapore" products, by housing displays, by serving as a focus for overseas buyers, and by conducting promotional activities at home and abroad;
- (b) To centralize technical assistance, training, advice, information, and promotion of good design, quality consciousness, packaging and presentation, and up-to-date marketing.

V.

INDUSTRIAL FINANCING

38. "The Government's policy on industrialization places great importance on the role of the private sector in the financing of industrial enterprises. The complementary role of the Government is to create a favourable climate in which promotional activities attract and mobilize capital and know-how for investment will be supported by an adequate infra-structure of industrial facilities and technical services." (7)

39. The Economic Development Board is authorized, to provide additional financial support for industry, to participate in equity capital, grant loans, guarantee loans, and underwrite the public issue of shares. It has, however, thus far limited its participation to granting loans and to equity participation in selected industrial enterprises.

40. The Board's total commitments in the form of loans was M\$52.1 million at the end of 1964, of which about 40 percent had been disbursed. The policy has been to assist industries with loans for their medium or long-term requirements, not to exceed 50 percent of their fixed capital. Loans are not ordinarily made for working capital. There has been increasing use of banks for disbursement and supervision of loans. The commercial banks are playing an important role in providing working capital and in financing fixed assets.

41. Total commitments by the Economic Development Board to the development of industrial estates, which increased 50 percent in 1964, as compared with 1963, now amount to about M\$45.4 million. Income from rentals and fees from industries occupying sites amounted to M\$1.7 million in 1964.

42. To encourage and promote new industries, the Board finds it is worthwhile to participate in equity, with the intention of transferring the holdings to private investors when they are well established. At the end of 1964, commitments amounted to M\$17.5 million of which M\$7.4 million had been paid up.

43. The Light Industries Services, . . . has received an initial grant of M\$3 million to establish a Loans Service for small industrial enterprises. (12) All loans, including the hire-purchase installment scheme for equipment, are handled by private local banks for a small handling charge. The Light Industries group makes technical and financial assessments before making recommendations to the banks.

VI.

TECHNICAL TRAINING

44. Training facilities at the University of Singapore and Singapore Polytechnic were discussed in the section on Research and Development.

45. The Productivity and Training Unit of the Economic Development Board (14) provides instruction in cost accounting, production control, financial planning, marketing and distribution and co-operates in some of these activities with the Singapore Institute of Management. It also carries out productivity studies in individual establishments.

46. The Singapore Institute of Management (17) was established in November 1964, with a Governing Council of prominent educational, business, and industry representatives. It organizes training courses, conferences, seminars and study tours for managerial training of executives at various levels. Four courses were given in July-December 1965, with a total of 67 lectures to 125 participants.

47. The Specialized Manpower Survey - a survey of manpower needs is being conducted by the Economic Development Board (5). Questionnaires, (see attached form) were sent to 119 Pioneer Companies and 73 non-Pioneer Companies selected from a wide range of industries.

48. The questionnaire used in Singapore covered 23 categories of specialized backgrounds. It requested information on numbers in each category employed in 1965, and the estimates of additional personnel needed in 1966, 1967, and 1968. The figures for future years were developed from responses as to estimated date of future employment, with the result that a considerable number were not identified as to date. Now that the precedent has been set, future surveys will undoubtedly permit the collection of information from a larger number of employers and on a more definite time breakdown.

SURVEY OF INDUSTRIAL MANPOWER

(All information shall be held in the strictest confidence)

Name of Firm:

Address:

Type of Industry:

Please tick () where applicable:

Kindly indicate the Number if possible:

Category	Existing Employment with Firm.	Future Employment by Firm.	Approx. Date of Future employment.
Architect. Accountant. Cost Accountant. Chemist. Bio-Chemist. Industrial Chemist. Chemical Engineer. Civil Engineer. Electrical Engineer. Mechanical Engineer. Production Engineer. Marine Engineer. Economist. Naval Architect. Metallurgist. Pharmacist. Statistician. Personnel Officer Marketing Officer Administrative Executive. Others.			

Remarks:

Date:Signature

Name:
Designation:

'SURVEY OF SEMI-SKILLED LABOR FORCE'

(All information shall be held in the strictest confidence)

Name of Firm:

Address:

Type of Industry:

Please tick () where applicable. Kindly indicate the number if possible.

CATEGORY	EXISTING EMPLOYMENT WITH FIRM.	FUTURE EMPLOYMENT WITH FIRM.	APPROX. DATE OF FUTURE EMPLOYMENT.
METAL WORKS. 1. Plumbing 2. Sheetmetal 3. Welding			
ENGINEERING WORKS. 1. Motor Mechanics 2. Machine shop fittings 3. Foundry			
WOOD WORKS. 1. Machinist 2. Wood-craft construction			
ELECTRICAL WIRING AND INSTALLATION			
BUILDING CONSTRUCTION			
OTHERS - KINDLY SPECIFY			
REMARKS			

Date:

.....Signature

Name:

Designation:


VII.

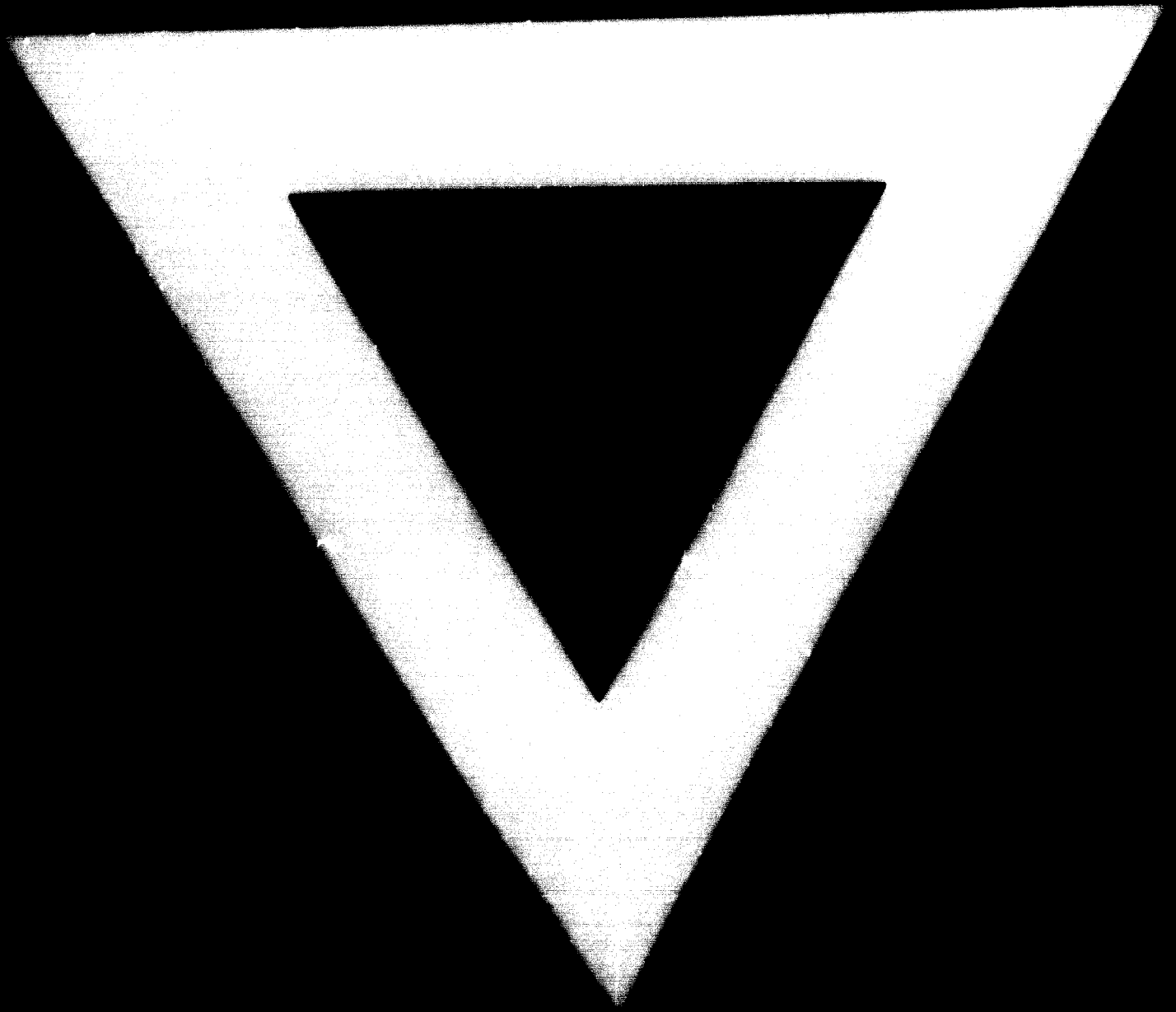
INDUSTRIAL ADVISORY AND EXTENSION SERVICES

49. All units in the Technical Consultant Services Division of the Economic Development Board take part in the broad programme of advice to industry, particularly smaller enterprises (14). The four units of which this division is made up: the Light Industries Services, the Productivity and Training Unit, the Product and Design Centre and the Industrial Research Unit have each been described in a previous section.

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