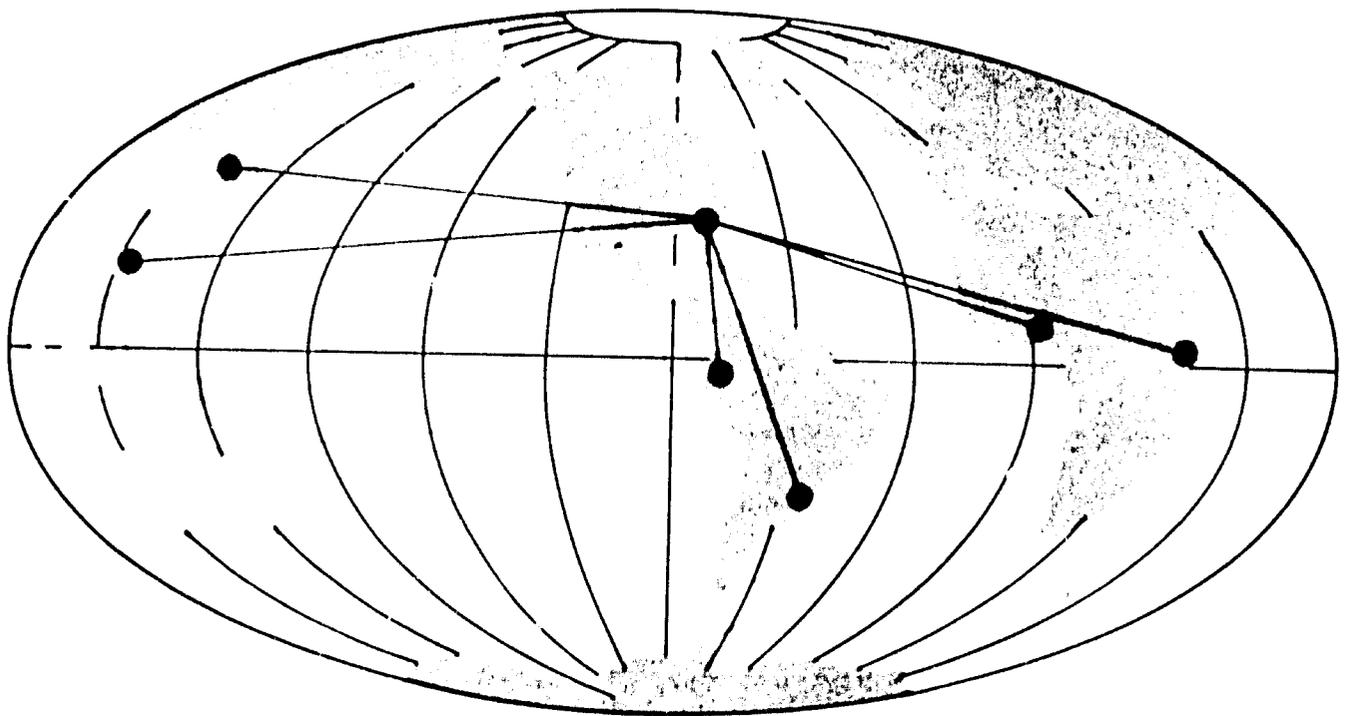


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# EMPLOYMENT GENERATION THROUGH STIMULATION OF SMALL INDUSTRIES



FIRST ANNUAL REPORT  
211 (d) GRANT YEAR — FEBRUARY 23, 1973 — FEBRUARY 22, 1974

GEORGIA INSTITUTE OF TECHNOLOGY  
ATLANTA, GEORGIA 30332

First Annual Report  
EMPLOYMENT GENERATION THROUGH  
STIMULATION OF SMALL-SCALE INDUSTRY

211(d) Grant Year: February 23, 1973 - February 22, 1974

Prepared for  
Agency for International Development

Georgia Institute of Technology  
Atlanta, Georgia 30332

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Title: Employment Generation through Stimulation of Small-Scale Industry

Grantee: Georgia Institute of Technology

Director: Ross W. Hammond, Industrial Development Division, EES

A. Statistical Summary

Period of Grant: February 23, 1973 - February 22, 1974

Amount of Grant: \$800,000

Expenditures for Report Year: \$130,237 Accumulated: \$130,237

Anticipated for next year: \$180,000

B. Narrative Summary

The primary objective of this program is to strengthen Georgia Tech's demonstrated capability in employment generation through the expansion of the small industry sector. This capability is particularly relevant to massive unemployment and rural-to-urban migration problems encountered in many of the developing countries. The program is integral to the institutional commitment to international education and development.

Activities during Grant Year One included organization staffing and start-up of the program (with personnel provided by four units of Georgia Tech) and the necessary planning and scheduling of activities.

A major effort was made to seek out, establish, and maintain counterpart and communications networks. To this end, formal agreements to work cooperatively on programs of mutual interest were signed between Georgia Tech and five counterparts in Asia, Africa, and South America. A less formal agreement was reached with a sixth counterpart in Africa. It is intended that these counterpart organizations will provide data and a real-world laboratory for testing and validating industrialization methodologies, relevant training programs, applied small industry research, and the like. Communications were initiated and maintained with international development organizations with parallel interests.

An International Development Data Center was initiated and about 1,000 publications and 150 serials were added to a base of Latin American resource material.

An International Development Data Center subject heading list was published. In addition, a key word directory for industrialization case histories in the collection was started. A well-documented case history on a three-year small industry project in Paraguay was written and published. An economic analysis of the Western State of Nigeria, with emphasis on industrialization, was completed and will be published in April 1974. A monograph on a methodology for identifying manufacturing opportunities in developing countries has been initiated and is scheduled to be produced during the spring of 1974.

A new graduate curriculum was developed in the School of Industrial and Systems Engineering, leading to a Master of Science Degree. The curriculum focuses on industrialization. It will be initiated in the Fall Quarter of 1974. One new course in connection with the graduate curriculum was developed -- "Analysis and Evaluation of Industrial Projects." This course uses an OECD text and has a strong international orientation. It will be first presented in the Spring Quarter, 1974.

Eight formal and three informal international development seminars were held during the grant year. In addition, 211(d) program-associated staff participated in numerous conferences, seminars, and workshops.

First-year program coordination was achieved through 16 staff meetings, two Internal Advisory Committee meetings, and one meeting of the External Advisory Committee.

As a result of these multidisciplinary activities, much information, knowledge, and experience have been acquired by the 211(d) program staff in the first grant year. It is expected that this expertise base will be substantially expanded in subsequent grant years.

The program, though new, already has resulted in other funding commitments to Georgia Tech and two of its counterpart organizations associated with the 211(d) program.

### C. Detailed Report

#### I. General Background and Purpose of the Grant

One of the massive problems faced by many developing countries is high unemployment and underemployment. In addition, most of these nations

have large numbers of young people in their population makeup. These young people are now or will shortly be joining the labor force, compounding the existing unemployment problems and creating more severe pressures for job generation.

An associated and difficult matter in many of these countries is the continuing rural-to-urban migration, generated in part by the quest for employment opportunities.

One of the approaches which can be used to ameliorate these and other developing country difficulties is the generation of industrial activities in the rural areas. Such industries could create employment opportunities and new income in the rural areas and, conceivably, reduce the population migration to the urban centers.

There are, of course, difficulties and inhibiting factors connected with rural industrialization. Rural industries tend to be small in size, unsophisticated in technology, limited in markets, hamstrung by inadequate capitalization and lack of access to technology, and unresponsive to factor changes. The owners tend to be self-made entrepreneurs with little education or managerial training. The rural areas frequently lack the infrastructure which industry needs.

The small industry segment in many developing countries tends to be owned by nationals, whereas the medium-size and large industries tend to be foreign owned. Hence, there is merit from the viewpoint of the home government in insuring that a viable small industry sector exists. Many governments have recognized this and developed programs to encourage this type of industry.

Moreover, small-scale industries tend to be numerous, diversified as to product, and marginal in profit-making capability. They are too small to support staff specialists who could solve many of their relatively simple problems of management, manpower, training, purchasing, production, and sales. Indeed, specialists in these fields are in short supply in most developing countries, and generally would not be available even if the rural industries could support them.

It is with this difficult small industry area that Georgia Tech presently is concerned in its international development activities. The Georgia Tech

211(d) grant focuses on the mechanisms to generate employment through the expansion and diversification of existing industry and the creation of new industrial enterprises, particularly, but not exclusively, in the rural areas of developing countries.

While this program is only one aspect of Georgia Tech's continuing interest and commitment to international education and development, it is an important aspect. Tech has a long history of applied management and technical assistance to domestic and overseas industry. One unit, the Industrial Development Division of the Engineering Experiment Station, has provided such assistance to more than 3,000 industrial enterprises over an 18-year period. Other units have had experiences of various sorts with industry of all sizes.

Hence, the 211(d) grant provides the institution with an opportunity to build its capability to assist small industry from a departure point of considerable experience in the field.

## II. Objectives of the Grant

1. OBJECTIVES RESTATED. The general objective of this program is to strengthen the capabilities of the Georgia Institute of Technology to more effectively apply its present interests, skills, and experience in developing small-scale industries in Georgia and Latin America to the problems of small industry in the less developed countries.

The program will consolidate presently available methodologies for achieving small-scale industrialization and job creation in the LDCs. It will systematically further the development of these methodologies by research, evaluation, generalization, and codification so that generally applicable and transferable principles and procedures will be readily available for effective application in the less developed countries. Innovation in developing new technological approaches to industrialization and employment generation is another objective.

In particular, emphasis will be placed on the following program elements:

- (1) Establishment and maintenance of linkages with three or four counterpart institutions in developing countries is an essential component. These linkages will provide a real-world laboratory

in which to jointly gather essential data and test alternative approaches to the accelerated development of small-scale industry.

- (2) Case studies of LDC small industry problems will be compiled, analyzed, and codified. This data base will be obtained through literature searches and development organization contacts and will be compiled in the field by the program staff when appropriate.
- (3) Analysis of methods and techniques for solving small-scale industry problems and encouraging expansion and diversification will be made to determine the reasons for success or failure under varying environmental conditions.
- (4) New approaches and alternative methodologies will be evolved and tested in the field to determine their suitability for the accelerated development of small-scale industries and elimination of problems.
- (5) Preparation will be undertaken of a graduate degree program, new courses, seminars, and other training programs for students and faculty who have an interest in small-scale industry development. The preparation and testing of these programs will serve to enlarge the institution staff capability in understanding the small-scale industry problems and employment generation processes, and to broaden the base of knowledge in the institution.

The objectives will be achieved through a program of sustained activities in applied research, relevant education and training, appropriate seminars and conferences, and program linkages with other institutions. The knowledge base derived from these activities will provide the institution staff with valuable inputs and insights, as well as being of interest to development practitioners and organizations. To the extent feasible, the above activities will be implemented in collaboration with these institutions.

2. REVIEW OF OBJECTIVES. As the program developed in the first year of the grant, it became increasingly apparent that the most important single element is likely to be the relationship between Georgia Tech and the counterpart institutions. This network of organizations with a

common interest in stimulating the development of small-scale industries will serve as information-gathering and dissemination loci, as well as a real-world laboratory for testing alternative approaches to industrialization. Moreover, some of the counterpart activities are likely to provide material for new case histories on industrialization which can be written up during the life of the 211(d) grant, thus making a significant contribution to the development literature.

As a consequence of these developing counterpart relationships, a greater emphasis is being placed on this element of the program than originally contemplated. This will be reflected in larger allocations of resources to on-site work in the counterpart countries in subsequent grant years. Otherwise, the emphasis on other program elements listed in Section II. 1. remains unchanged.

### III. Accomplishments

The specific goals established by Georgia Tech for achievement in the first grant year are detailed in the grant instrument. For convenient reference, they are repeated below:

1. LINKAGES (25% of effort)
  - a. Screening of potential counterpart organizations.
  - b. Communications with and visits to counterpart organizations.
  - c. Development of counterpart relationships.
  - d. Cooperative agreements between Georgia Tech and counterparts
  - e. Initiation of joint activities.
2. RESEARCH (45% of effort)
  - a. Expansion of the existing international development specialized data collection.
  - b. Compilation and codification of case histories and initiation of new methodology and development.
  - c. Initiation of case history field research by staff and students.
  - d. Initiation of industry potential studies for counterpart institution countries.
  - e. Economic analysis of counterpart institution countries, utilizing available and new data.

3. EDUCATION AND TRAINING (15% of effort)
  - a. Development of new relevant academic courses and curricula.
  - b. Development and testing of an appropriate training program.
4. CONFERENCES AND SEMINARS (5% of effort)
  - a. Presentation of periodic seminars at Georgia Tech (primarily for program-associated staff and faculty).
5. ADMINISTRATION AND COORDINATION (10% of effort)
  - a. Planning and coordination of program.
  - b. Program policy and procedures.
  - c. Consultations with AID and other involved organizations.
  - d. Internal and external advisory committee meetings.
  - e. Development of program information.
  - f. Coordination meetings.
  - g. Informal and formal reports to AID.

For quick reference purposes the next page lists the initial planned goals and the actual results achieved in Grant Year One. The activities are discussed in detail thereafter.

QUICK REFERENCE ACTIVITY PROFILE -- GRANT YEAR ONE

<u>Initial Planned Goals*</u>	<u>Actual Results Achieved</u>	<u>Due Date if Goal Not Achieved in Grant Year One</u>
Frequent consultation with AID	Frequency of one to two contacts per week	
Frequent communication with counterpart institutions	Two or more on-site contacts with counterparts	
Two Internal Advisory Committee meetings	Two counterpart contacts in Atlanta	
One External Advisory Committee meeting	Frequent mail and cable communication March 27, 1973; October 25, 1973	
Twelve program staff coordination meetings	July 30-31, 1973	
Major information resource acquisitions	Sixteen held	
One report based on case history file	Expended budget allocation of \$4,000 for resource materials	
One industry report	Added 1,000 publications, 150 serials Case history -- "Small-Scale Industry Development in Paraguay"	
One economic analysis	Subject headings list -- collection In preparation -- "Methodology for Manufacturing Opportunity Identification"	Spring 1974
One annual program report	In preparation -- "Economic Analysis of Western State of Nigeria"	
One training program developed and tested	Completed -- at AID by March 22, 1974 Initiation of development on March 1, 1974 -- Analysis and Evaluation of Industrial Projects	April 1974
One graduate curriculum developed, approved, and operational	Graduate curriculum leading to Master of Science degree developed and approved	
One new graduate course developed and presented	First offering -- September 1974 Course developed -- Analysis and Evaluation of Industrial Projects. First offering -- Spring Quarter 1974	On-site testing -- Fall 1974
Six to nine seminar presentations by invited lecturers	Eight formal, three informal seminars presented	

\*From Grant Instrument.



Seated: Dr. Joseph M. Pettit, President of Georgia Tech, signing the 211(d) counterpart agreement with Dr. Hahn Been Lee, President of Soong Jun University, Seoul, Korea. Standing: Left to right are Ross W. Hammond, Chief of the Industrial Development Division (IDD) of the Engineering Experiment Station and 211(d) Program Director; Earl Logan of the International Branch of IDD, assigned full time to the project; Henry Arnold, Director of the Office of Science and Technology, USAID, the sponsor; and project team members Dr. Kong Chu, College of Industrial Management, and Herbert Eller, Southern Technical Institute.



Dr. Hyung Sup Choi, Korean Minister of Science and Technology, visits the Engineering Experiment Station at Georgia Tech to discuss industrial extension activities. Left to right, Dr. Choi; Ross Hammond, Chief, IDD; Dr. Newman Hall, U.S. Science Advisor to the Korean Government; Mr. Hyung K. Kim, Ministry of Science and Technology, Korea; Mr. Yeo Gyeong Yun, Korean Institute of Science and Technology.



Fundacao Educacional do Sul de Santa Catarina (FESSC) general administration building, Tubarao, Santa Catarina, Brazil.



Signing of the counterpart agreement between Fundacao Educacional do Sul de Santa Catarina (FESSC) and Georgia Tech. Shown are Nelson Wall, IDD, at left; FESSC President Dr. Osvaldo dela Guistina, center; and Dr. Jose Muller, immediate right. Looking on are faculty concerned with the University's educational, industrial development, and technical assistance programs.

1. COUNTERPART AND COMMUNICATIONS NETWORKS ESTABLISHED (35% of effort)

An intensive effort was made in Grant Year One to seek out, establish, and maintain counterpart and communications networks.

The counterpart network was sought to provide real-world "laboratories" in the developing countries to facilitate the conduct of contract activities. The communications network was sought to involve the counterparts, as well as a number of other internationally-oriented organizations, in a continuing flow of development information pertinent to small-scale industrialization. These efforts were substantially successful.

In the case of the counterpart institutions, preliminary guidelines were established for the selection of counterparts (Appendix A). Four screening trips were made to South America, Africa, and Asia, in which some 30 possible counterpart organizations in 12 countries were visited and interviewed (see interview form, Appendix B). Almost all exhibited an active interest in a counterpart relationship with Georgia Tech under the 211(d) grant.

Due to the need to decide on a limited number of counterparts from this larger body of "willing" organizations, increasing weight was given to the motivation of the various institutions, particularly where an interest in industrialization had been exhibited prior to contact by Georgia Tech. The geographical dispersion of counterparts also was deemed desirable.

Over a period of time, starting in July 1973, formal agreement was reached with five institutions and government organizations to work cooperatively on programs related to employment and small-scale industries. An informal arrangement was consummated with a sixth organization.

These six counterpart institutions and organizations, along with Georgia Tech, now compose a linkage network with a common interest in the development of the small industry sector in their respective countries. These institutions are:

Centro de Desarrollo Industrial del Ecuador (CENDES), Ecuador  
Fundacao Educacional do Sul de Santa Catarina (FESSC), Brazil  
Georgia Institute of Technology, United States  
University of Ife, Nigeria

Kenya Industrial Estates, Kenya

Seong Jun University, Korea

University of the Philippines/Institute for Small-Scale Industries,  
Philippines

A profile of these counterparts is shown on the following page. A typical organizational agreement is shown as Appendix C.

In separate discussions with each counterpart, agreement has been reached on information exchanges, areas of industrial research which are of mutual interest, potential education and training interactions under either the 211(d) or related programs, and other matters of common interest.

In concert with the counterpart network, a communications network was initiated with individuals in various internationally oriented organizations for the primary purpose of interchange of information, reports, seminar activity, etc. A regular interchange of information is in progress.

This linkage includes, but is not restricted to, the following list:

Agency for International Development (AID)

National Academy of Sciences/National Academy of Engineering  
(NAS/NAE)

United Nations Industrial Development Organization (UNIDO)

Organization of American States (OAS)

East-West Center

International Bank for Reconstruction and Development (IBRD)

Organization for Economic Co-operation and Development (OECD)

Denver Research Institute (DRI)

World Association of Industrial and Technological Research  
Organizations (WAITRO)

Ford Foundation

MIT and Cornell 211(d) programs

The development and implementation of the counterpart and communications network required a greater effort than originally planned and a longer period of time to organize and activate. In general, two field trips were made to each counterpart: the first was the initial screening; the second was for the purpose of initiating program activities. A possible counterpart in Indonesia turned out to be non-responsive, although this

1974 MEMBER ORGANIZATIONS - SMALL SCALE INDUSTRY NETWORK

<u>Organization Name and Address</u>	<u>Principal Contacts</u>	<u>Cooperative Agreement in Force</u>	<u>Type of Organization</u>	<u>Major Interests and Activities in Small Industry Area</u>	<u>Basis of Relationship with Georgia Tech</u>	<u>Comments and Additional Data</u>
Centros Desempeño Industrial de Ecuador (CENDEE) Casilla Postal 2321 Quito, Ecuador	Dr. León León Bernabete Arias, Executive Director	Yes	National Industrial Development Center Part of Ministry of Commerce and Industry Staff - 100+	Industrial Research Management and Technical Assistance Market Analysis Implements government industrial development plans	211(d) counterpart	Regional office in Guayaquil. 100+ published reports. Field office planned for Cuenca.
Fundação Educacional de São de Santa Catarina Casilla Postal 371 Itapiranga, Santa Catarina Brazil	Prof. Osvaldo de la Góttica  Prof. José Müller	Yes	State Educational Institution and Research Unit Staff - 50+ Students - 2,500+	Industrial Research Community Development Regional Research and Development	211(d) counterpart Small industry project	Relatively new organization closely related to area industry. Major interest in coal found in area.
Georgia Institute of Technology Atlanta, Georgia 30332, U. S. A. Cable: ENCLOSURES, Atlanta	Ross W. Hammond, Chief, Industrial Development Division (IDD)  Nelson C. Wall	Yes	State Educational Institution and Engineering Experiment Station Students - 10,000	Industrial Development Resource Development Community Development Industrial Extension International Development	211(d) counterpart	Major IDD functions: applied research, service, training and technology transfer oriented to employment generation
University of Ife Ife-Ife, Nigeria Cable: UNIVERSITY, Ife-Ife	Prof. Sam A. Alake Head, Industrial Research Unit (IRU)  Dr. A. O. Lewis, Acting Head	Yes	Technological University IRU staff - 20 Students - 4,000	Industrial Research Small Industry Surveys Management Assistance Economic Development	211(d) counterpart	IRU has interviewed 30,000 household and small industries and analyzed this primary data in a series of reports.
Kenya Industrial Estates, Ltd. P. O. Box 19292 Likoni Road Nairobi, Kenya	Mr. E. A. Wany General Manager Mr. R.L.O. Ayen Prog. Mgr. Rural Ind. Dev. Program	-	Part of Industrial and Commercial Development Corp. (ICDC) Staff - 75	Industrial Estate Development Rural Industrial Development Management and Technical Assistance Financial Assistance (ICDC)	Informal working relationship	Several industrial estates in being or planned. Several rural industrial development centers are operational.
Sung Jun University 115 Song-Ju Dong Seoul 150, Korea	Dr. H. S. Lee, President Dr. Y. S. Oh, Integrated Dev. Center	Yes	3 Campus Private University Staff - 50 Students - 2,100	Industrial Extension Regional Development Entrepreneurship Development Technology Transfer	211(d) counterpart Small industry project	Initiated an Integrated Development Center, a Science Research Institute, a Regional Development Institute and an Industrial Technology Institute.
Instituto for Small-Scale Industries (Instituto de Industrias) 11th Floor, 818 Building East Ave. Diliman, Quezon City, 1505 Philippines	Dr. Leon V. Chino Director	Yes	Institute associated with the University of the Philippines Staff - 70	Industrial Training Management Consultancy Industrial Technology Industrial Extension Industrial Research	211(d) counterpart	Heavy emphasis on industrial training programs and seminars. Establishing (1974) five regional centers. Industrial technology activity expanding.

may have been due, in part, to difficulties in mail communications. Additional screening of other organizations in Asia resulted in the UP/ISSI-Tech relationship.

The significance of these counterparts to the overall performance of the grant activities cannot be overstated. The expectation is that they will constitute access to the developing country governments, industrial sectors, and economies which otherwise could not be easily achieved. In this geographically dispersed, representative sample of developing countries, information can be gathered and analyzed, small industry problems and research defined and solutions sought, varied industrial incentive programs reviewed for results or lack of them, etc. It is anticipated that much will be learned by the Georgia Tech 211(d) staff about the counterpart environments and that long-lasting network relationships will result.

## 2. PROGRAM RESEARCH (37% of effort)

a. Initiation of the International Development Data Center. The initial activity was the development of a five-year plan for building and maintaining the collection and the establishment of written procedures to be utilized in this process.

An extensive bibliography of international development literature has been initiated with emphasis on bibliographies and sources of material resulting from communication with organizations active in the field.

Starting with a nucleus of previously gathered Latin American material, the Data Center has acquired nearly 1,000 publications and is receiving 150 serials during the first year. These materials are widely circulated to the program staff members after their receipt, and the collection is being used on a daily basis by program-associated staff people.

As the collection has grown, a subject heading file has been developed for quick reference to the resource material. Two copies of this subject heading list have been provided AID as part of the annex material.

b. Existing case study collection and codification. A continuing grant activity involves the identification, collection, and analysis of industrial case studies drawn from the existing literature. These case studies are acquired as part of the building of the International Data Center and are

screened out of new acquisitions as they are received. All program staff members are asked to review a number of them and fill out a form which calls for information on the principal aspects of the study. These forms are incorporated in a file by key word (e. g., advisory services, capital equipment, financial incentives, subcontracting). At this report writing, some 50 published items in the general field of industrial stimulant and incentive programs had been so treated.

Parenthetically, it should be pointed out that certain difficulties exist in examining the existing literature for case studies. They frequently are difficult to identify, since they may not be titled as case studies and some which are so titled do not seem to fit that category. Furthermore, since these "case studies" have been written by different authors with different viewpoints and motivations, there tends to be a great variety of approaches and formats and lack of uniform coverage of all the elements which one would associate with a fully developed case study.

c. Initiation of case history field research. A case study was written and published in the grant year titled "Small-Scale Industry Development in Paraguay" (Nelson C. Wall) as a result of a three-year project in Paraguay. It was based on field experience and results, and is provided in fulfillment of the commitment to initiate case history field research by the program staff. Two copies are provided in the annex materials.

d. Industry monograph. An outline and discussion of a general methodology for identification of manufacturing opportunities in developing countries was initiated. It is intended for use by professional personnel involved with industrial projects, new ventures, investment evaluations, etc. This document will be published in the spring of 1974.

e. Economic analysis. A staff member, Dr. Kong Chu, went to the University of Ife in Nigeria to prepare an economic analysis of the Western State of Nigeria with particular emphasis on small-scale industry. This field trip took place during February and early March 1974. The report will be provided as part of the annex material as soon as it is published.

### 3. EDUCATION AND TRAINING (12% of effort)

a. New curriculum and relevant courses. The major thrust of this activity has been to design, develop, and obtain approval of a new

graduate curriculum in the School of Industrial and Systems Engineering. This Master of Science program, to be first presented in September 1974, is planned for students (foreign and U.S.) who are interested in industrialization of developing regions or countries.

The curriculum content is described in a brochure included as Appendix D. It is described in greater detail in the annex materials provided AID under the title of "Proposed Educational Program for a Master of Science Degree with Emphasis on Industrialization."

This is considered to be an evolutionary program which will be modified with the passage of time and the gaining of additional experience with developing countries. Initially, the program draws on existing courses at Georgia Tech from a number of disciplinary sources. It is planned that these offerings will be supplemented by new courses in the future. These courses will focus on international development aspects primarily.

The first new course has been developed and is titled "Analysis and Evaluation of Industrial Projects." Course content is largely based on international industrial project concepts and examples. This course will be presented initially in the Spring Quarter of 1974. The course description and topic outline are shown as Appendix E.

b. Training program. The new course, "Analysis and Evaluation of Industrial Projects," will be the basis of a one-week training program to be developed for testing and validation in one or more counterpart locations. The principal audience for this training program will be industry, government, and academic personnel whose activities involve them in preparation or evaluation of industrial project studies and proposals. It is anticipated that this training program will involve preparation of training materials and lesson plans which will permit, where appropriate, the training of "trainers" and subsequent diffusion of the course contents by counterpart personnel in their own environments, under programs separate from the 211(d).

One of the goals not achieved in the first grant year was the preparation of such a training program relevant to industrialization. This goal was given a lower priority as the first-year program progressed and was moved back in time.



First stage in the production of bamboo fishing rods in a rural industry established under the New Village program of the Korean Government. This enterprise has a monthly output of over 10,000 fishing poles designed for export to Japan. Looking on at the extreme right is Dr. C. E. Prince of the Industrial Development Committee at Soong Jun University, who is concerned with improved materials handling and ways and means of increasing the output to meet demand. Soong Jun University is a counterpart institution under the Georgia Tech 211(d) program, involving employment generation through stimulation of small-scale industry.



Concrete blocks drying in the sun near Seoul, Korea. This small-scale industry is labor intensive, uses local materials exclusively, provides employment, and supplies at relatively low cost, building materials necessary to cope with Seoul's housing shortage.

#### 4. CONFERENCES AND SEMINARS (6% of effort)

The International Development Seminar series, presented by visiting lecturers, was initiated in the first grant year. Eight formal and three informal seminars were held. Attendance averaged 30 persons. A listing of these seminars is shown on the next page.

These seminars were publicized on campus by means of posters and notices. A typical poster is included as Appendix F. The audiences included Georgia Tech administrators, faculty, and students, although the series is intended primarily to acquaint the 211(d) program staff and Industrial Development Division personnel with programs and activities of international development organizations.

The 211(d) program-associated staff people participated in a number of relevant seminars, workshops, and conferences during the grant year. A listing of these follows:

- A seminar on "Entrepreneurship" at the East-West Center in Hawaii was attended by Ben James.
- A presentation on the Georgia Tech IDD and 211(d) programs was given at Cornell University by Ross Hammond.
- A SEADAG seminar in New York titled "Directions in Rural Development Planning" was attended by Gaston Parets.
- Jerry Lewis participated in an OST/AID symposium held at Cornell University.
- A paper on "The Role of Small Scale Industries in Transfer of Technology" was presented by Ross Hammond at an OECD seminar held at Schloss Hernstein, Austria. Copies of the paper are included in the annex material.
- Ross Hammond participated on an NAS panel studying "The Role of U.S. Engineering Schools in Foreign Aid." Meetings were held in Washington and Atlanta.
- A three-week workshop at the East-West Center on the subject of "The Regional University and Development" was attended by William Ward and Ross Hammond. Papers presented by these individuals are included in the annex material. Georgia Tech has been involved in the planning and implementation of the

## CONFERENCES AND SEMINARS

<u>No.</u>	<u>Date</u>	<u>Lecturer</u>	<u>Title of Seminar</u>
1	April 27, 1973	Dr. Franklin Ahimaz, Cornell University	"Policies for Science and Technology in Developing Countries"
2	June 29, 1973	Dr. Aron Jose Aizenstat, UNIDO	"International Action for Industrial Development"
	July 31, 1973	Dr. Edmund T. Cranch, Cornell University	"The Cornell 211(d) Program"
		Dr. Hahn Been Lee, Soong Jun University	"Small Industry Programs at Soong Jun University"
		Dr. Jack Ruina, Massachusetts Institute of Technology	"The MIT 211(d) Program"
	(Informal presentation to Georgia Tech 211(d) program staff at time of External Advisory Committee meeting.)		
3	Aug. 3, 1973	Dr. Jesse Perkinson, Organization of American States	"Pilot Program for the Transfer of Technology and Related OAS Programs"
4	Oct. 2, 1973	Dr. Manuel S. Alba, East-West Center	"Programs of the Technology and Development In- stitute, East-West Center"
5	Nov. 8, 1973	Mr. Louis Goodman, East-West Center	"Role of the Non-Metropolitan University in Com- munity Development"
6	Nov. 9, 1973	Mr. Ted J. Davis, International Bank for Reconstruction and Development	"Rural Development Program at the World Bank"
7	Jan. 31, 1974	Dr. Yoon Bae Ouh, Soong Jun University	"Counterpart Activities at Soong Jun University"
8	Feb. 15, 1974	Dr. Maurice Albertson, Colorado State University	"The Development Process"

AID-funded non-metropolitan university project of the Technology and Development Institute and three Asian universities [related to, but not connected with, the Tech 211(d) program].

- A presentation was made by Ross Hammond and Earl Logan to a World Bank seminar on Financing Small Scale Industries, held in Washington, D. C.
- The midwinter meeting of the American Society of Engineering Education was held in Atlanta. Jerry Lewis and Ross Hammond made a presentation on the Industrial Development Division activities and the Georgia Tech 211(d) activities.
- Nelson Wall participated in the Bogota Conference for Small and Medium Latin American Industries.
- The AID Contractors Meeting was held in Denver and attended by representatives of contractors to the OST/AID. Ross Hammond participated as the Georgia Tech representative.
- Ross Hammond participated in a Yale University (Economic Growth Center) seminar on "The Micro Analysis of Technology Choice and Employment."

5. ADMINISTRATION AND COORDINATION (10% of effort)

The major administrative and coordinative activities in Grant Year One involved planning and scheduling activities, internal and external communication, budgetary control, and periodic review of program activities.

These activities included frequent communication with AID/Washington relative to the 211(d) grant and allied matters. In addition to field trips to six counterparts, regular communication was maintained with each. Communications were initiated or continued with numerous international development organizations.

For public information purposes; a program brochure was published and widely distributed. It has been updated and reprinted, and a copy is included as Appendix G. A slide presentation describing the program has been developed and shown to a variety of audiences. This presentation will be expanded to include milestone happenings as they occur during the course of the project.



A view of the maintenance shop of a tropical hardwood sawmill employing over 100 people near Ife, Western Region, Nigeria. The finished product is used in the local market and is exported as boards, replacing the export of logs and thereby increasing employment in Nigeria while reducing transportation and handling costs.



Bread making, using a several-hundred-year-old process in which earthen ovens are fired by wood, in Ife, Western Region, Nigeria. Although the Ife University Industrial Research Unit, the IDD 211(d) counterpart in Nigeria, can improve materials handling and reduce costs, the basic process is apt to stay unchanged for the immediate future because of the high costs of operating modern baking systems.

This AID-funded program has received considerable publicity in Georgia news media and in several counterpart locations.

Program coordination has been achieved through staff coordination meetings (16 to date) and frequent interpersonal communication.

Administrative guidance and coordination have been received through two meetings of the Internal Advisory Committee associated with the program. This committee is composed of the following Georgia Tech individuals:

Dr. Vernon Crawford, Vice President for Academic Affairs (Chairman)  
Dr. Walter Bloom, Associate Vice President for Academic Affairs  
Dr. Walter Carlson, Dean, Southern Technical Institute  
Dr. Ferdinand Levy, Dean, College of Industrial Management  
Dr. Maurice Long, Director, Engineering Experiment Station  
Dr. Thomas Stelson, Vice President for Research  
Dr. Henry Valk, Dean, General College  
Dr. Sam Webb, Dean, Graduate Program  
Mr. Ross Hammond, Chief, Industrial Development Division, 211(d)  
Program Director

An External Advisory Committee, composed of individuals with distinguished records of international experience, meets annually to advise on and evaluate the program activities. This committee met in July 1973. It presently is composed of the following individuals:

Mr. Henry Arnold, Office of Science and Technology, AID (Chairman)  
Dr. Edmund Cranch, Cornell University  
Dr. Vernon Crawford, Georgia Tech  
Dr. Hahn Been Lee, Soong Jun University, Korea  
Mr. William Littlewood, Office of Science and Technology, AID  
Dr. Frederick Moore, World Bank (IBRD)  
Dr. Bruce Old, Arthur D. Little  
Dr. Joseph Pettit, President, Georgia Tech  
Dr. K. N. Rao, Ford Foundation  
Dr. Jack Ruina, Massachusetts Institute of Technology  
Mr. Ross Hammond, Georgia Tech

A number of alternates have been designated by individual committee members.

The working members of the 211(d) staff who contributed substantial proportions of time to the program included the following Georgia Tech faculty members:

Dr. Kong Chu	50%
Mr. Herbert Eller	50%
Dr. David Fyffe	50%
Mr. Ross Hammond	50%
Mr. Richard Johnston	50%
Mr. Earl Logan	100%

In addition, a number of professional and support personnel provided short-term inputs to the program.

#### IV. Impact of Grant-Supported Activities in Developing Institutional Capabilities

In the first grant year, this interdisciplinary program involved four major units of Georgia Tech: The Industrial Development Division of the Engineering Experiment Station, the School of Industrial and Systems Engineering, the College of Industrial Management, and the Southern Technical Institute. Through the work of the representatives of these units, much information on small-scale industry was reviewed and digested, and research activities were initiated. The first students for the Industrial and Systems Engineering graduate program have been identified. Southern Tech, through its 211(d) participation, has generated an interaction with an institution in Colombia. Inputs from the program will be utilized in various academic courses. Four to six foreign students normally are involved in the program and will continue to be utilized. As a result, the institutional interests in the development field have been more broadly dispersed at Georgia Tech and many faculty members and students have been exposed to the program.

As a result of the cooperative agreements with the six counterpart organizations and other contacts, all but one generated by the 211(d) programs, other interactions are occurring. Short-term interchanges of personnel have occurred in the case of Soong Jun University (Dr. Ouh) and are scheduled with the University of Ife (Professor Aluko), Yeungnam University in Korea (President Sun Keun Lee), and the Technology and Development Institute of the East-West Center.

Another interaction resulting from the 211(d) program was a visit to Inha University at Incheon, Korea. A sister relationship with Georgia Tech was proposed by the president of Inha University. This has been deferred in the absence of substantive mutual programs between the two institutions.

Yeungnam University in Taegu, Korea, is the largest Korean University outside of Seoul. It is one of three Asian non-metropolitan universities involved in an AID/RED-sponsored project studying the feasibility of establishing an Applications Technology Center at the involved universities.

President Sun Keun Lee of Yeungnam University has requested assistance from Georgia Tech in planning and implementing the proposed center. The assistance, when funded, will involve sending an industrial engineer for six months to a year to assist the center's operations and help plan for an industrial engineering curriculum at the university.

There is a general awareness throughout the institution of the 211(d) program, due to internally generated and disseminated information. A number of units have indicated an interest in participating in the program and ways are being sought to accommodate this desire.

#### V. Utilization of Institutional Resources in Development

Georgia Tech considers itself a highly relevant institution with respect to the economy of the Southeast and Georgia, and many of its training and service programs relate directly to the small industry sector. The 211(d) activities and these Georgia Tech activities obviously are interrelated and mutually supporting.

Support from top administrative personnel of the institution, from President Pettit down, has been manifest. Many administrators have given freely of their time in program-related activities, meetings, and consultations, and institutional resources have been used in support of the program.

The 211(d) activity has contributed to the evolution of a new small industry activity at two counterpart institutions -- Soong Jun University in Korea and Fundacao Educacional do Sul de Santa Catarina (FESSC) in Brazil. At both of these institutions, centers of research on small industry problems and direct management and technical assistance have been organized and activities initiated. Significantly, these institutions are developing support for these activities from the state government in the case of FESSC and the Asia Foundation in the case of Soong Jun University. However, the main outside stimulus comes from AID through a small industry grant program administered by Georgia Tech. (This is discussed in Section VI.)

As part of the well-established information dissemination activities of the Industrial Development Division, many of its more than 600 published reports have been made available to the Tech counterpart organizations and to other international development organizations during the grant year. There have been assurances that these reports have been helpful to the

recipients. Overseas information requests generated by the 211(d) program have been serviced from other available sources and resources, utilizing Georgia Tech funds for this purpose.

George Morelos, International Development Branch, Industrial Development Division, has been on leave since July 1973, working on an AID-sponsored rural industrial project in Paraguay. He will rejoin the IDD staff on March 1, 1974.

International visitors to Georgia Tech whose interests were related to small-scale industry included the following:

Dr. Hyung Sup Choi, Minister of Science and Technology, Korea  
Mr. Yeo Gyeong Yun, Korean Institute of Science and Technology, Korea

Dr. Hyung K. Kim, Ministry of Science and Technology, Korea

Dr. Newman Hall, Science Advisor to Korea, USAID

Dr. Golfredo Contreras, IPADE, Venezuela

Dr. Luis Vargas, CORDIPLAN, Venezuela

Dr. Jorge J. Petride, IPADE, Venezuela

Dr. A. Ferrari, State University of Pernambuco, Brazil

Dr. Jose Pastore, Universidade de Sao Paulo, Brazil

Mr. A. Golez, National Economic Development Administration, Philippines

Mr. Cornelius Zondag, USAID, Afghanistan

Dr. Clarence Prince, Soong Jun University, Korea

Dr. Chong Min Pak, Soong Jun University, Korea

Dr. Manuel Alba, Technology and Development Institute, Hawaii

Dr. Saul Savarucha, Instituto Tecnologico de Pernambuco, Brazil

In addition, Georgia Tech hosted an AID team which was reviewing the 211(d) program in the region. AID team members included Alan G. Swan, C. Tyler Wood, and Robert Berg. Other 211(d) grant recipient institutions present included Auburn University and Tuskegee Institute.

## VI. Other Resources for Grant-Related Activities

1. SMALL INDUSTRY GRANT (AID). One of the problems which Georgia Tech faced in developing counterpart relationships with organizations around the world was the limited resources of counterparts. Since the 211(d) funding was to enhance Georgia Tech's capabilities, it could not then be used to support counterpart activities. Yet the nature of the proposed institutional relationship implied the provision of facilities, services, and information and, consequently, staff time and financial commitment on the part of the counterpart organization.

This lack of direct support for counterparts made it imperative during the selection process that only counterparts with proven high motivation in the small industry sector be considered. It was assumed that this motivation would be sufficient to assure some allocation of effort by the counterpart organization to the 211(d) program. In the first grant year, this has worked fairly well but has induced some strains on the resources of the counterparts, even though the program demands on the counterparts have been minimal to date.

However, with commendable foresight, AID has authorized a small industry grant program which is synergistic with the Georgia Tech 211(d) program. This one-year program, also administered through Georgia Tech, provides technical assistance grants of \$45,000 each to two counterpart institutions. Half of the grant funds to the institution can be utilized for institutional support of small industry-related activities. The other half must be used to obtain training and consulting assistance to the program from U.S. technical assistance organizations.

There appears to be little question that this pragmatic approach to institution building will have the effect of providing high motivation and will result in meaningful small industry programs at the recipient institutions, Soong Jun University in Korea and the Fundacao Educacional do Sul de Santa Catarina in Brazil. Both of these organizations are in the process of initiating comprehensive programs of research, training, technology transfer, and technical assistance activities to the small industry sectors in their areas of influence. Furthermore, both institutions have committed their own resources and have commitments from additional outside funding sources to expand and intensify the activities which the AID small industry grant has helped initiate. These commitments are shown in Table I of this report.

There is an apparent need for AID to expand this conceptually excellent small industry grant program to include other counterparts in addition to the original two organizations. In this way, a firm base will be laid for a continuing institutional strength in small industry development and employment generation through multi-source funding.



A hand-operated, mechanized corn sheller, left, and a large wooden wheelbarrow, right, that have been designed and produced by the Rural Industrial Development Center, an extension of the Kenya Industrial Estates, at Machakos, Kenya. These and other basic tools will be used in the villages and countryside, where power and mechanization do not exist, to improve productivity.



Dr. Hahn Been Lee, President, Soong Jun University, presiding over a committee meeting to discuss the university's involvement as a counterpart to Georgia Tech under the 211(d) program. Clockwise, from left to right, Earl Logan, Georgia Tech; Dr. Lee; Ross Hammond, Georgia Tech; Dr. C. E. Prince, Soong Jun University.

2. OTHER RESOURCE DEVELOPMENTS. Because of the involvement of Southern Technical Institute in the 211(d) activity, a series of discussions was initiated between Universidad Technologica de Pereira, Colombia, and the Southern Technical Institute. The Colombia institution is planning to send a cadre of faculty people to Southern Technical Institute for custom-designed chemical, mechanical, electrical, and industrial engineering programs leading to a Bachelor of Engineering Technology degree. It is unlikely that these discussions would have occurred without the stimulus of the 211(d) program.

The existence of the 211(d) grant to Tech has prompted inquiries from Ecuador, Colombia, Guyana, Nigeria, and the Philippines relating to possible technical assistance projects in the small industry field. Should any of them materialize, the program will be significantly enhanced.

At the OECD meeting on technology transfer to small industries, which was attended under 211(d) auspices, discussions were initiated with OECD by George McRobie of Intermediate Technology Development Group, Ltd., and Ross Hammond of Georgia Tech about the possibility of holding a conference of practitioner organizations in the low-cost technology and technology delivery fields. OECD is planning to hold such a meeting in June 1974 with tentative venue Paris. This meeting could contribute substantially to the knowledge base and capabilities of organizations active in the low-cost technology field and reduce duplication of effort where it exists.

#### VII. Next Year's Plan of Work and Anticipated Expenditures

The proposed allocation of effort to the program's functional activities in the second grant year is as follows:

<u>Applied Research Activity (50% of effort)</u>	<u>End Result</u>
o Manufacturing opportunity studies (Korea and Nigeria)	Report(s)
o Economic analyses with emphasis on industrialization (Brazil and Philippines)	Report(s)
o Survey of public and private resources and programs for small industry development (Ecuador)	Report
o Continued expansion of the International Development Data Center	Collection
o Key word reference/selected industrialization case histories	Report
o Continued compilation and codification of case histories	File

<u>Applied Research Activity (continued)</u>	<u>End Result</u>
o Initiation of comparative study of counterpart assistance to selected companies in one industrial sector	Interim Report
<u>Education and Training (15% of effort)</u>	
o Presentation of graduate program on industrialization (September 1974)	Graduate Program
o Changes to graduate program as indicated	--
o Presentation of new course (April 1974)	New Course
o Development of additional course in graduate program	New Course
o Development of a training course and on-site testing of course	Course Material
o Training program - market analysis-feasibility	Training Program
o Dissemination of graduate program (information for prospective students)	Graduate Program
<u>Conferences and Seminars (7% of effort)</u>	
o Participation in relevant conferences and seminars	Papers
o Six to nine seminar presentations by invited lecturers	Seminars
<u>Counterpart Linkages (18% of effort)</u>	
o Frequent communication with counterparts	Liaison
o Provision of technical information to counterparts [utilizing institution, not 211(d), resources]	Tech. Transfer
o International travel for on-site studies	Reports
<u>Administration and Coordination (10% of effort)</u>	
o Planning and coordination	
o Communication with AID and other involved organizations	
o Two Internal Advisory Committee meetings	
o One External Advisory Committee meeting	
o Twelve program staff coordination meetings	

## VIII. Other

### I. PROBLEMS EXPERIENCED

- a. The project has had only normal start-up delays.
- b. The identification of and obtaining of agreements with counterparts required far more time than anticipated.

This set a number of activities related to counterparts tentatively scheduled for Grant Year One back in time; they will be done in Grant Year Two.

- c. The first-year budget's allocation of funds to line items (salaries and wages, students, travel, etc.) was modeled after the Cornell and MIT 211(d) budget estimates. However, the commitment to working with counterparts overseas, explicit in the Georgia Tech grant, soon made it apparent that insufficient funds had been allocated for staff travel. Accordingly, in recognition of the larger travel requirements of the Georgia Tech grant, the budget was adjusted internally to make more on-site activity funds available. The involvement of students in the program is expected to increase.
- d. The receipt of resource materials, particularly books, utilizing the AID book agents, has been slow. For example, six months after ordering books, only half had been received. It is expected that this mechanism will improve and time delays shortened as the program proceeds.

## 2. CHANGING EMPHASIS IN GRANT YEAR TWO

- a. Counterpart field trips by program staff will be longer in duration in order to provide sufficient time for substantive research leading to the production of reports. Some short field trips will be scheduled for program staff orientation purposes with the counterparts and for specific purposes (the graduate program, development library interaction, etc.) where longer term interaction with counterpart personnel is not needed.
- b. There will be a close coordination of 211(d) activities with the small industry grant project activities, which involve the two counterparts, Soong Jun University and Fundacao do Sul de Santa Catarina. This could affect savings in travel costs and provide more efficient use of staff time and funds.

## IX. Report of Expenditures

Expenditures are itemized in Tables I and II.

Table I  
Distribution of 211(d) Grant Funds and Contributions from Other Sources of Funding  
(Estimated)

Review Period February 23, 1973 to February 22, 1974

<u>211(d) Activities</u>	<u>Period Under Review</u>	<u>Cumulative Total</u>	<u>Projected Next Year</u>	<u>Projected to End of Grant</u>	<u>Non-211(d) Funding Amount</u>
Research	\$ 71,300	\$ 71,300	\$ 97,400	\$264,600	\$100,000 Small Industry Grant (AID), of which Georgia Tech will utilize about \$55,000. In terms of counterpart support, Asia Foundation has provided \$7,000 to Soong Jun University and the institution has committed \$9,000 for the small industry effort. FESSC in Brazil has committed \$22,500 of its own funds and has obtained future commitments of \$56,000 from SUBIN, SUDESUL, and others.
Teaching	15,500	15,500	21,600	58,800	
Libraries	19,000	19,000	22,000	58,800	
Consultation	2,000	2,000	2,000	4,900	
Publication	2,000	2,000	3,000	9,800	
Other					
Visitors	2,500	2,500	2,000	4,900	
Travel	17,700	17,700	32,000	88,200	
<b>TOTAL</b>	<b>\$130,000</b>	<b>\$130,000</b>	<b>\$180,000</b>	<b>\$490,000</b>	

Table II  
Expenditure Report  
(Actual and Projected)

Under Institutional Grant #AID/csd - 3175

Review Period February 23, 1973 to February 22, 1974

	<u>Expenditures to Date*</u>		<u>Projected Expenditures</u>				<u>Total</u>
	<u>Budget</u>	<u>Actual</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4 (to nearest 100)</u>	
Staff Salaries	\$ 83,200	\$100,202	\$119,350	\$120,000	\$126,000	\$ 80,000	\$545,600.
Stipends for Students	21,000	5,459	18,000	21,000	21,000	20,000	85,500
Travel	14,000	17,700	32,000	25,000	25,000	17,000	116,700
Materials and Supplies	5,800	4,427	6,650	4,000	4,000	3,000	22,000
Consultants and Visiting Experts	6,000	2,449	4,000	9,800	4,000	10,000	30,200
<b>TOTAL</b>	<b>\$130,000</b>	<b>\$130,237</b>	<b>\$180,000</b>	<b>\$179,800</b>	<b>\$180,000</b>	<b>\$130,000</b>	<b>\$800,000</b>

\*Estimated, since grant year terminates in the middle of the monthly accounting period.

## APPENDICES

- A. Guidelines for Identifying Potential  
Counterpart Institutions
- B. Counterpart Institution Interview Form
- C. Sample Counterpart Agreement
- D. Graduate Program Brochure
- E. Course Description: Analysis and  
Evaluation of Industrial Projects
- F. Example of International Development  
Seminar Poster
- G. 211(d) Program Brochure

## Appendix A

### GUIDELINES FOR IDENTIFYING POTENTIAL COUNTERPART INSTITUTIONS

The following are primary considerations in identifying linkage counterparts (educational institutions or government agencies).

<u>Preferred Situation</u>	<u>Acceptable Situation</u>
1. Institution is located in country with AID Mission interested in industrialization	Institution is located in country with AID Mission
2. Institution is located in country with relatively stable political climate	Same
3. Institution is national in character	Institution is strong state or independent in character
4. Institution is interested and well motivated	Same
5. Institution has engineering, business and economic components or a multi-disciplinary staff (if government agency)	Institution has at least business and social science components
6. Institution has applied research activities or practically oriented associated institutes	Strong orientation to be pragmatic and relevant even if no present activity
7. Institution staff has broad understanding of English language	Key people able to speak and understand English
8. Institution is willing to negotiate and sign cooperative agreement	Same
9. Institution is willing either to support its efforts or to seek outside funding sources	Same

COUNTERPART INSTITUTION

Interview Form

Date \_\_\_\_\_

I. Name of organization \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Cable Address \_\_\_\_\_

Name of Contacts \_\_\_\_\_ Position \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

II. Nature of Organization \_\_\_\_\_

National, Regional, State, Local; Public, Private

Operating since \_\_\_\_\_ Area of Influence \_\_\_\_\_

Size:

No. of Students (if educational) \_\_\_\_\_

Graduate School (if educational) \_\_\_\_\_

Research Facilities \_\_\_\_\_

\_\_\_\_\_

Professional Staff:

Main interest areas 1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Physical Facilities \_\_\_\_\_

\_\_\_\_\_

Annual Annual Budget \_\_\_\_\_

Average Annual Contract Income \_\_\_\_\_

O. H. \_\_\_\_\_ Experience with A.I.D. \_\_\_\_\_

Institutional Goals \_\_\_\_\_

\_\_\_\_\_

III.

		Circle appropriate number					
Reaction to project	None	1	2	3	4	5	Good
Interest in involvement	None	1	2	3	4	5	Yes
Interest in agreement	None	1	2	3	4	5	Positive
Present interest in industrialization	None	1	2	3	4	5	High
Interest in small industries	None	1	2	3	4	5	High

Sufficient English-speaking capability \_\_\_\_\_

Existing efforts in field \_\_\_\_\_

List of project reports in industrialization \_\_\_\_\_

Interest in graduate program in field \_\_\_\_\_

Willingness to consider establishment of industrialization unit \_\_\_\_\_

IV. Interviewer summary of institution interest and potential commitment, and consideration of other factors \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Appendix C

AN AGREEMENT

BETWEEN

\_\_\_\_\_

AND THE GEORGIA INSTITUTE OF TECHNOLOGY

THIS AGREEMENT, entered into this \_\_\_\_\_ day of \_\_\_\_\_ between the \_\_\_\_\_, located in \_\_\_\_\_, hereinafter referred to as "\_\_\_\_\_", and the Georgia Institute of Technology, located in Atlanta, Georgia, United States of America, hereinafter referred to as "The Institute" witnesseth that:

WHEREAS, \_\_\_\_\_ and The Institute share certain common interests in furthering local and regional economic and industrial development, and promoting the education of students at a professional level, and

WHEREAS, informal deliberations of representatives of these two organizations have been held in \_\_\_\_\_, and in \_\_\_\_\_ during which time there was a mutual exchange of hopes, aspirations, and problems, and

WHEREAS, it is now desired to formalize these prior informal exchanges, and

WHEREAS, both parties believe that their respective interests will be advanced by this agreement considering the benefits reasonably to be expected from it.

NOW, THEREFORE, for the purpose of promoting the increase, dissemination and preservation of useful knowledge and in consideration of the mutual promises herein contained, the parties hereto agree as follows:

1. In recognition of the common interests of \_\_\_\_\_ and The Institute, there is hereby established a continuing relationship

Appendix C (Continued)

between the two parties to facilitate cooperative undertakings in furtherance of these interests and both parties will proceed with implementation of this agreement in consonance with its intent.

2. This agreement provides a broad framework within which specific activities or programs may be developed and jointly undertaken. It is to be maintained with a high degree of flexibility in anticipation of future plans which will be responsive to current situations. Such flexibility will provide the requisite latitude for the organizational representatives designated in paragraph 4 below to develop various specific types of activities which will contribute to the common objectives as needs become apparent and as resources may permit.
3. In the future when undertakings are formulated and are in consonance with the program objectives and institutional policies of \_\_\_\_\_ and the Institute, they will be presented to their respective organizations for approval.
4. In order to provide under this agreement an official joint committee which will be responsible for the implementation of the total program and to facilitate communications, liaison, and cooperation in such implementation, the following are hereby designated as representatives by their respective organizations:
  - a. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - b. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Appendix C (Continued)

- c. Ross W. Hammond, Chief  
Industrial Development Division  
Georgia Institute of Technology
- d. Nelson C. Wall, Head  
International Development  
Industrial Development Division  
Georgia Institute of Technology

Subsequent to the execution of this agreement either party may modify its membership on this committee by written notice to the other party.

- 5. While both parties desire to support their cooperative programs with available resources where appropriate and feasible to do so, nothing in this agreement shall commit either party to an undertaking for which the funds are not available. Individual joint undertakings or projects may be made the subject of separate agreements, and both institutions may singly and jointly seek financial support from sources other than their respective organizations.
- 6. This agreement may be terminated by either party upon the giving of ninety (90) days written notice to the other; provided, however, that any other agreement entered into between either party and a third party, the performance of which requires cooperation between \_\_\_\_\_ and the Institute, shall be fully and faithfully performed pursuant to the terms thereof.

Appendix C (Continued)

IN WITNESS WHEREOF the parties hereto have caused this agreement to be  
duly executed by their authorized representatives.

City of \_\_\_\_\_  
on the \_\_\_\_ day of \_\_\_\_\_, 1973 By \_\_\_\_\_

City of Atlanta, Georgia, U.S.A. GEORGIA INSTITUTE OF TECHNOLOGY  
on the \_\_\_\_ day of \_\_\_\_\_, 1973 By \_\_\_\_\_

*Are You Interested In*

1974

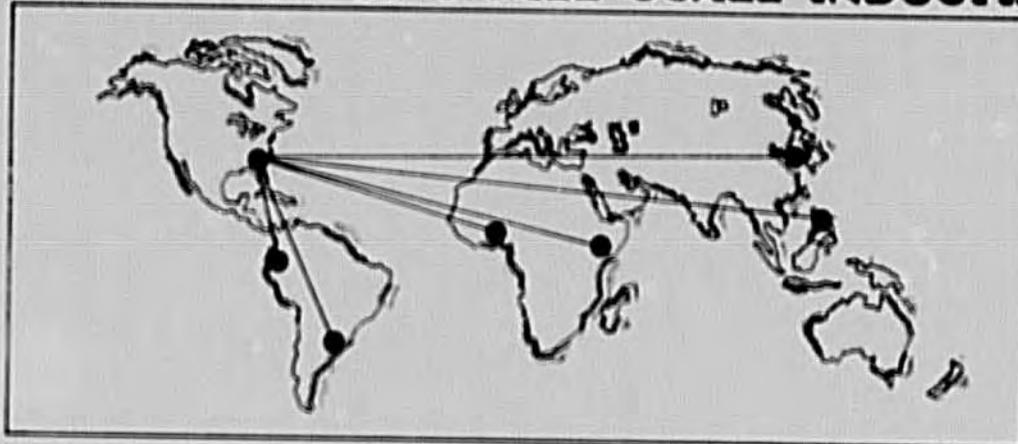


## **SMALL INDUSTRY DEVELOPMENT?**

In particular, are you interested in —

- ▲ **STARTING A SMALL BUSINESS?**
- ▲ **WORKING FOR A DEVELOPMENT ORGANIZATION?**
- ▲ **TEACHING INDUSTRIAL DEVELOPMENT?**

### **EMPLOYMENT GENERATION THROUGH STIMULATION OF SMALL-SCALE INDUSTRY**



A Georgia Tech program funded by the Agency for International Development

## **GEORGIA TECH SCHOOL OF INDUSTRIAL AND SYSTEMS ENGINEERING**

**Announces Opportunities for Graduate Study  
with Emphasis on Industrialization  
Beginning September 1974**

**Georgia Institute of Technology School of Industrial and Systems Engineering is offering graduate studies, leading to the degree Master of Science, for students who are interested in small industry development.**

#### **PROGRAM OBJECTIVES**

This program is planned for students who are interested in industrialization of developing regions or countries—particularly employment generation through the creation and development of small industries. Applicability is not limited to foreign nations and U.S. citizens as well as foreign nationals are encouraged to participate.

#### **HOW THE PROGRAM WORKS**

After discussing your professional objectives with an adviser, you choose courses from prepared lists in each of the following areas:

##### **FINANCIAL RESOURCES**

To provide knowledge concerning the acquisition and management of the financial resources of a business.

##### **PLANT AND EQUIPMENT RESOURCES**

To provide knowledge of how to perform site selection, facilities design and layouts, process design and management functions for any industrial setting.

##### **HUMAN RESOURCES**

To develop an understanding of human relations in an industrial organization, i.e. how individual and group behavior affects and is affected by the work environment.

##### **INFORMATION & CONTROL SYSTEMS**

To introduce the concept of information needs to business management and to provide background knowledge pertaining to the design of management information and control systems.

##### **MANAGEMENT OF IMPROVEMENT AND INNOVATION**

To provide the necessary knowledge for systematically identifying significant problems, needs and opportunities for improvement and for managing the implementation of technical change.

#### **ELECTIVES**

To provide additional depth or breadth in order to achieve the objective of your specific program of study.

In addition to the class-room courses, you will complete a project which will provide a carefully guided practical experience related to industrialization. Possible projects include the planning for creation and implementation of a small scale business, or for the development of a specific region.

The program is designed to be completed in not less than two academic years. Actual length will depend upon your academic background, experience, and professional objectives.

#### **PREREQUISITES**

Entering students are required to hold a bachelor's degree from a recognized institution, and to have graduated in the upper half of his class. A background in engineering, sciences, or management is preferred and the program of study should have included the following:

Probability and Statistics (6 qtr. hrs.)

Introductory Operations Research (3 qtr. hrs.)

Computer Programming (3 qtr. hrs.)

Linear Algebra (3 qtr. hrs.), and

Engineering Economics (3 qtr. hrs.)

In the event these prerequisites were not a part of your undergraduate program, you may meet the requirements after admission by completing the appropriate courses at Georgia Tech.

#### **FINANCIAL ASSISTANCE**

This program is being developed under the auspices of the project "Employment Generation Through Stimulation of Small-Scale Industry" which is funded by the Agency for International Development of the United States Department of State. A limited number of assistantships are available to highly qualified students.

#### **FOR MORE INFORMATION AND APPLICATION FORMS CONTACT**

**Dr. R. N. Lehrer, Director  
School of Industrial and Systems Engineering  
Georgia Institute of Technology  
Atlanta, Georgia 30332**

New Course Description  
ANALYSIS AND EVALUATION OF INDUSTRIAL PROJECTS

This course deals with the economic analysis of industrial projects. It starts with the generation of ideas for new ventures and ends with preparation of requests for funding. The course is planned in response to the needs of students who expect to start a small business or work as professionals in an industrial organization. The objective is to provide knowledge for assessing the economic feasibility of industrial projects, with due regard for social, cultural, and environmental factors within the region or country in which the venture will be located. Subject areas include generation of venture ideas, location and site selection, development planning, market demand, pricing considerations, production technology, cost and profit estimating, economic and social benefits, project proposal preparation, and funding.

Text: Manual of Industrial Project Analysis, Volume 1, Organization for Economic Co-operation and Development, 1972.

# **INTERNATIONAL DEVELOPMENT SEMINAR SERIES**



**SEMINAR NO. 8**

**2:00 pm, Friday, Feb. 15**

**Room 303 (Auditorium)**

**ENGINEERING EXPERIMENT STATION (957 DALNEY ST.)**

## **The Development Process**

**Dr. Maurice L. Albertson  
Centennial Professor  
Colorado State University  
Fort Collins, Colorado**

**SPONSORED BY: GEORGIA TECH PROGRAM OF EMPLOYMENT  
GENERATION THROUGH STIMULATION OF  
SMALL SCALE INDUSTRY (IN THE DEVELOPING  
COUNTRIES).**

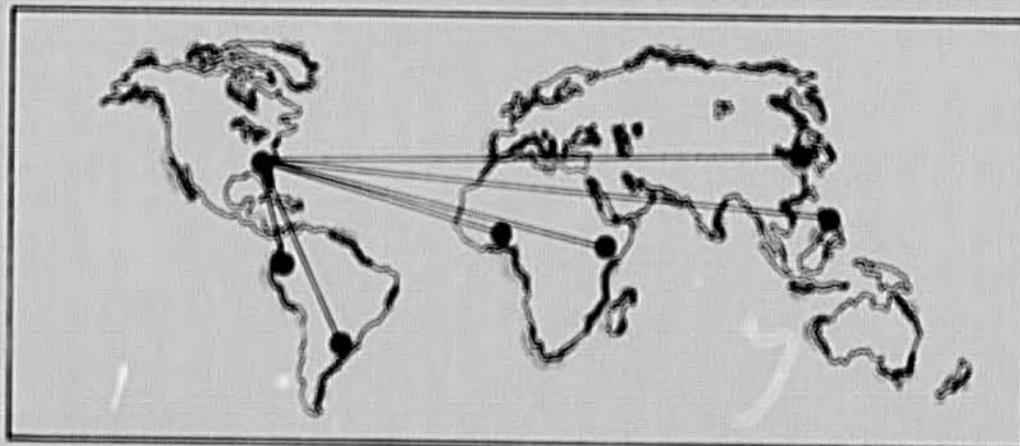
**PROGRAM FUNDED BY THE AGENCY FOR INTERNATIONAL DEVELOPMENT**

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**EMPLOYMENT GENERATION THROUGH  
STIMULATION OF SMALL-SCALE INDUSTRY**



A Georgia Tech program funded by the Agency for International Development

#### **The Program and Its Goals**

The Georgia Institute of Technology is conducting a five-year (1973-78) program of industrial development research, training, and linkages under an institutional grant from the Agency for International Development. The purpose of the program is to strengthen and broaden Georgia Tech's existing capabilities in employment generation and small-scale industry development, primarily in rural areas, through activities involving less-developed countries. This program relates to the institution's ongoing commitment to international education and development.

#### **Need for the Program**

Developing countries generally are faced with an urgent need to generate massive numbers of jobs for their burgeoning populations—in the face of already high unemployment rates and low incomes, rural-to-urban migration, inadequate infrastructure and capital, and the myriad of other complex problems associated with such economies. An effective way to create employment is through industrialization. In particular, since small-scale industries are characteristic of many of these nations, expansion of small-scale industry is vital to balanced future economic well-being. The Georgia Tech program concentrates on this problem—expansion of the small industry sector.

#### **Scope and Functions**

Georgia Tech is applying its knowledge and expertise gained through many years of work in the rural areas of the southeastern United States and in Latin America to attack the problem of industrial expansion in developing countries in the following ways:

- Linkages with overseas counterpart institutions
- Applied research
- Education and training
- Conferences and seminars

#### **Staffing and Organization**

The Georgia Tech units primarily involved are the Industrial Development Division of the Engineering Experiment Station, the School of Industrial and Systems Engineering, the College of Industrial Management, and the Southern Technical Institute. Other Georgia Tech personnel will participate as appropriate. In addition to faculty members, students from both the U.S. and developing countries are being utilized.

The program is administered through the office of the Vice President for Academic Affairs and is coordinated by a program director from the Industrial Development Division. Assisting in guidance of the program are an internal advisory committee, consisting of the heads of interested and involved units at Georgia Tech, and an external advisory committee, including AID representatives and internationally oriented industrial, academic, and scientific personnel.

#### **Counterpart Institutions and Other Linkages**

An important component of the program is linkages with six counterpart institutions in Asia, Africa, South America, and other parts of the world. Counterparts can be educational institutions, research institutes, or government ministries, and may change from time to time. They will work jointly with Georgia Tech in relating industrialization technology to their specific environments. Georgia Tech also will interrelate with other organizations and consortiums engaged in similar activities.

#### **Conferences and Seminars**

Major international development conferences to present the latest findings of the program will be held at Georgia Tech during the third and fifth years of the grant period. A series of six to nine seminars will be presented each year, with guest speakers lecturing on appropriate subjects.

#### **Applied Research**

Economic analyses, industrial potential studies, small-scale industry problem-solving analyses, and case history research conducted in Atlanta and on-site in the developing countries constitute a basic element of the overall program. The existing library of international development materials at the Industrial Development Division is being formalized and expanded. Efforts are being focused on designing and testing in the field new and innovative methodologies for small industry development, working with counterpart institutions where appropriate. The end products of the research activity will be reports, manuals, training packages, case histories, and similar publications.

#### **Education and Training**

The formal education segment is open to qualified undergraduate and graduate students of domestic and foreign origin. A graduate option (master's level) in the School of Industrial and Systems Engineering, oriented specifically to the program, is an important component. Existing curricula may be revised and new courses developed.

Short-term training programs will be designed and tested throughout the five-year program period. They will focus on adapting industrialization principles and methodologies to the real-world problems of the developing countries. The programs will vary in length, content, and potential audience.

#### **Expanded Activity**

This interdisciplinary effort should considerably enhance the capability of Georgia Tech in the field of small industry development and employment generation. The enhanced capability will be available to others for technical assistance, including training, problem solving, advice, and consultation.