

Asian Institute of Technology

AIT Annual Report

1999



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AIT - The first 40 years and the next 40



Her Royal Highness Princess Maha Chakri Sirindhorn presided over the opening of AIT's 40th Anniversary Stakeholders' Forum in September. Her Royal Highness is seen being welcomed by Dr. Thanat Khoman, Chair Emeritus, and AIT President, Prof. Jean-Louis Armand, and Mrs. Candice Ann Armand, together with senior officials from the provincial government of Pathumthani.



The Institute's tokens of appreciation were presented to Her Royal Highness by AIT faculty Dr. Vatcharaporn Esichaikul.

ABOUT AIT

It is 40 years since AIT began life on a modest scale in a few rooms belonging to the Faculty of Engineering on the Chulalongkorn University campus. In those days AIT was called the SEATO Graduate School of Engineering. In 1967, SEATO (the Southeast Asia Treaty Organization) relinquished control of the School. Thus, AIT proper came into being, moving six years later to its campus in Pathumthani province.

Asia's needs have changed - almost continuously since 1957 when Mr. Pote Sarasin, then SEATO Secre-

tary General, first proposed the idea of a SEATO-sponsored regional graduate school focusing on civil engineering. The first class of 18 students in 1959 - from Pakistan, the Philippines and Thailand - was enrolled in a single field of specialization, hydraulic engineering.

Today, AIT is an international post graduate institution providing programs in infrastructure engineering, advanced technologies, management and planning, and agricultural and natural resource engineering.

A ROLE FOR THE NEW MILLENNIUM

With more than half of the world's population living in the regions covered by AIT, the need is greater than ever for the Institute to focus on how best to discharge its role as an influential agent of change and development.

AIT took the opportunity of its 40th Anniversary celebration in September to take stock of itself and find the best ways by which it can sustain its success in an increasingly competitive environment. The Stakeholders' Forum was an opportunity for cooperative inquiry and problem solving surrounding three main themes: product, internationality and funding.

Issue speakers Dr. Sam Pitroda, Chairman of WorldTel, London, UK, spoke on product, while Dr. Stephen Hill, Director of UNESCO Regional Office for Science and Technology for Southeast Asia, spoke on internationality. The Forum's paper on funding by H.E. Mr. Prachuab Chaiyasan, Minister of University Affairs of Thailand, was read by Dr. Tharnthong Thongsawat, Secretary to the Minister.

Representing various disciplines and cultural perspectives, AIT's stakeholders examined the nature and impact of the Institute's most pressing needs and offered courses of action.

The Forum's discussions aimed at providing inputs to the Institute's forward planning. They focused on socio-economic, educational, cultural, financial and institutional issues relating to AIT in the next 40 years. What should AIT be? What should it do? How should it position itself and where is it going?



Commemorative Events:

The 40th Anniversary Exhibition chronicled Asia's growth and development and presented AIT's responses to the region's needs over the past four decades. Her Royal Highness is seen viewing the exhibition with Prof. Jean-Louis Armand, AIT President, and Prof. Mario T. Tabucanon, Provost.



A commemorative plaque was laid at the Faculty of Engineering premises at Chulalongkorn University by Dr. Thanat Khoman, Chair Emeritus of the AIT Board of Trustees, and Prof. Jean-Louis Armand, AIT President, assisted by Prof. Tawatchai Tingsanchali (center).



The AIT Time Capsule, containing artifacts, documents, science and technology data, and other items of interest to future generations, will be opened at AIT's 200th Anniversary in 2159.

AIT - The first 40 years and the next 40

THE WAY AHEAD

Challenges lie ahead and AIT must take a strategic view of how these are to be met. Present-day realities are in fact opening new avenues for the Institute's expansion. As AIT President, Prof. Jean-Louis Armand, points out, "The economic recovery of the region now underway, the need to strengthen higher education, technical training and research, and the emergence of ambitious regional projects present remarkable opportunities for the Institute and the region as a whole."



The Forum took the format of a core-round table discussion among representatives of AIT's stakeholders (including trustees, donors, faculty, staff, students, alumni, representatives from international organizations, NGOs, the private sector and other parties).



The men and women of AIT.
(Above). Alumni best exemplify AIT's four decades of achievements. Led by Dr. Subin Pinkayan (seventh from left), a member of the first batch of eight graduates in 1961, AIT alumni pose for a group photo at the Chulalongkorn University event.

(Left). Remembering their Chula days, senior alumni gather around the commemorative plaque placed at the Faculty of Engineering at the Chulalongkorn University campus.



(Left). Mrs. Mai Charoensupaya, former registrar and holder of AIT staff identity card No. 1, joined the event with other retired members of the AIT staff who had worked for the SEATO Graduate School of Engineering.

Recommendations submitted by the AIT Stakeholders' Forum:

Product

- While maintaining AIT's development focus and cooperation with the public sector, build closer collaboration with the private sector.
- Identify and develop unique, successful, interdisciplinary programs, including the use of information technology in appropriate areas; and review the relevance and performance of existing programs.
- Give recognition to students and alumni as important stakeholders and agents of development throughout Asia.

- Develop AIT as a hub of regional and international higher education networks.
- Initiate regional research projects in collaboration with universities in developed countries and with regional institutions.
- Implement rigorous internal and external quality assurance across the Institute.

Internationality

- Internationality should be strengthened as AIT's critical competitive advantage, and reflected in the community and curriculum.
- Raise AIT's teaching, research and outreach throughout Asia to international standards, including

gender issues, environmental conservation, poverty alleviation, and other concerns of transnational significance.

Funding

- Quality education, research and outreach should be enhanced and integrated as the key to funding security.
- AIT's funding base should be diversified.
- AIT should continue to build its capacity to carry out research and institutional consultancy.
- The existing Endowment Fund should be strengthened.
- A marketing strategy should be implemented.



CALENDAR OF EVENTS

8 September

Remembering AIT's early years

A commemorative event, featuring the laying of a plaque of appreciation, was held at the premises of the Faculty of Engineering at Chulalongkorn University, home of the SEATO Graduate School of Engineering when it was established in 1959.

AIT Stakeholders' Forum

Her Royal Highness Princess Maha Chakri Sirindhorn presided over the opening of the AIT Stakeholders' Forum.

A message from Dr. Federico Mayor, then Director-General of UNESCO, was read by Dr. Stephen Hill, Director, UNESCO Regional Office for Science and Technology for Southeast Asia.

The keynote address was delivered by Dr. Klaus Toepfer, Under-Secretary-General of the UN and Director-General of the UN Office at Nairobi, Executive-Director of the UN Environment Programme (UNEP) and the Centre for

Human Settlements (Habitat). The Stakeholders' Forum was chaired by H.E. Mr. Niels Kaas Dyrland, Danish Ambassador to Thailand and AIT Trustee.

40th Anniversary Exhibition and AIT Time Capsule

HRH Princess Maha Chakri Sirindhorn presided over the opening of the 40th Anniversary Exhibition and the interment of the AIT Time Capsule.

9-10 September

AIT Stakeholders' Forum

A full day session was held on 9 September and a half day session on 10 September.

11 September

Special Meeting of the Board of Trustees

Recommendations from the Stakeholders' Forum were discussed.

President's Message



I have great pleasure in presenting AIT's Annual Report for 1999, my first since I had the honor of being appointed as President of this prestigious institution in May.

The year saw AIT reach its 40th Anniversary, a landmark celebrated by a number of special events and ceremonies that are featured in this Report. These events and the reflection that accompanied them served to highlight the Institute's impressive growth and proud record of achievement and service to much of Asia over four decades; four decades during which the shape of most Asian economies has changed almost beyond recognition. It is, I believe, to AIT's credit that it has kept pace with this transformation and has remained a credible and relevant institution. Time and again, AIT has demonstrated its capacity to meet new challenges and to evolve in line with the rapidly-

changing technological landscape. This Annual Report clearly shows that 1999 was no exception to the trend of continuous institutional development.

But as the world enters a new millennium and as the pace of technological innovation accelerates and the range of its applications expands ever more rapidly, it is evident that AIT cannot rest on its laurels, however deserved they may be. For that reason, I have initiated a broadly-based process of consultation on AIT's future, central to which was the Stakeholders' Forum held in September on the occasion of AIT's 40th Anniversary. This Forum examined the impact of technological development in the region, emerging needs in technology education, and AIT's future responses as an influential agent of change. AIT's stakeholders sought to define the Institute's



future roles, direction and priorities, in relation to the broader scenario of technology education in the region, in particular the emergence of other high quality universities and institutions in Asia.

At this pivotal moment in AIT's history, what are the options open to the Institute as it faces increasing competition for suitable students and for financial support from the development community? There is perhaps a tendency to view AIT's future in terms of stark alternatives: either it focuses on the ideal of academic excellence as defined by well-known international standards, perhaps to the exclusion of less qualified students from the more disadvantaged countries of the region; or it concentrates on maximizing opportunities for development aid by addressing the specific needs of the more disadvantaged, perhaps at the cost of lowering academic standards. My vision is somewhat different, however.

I believe that AIT can and must remain relevant to the needs of the countries of the region, whatever their level and pace of

development, without sacrificing academic excellence. We are speaking here not of compromise but of a synthesis of relevance and quality; indeed the perceived quality of what AIT does consists in large measure of the relevance of the programs it offers. I am convinced that the best way of attracting students is to offer high quality programs that are clearly perceived and widely acknowledged as relevant to development needs and employment opportunities. Indeed, the long-term visibility of AIT depends on its ability to achieve this synthesis and to focus its limited resources on programs with the potential for added value in terms of academic excellence, relevance to regional needs and adaption to the demands of the market.

To achieve this synthesis, AIT must reassert its comparative advantages of internationality, cross-cultural identity, and political neutrality, as well as its generally positive image throughout Asia - an image for which AIT's alumni by their example of leadership must take great credit. At the same time, AIT must seek new ways

to extend its influence, and here I have in mind the potential role in networking with other universities, both within and beyond the region, in offering support and technical assistance to emerging institutions in the less developed countries of Asia, and in participating in collaborative ventures under the auspices of bodies such as the Greater Mekong Sub-region.

Translating this vision into reality will require clear thinking, the elaboration of change strategies supported by concrete action plans, and not little courage on the part of the AIT community.

Even after so comparatively short a time at AIT, I am convinced of the will and the potential for a constructive response to the challenges AIT faces. I am sure therefore that everyone connected with AIT will share my sense of optimism and excitement as the Institute moves forward into the next millennium.

Prof. Jean-Louis Armand

1999 in Brief

Inauguration of Geoinformatics Center



The Geoinformatics Center, inaugurated on 19 February by Her Royal Highness Princess Maha Chakri Sirindhorn, supports teaching, research and outreach activities in remote sensing. The Center's inventory of equipment includes a NOAA receiving station.

In His Majesty's Honor

At a special ceremony held on 10 December at the Narayanhiti Royal Palace in Kathmandu, AIT conferred the Honorary Degree of Doctor of Technology



on His Majesty King Birendra Bir Bikram Shah Dev of Nepal in recognition of his contribution to educational development as the solution to poverty and economic backwardness.

The conferment of the Honorary Degree by Prof. Jean-Louis Armand, AIT President, coincided with the observance of AIT Day in Nepal, which was inaugurated by

H.E. Krishna Prasad Bhattarai, then Prime Minister of Nepal. It was organized by the AIT Alumni Association (AITAA) and the AITAA-Nepal Chapter.



Asian Leadership

Sustaining Asia's economic recovery will require the region's leaders to put all necessary structural reforms in place. Former Philippine President, General Fidel V. Ramos, issued the reminder in his keynote address at a seminar, "Leadership under the Asian Crisis", which was organized by the AIT Alumni Association at its 28th Governing Board Meeting and Homecoming on 11-14 November.



Welcoming President Armand

"It is indeed a privilege and honor to assume the Presidency and I wish to share these with the whole AIT community," said Prof. Jean-Louis Armand on becoming AIT President on 12 May.

Prof. Armand succeeded Prof. Charas Suwanwela who served as Interim President from 17 August 1998 to 11 May 1999.



Medals from Vietnam

Students and Alumni

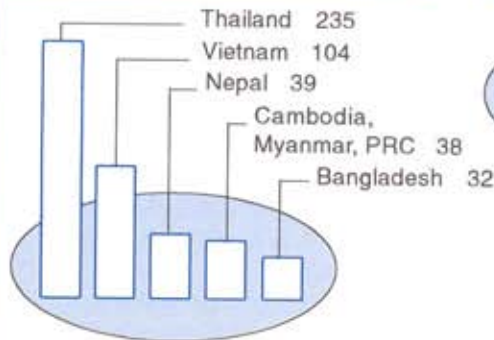


"I am confident that through our two Centers we will continue to provide significant contributions to Vietnam's technological and economic development as well as to international friendship and mutual understanding."

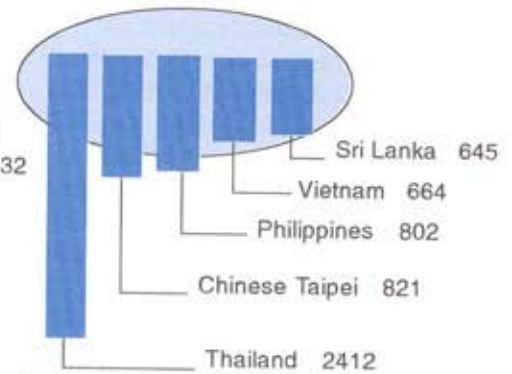
Prof. Armand conveyed the message in acknowledgement of the medals of appreciation presented to AIT by the Ministry of Education and Training. Receiving the medals were Prof. Armand, Dr. Jari Backman, AITCV Director, Dr. Hans Stoessel, SAV Director, and Prof. Wilhelm Hill, former AIT Trustee.

The presentation was held at AIT's 40th Anniversary observance in Vietnam in October, which featured a roving exhibition and seminar in Ho Chi Minh City, Hue, Danang, and Hanoi.

Five Largest Groups of Graduates in 1999



Five Largest Groups of Alumni 1961-1999



Resource Generation

SUMMARY OF DONATIONS RECEIVED IN FY 1998-99

Total Donations: Baht 882,331,000.-



Donations received by sector in FY 1998-99 (%)

□ Governments and Government agencies	89.378%
■ International organizations	2.999%
■ Corporations	4.967%
■ Foundations, private and others	2.646%



Donations received by sector FY 1989-90 to FY 1998-99 (%)

□ Government and Government agencies	88.619%
■ International organizations	3.548%
■ Corporations	5.053%
■ Foundations, private and others	2.780%



Donations received by sector FY 1959-60 to FY 1998-99 (%)

□ Government and Government agencies	71.127%
■ International organizations	10.942%
■ National Government Agencies	7.833%
■ Foundations, Private and Others	10.098%

Academic Developments

Degree Programs

Inter-disciplinarity

Inter-school activities, mainly offered as areas of specialization, were pursued in earnest throughout 1999. These included the following:

- The Danida-supported programs in Integrated Tropical Coastal Zone Management, Integrated Watershed Development and Management, and Modelling Tools for Environment and Resource Management, involving the School of Environment, Resources and Development (SERD) and the School of Civil Engineering (SCE).
- Cleaner Production, involving all Schools with support from UNEP and ADB.
- Programs in Process Control and Automation, involving SERD and the School of Advanced Technologies (SAT), and Oil and Gas, involving all Schools, are under development.

New Doctoral Programs

Doctoral programs in Pulp and Paper Technology, SERD, and in the inter-disciplinary field of Mechatronics, SAT, were introduced in the September 1999 term.

Two-stage Master's Program in Energy

A two-stage Master's Program in Energy was introduced at the AIT Center Vietnam (AITCV). The first stage is a Diploma program at AITCV. Qualified graduates may apply for admission into the Master's program at AIT.

Master's Program in Microelectronics

The Master's Program in Microelectronics responds to the need for skilled human resources in the region's semiconductor industry. It is set to open in the May 2000 term in the School of Advanced Technologies (SAT). The development of a curriculum, focusing on design aspects particularly for specific applications, IC packaging and storage technology, was carried out with AIT's collaborating institutions namely, the National Electronics and Computer Technology Center (NECTEC) and Thailand Graduate Institute of Science and Technology (TGIST), under the National Science and Technology Development Agency of Thailand.

Extension Master's Degree Program

The newly established Extension Master's Degree Program offers greater flexibility to professionals whose positions and responsibilities do not allow long periods of absence from their work. Candidates for this program are required to fulfill all standard academic requirements. The first batch of students is expected to come from Laos, Vietnam and Cambodia with support from Sida.

Outreach

Strategic Plan for Distributed Education

The Distributed Education Center (DEC), established in 1998, undertook the development of a strategic plan to guide its future activities, based on a market survey undertaken by the School of Management. The DEC, the Institute's core unit for initiating distance learning activities, carries out planning, coordinating, facilitating, implementing and servicing functions in a stepwise fashion.

Web-based course delivery trials will be carried out for AITCV in Hanoi and the Swiss-AIT-Vietnam Management Development Program in Ho Chi Minh City by early 2000.

Under consideration is a policy for the accreditation of course credits earned from the distributed education mode. The concept of offering modular curricula through joint programs/degrees with other universities has been endorsed in principle.

Streamlining SERD

In 1999 SERD restructured its Programs from 11 to five, as follows: Agriculture, Aquatic Systems and Engineering; Rural Development, Gender and Resources; Energy; Processing Technology; and Urban Environmental Engineering and Management. The Space Technology and Applications Research Program was relocated from SERD to SAT.

New Structures

Strengthening Undergraduate Education

As its primary objective, the Institute's Regional Educational Development Program (REDP) seeks to strengthen undergraduate institutions in the region and to improve the quality of potential student-feeder institutions for AIT. In an effort to promote the REDP, new partner universities were approached in 1999 in Vietnam, Sri Lanka and Pakistan.

Certificate of Competence in Storage Technology

Plans were finalized for the introduction of a Certificate of Competence in Storage Technology (CCST), to be offered jointly with the International Disk Drive Equipment and Materials Association (IDEMA) and NECTEC.

The 10-module CCST course curriculum responds to the need for skilled manpower in the hard disk drive industry, particularly in Thailand. Customized in-house programs to suit specific corporate needs will be made available.

The seven core modules are fundamentals of magnetism, fundamentals of hard disk technology, fundamentals of heads technology, HDD manufacturing basics, disk drive handling, microcontamination and ESD/EOS control.

International Academy in Engineering Development and Scientific and Management Technology

The International Academy in Engineering Development and Scientific and Management Technology was inaugurated in November 1999 at the International Conference in Civil and Environmental Engineering - New Frontiers and Challenges. The Academy serves as a catalyst in promoting sustainable urban and rural environments, embracing multi-faceted science and technology activities at the appropriate and advanced levels. Among its upcoming activities are the Geotech 2000 Conference, presentation of millennium awards and fellowships, and establishment of a summer school in new and emerging technologies.

Academic Senate

At its first meeting on 23 February 2000, the Academic Senate, which serves as an advisory group to the Management on all academic matters (as stipulated in the Bye-Laws of the Board of Trustees), elected Prof. Gajendra Singh of the Agricultural & Aquatic Systems and Engineering Program, SERD, as Chair, and Prof. Tawatchai Tingsanchali of the Water Engineering and Management Program, SCE, as Vice Chair.



Prof. Singh



Prof. Tawatchai

Clearing House for Asian Management Case Studies

In 1999 AIT embarked on an innovative venture with the establishment of the Asian Case Clearing House (ACCH) based at the School of Management (SOM). Supported by the Swiss Agency for Development and Cooperation, the ACCH aims to widen the availability of management case studies and teaching materials that are specific to Asia. It will generate its own case studies and will network with like-minded institutions in the region.

The main distribution channel will be the Internet. The ACCH will function like an e-commerce company, allowing credit card payment, downloading of cases, security checking, as well as facilitation of delivery and shipment. An on-line shop for the ACCH is being developed to launch the distribution of the case studies.

In its first year, the ACCH will tap existing materials and resources at SOM and the Swiss-AIT-Vietnam Management Development Program in Ho Chi Minh City. As its primary target market, the ACCH is looking at regional and international institutions that teach Asian topics and/or enrol a considerable number of Asian students.

Initially, the ACCH will focus on writing traditional case studies and their corresponding teaching notes. Later, the range of products will include industry notes and multimedia facilities, such as simulations.

Students

Applications Trend

Applications for admission in 1999 totalled some 3575, marking a 4% drop from the previous year and a slight increase over the same period two years ago. The number of applications was largest in the January 1999 term.

1999 Student Applications Record	
Term	Students
January	1369
May	935
September	1271
Total	3575



A significant enrolment trend over the past three years has been the increasing number of women joining the Doctoral program.

Enrolment Record

Annual student enrolment in the four Schools averaged 1334 in 1999, which was lower than the 1998 annual average of 1368. While enrolment in SAT and SOM rose in the past three years, it declined in SCE and SERD.

1999 Student Enrolment			
	Jan	May	Sept
Doctoral	234	235	255
Master's	1083	1002	959
Diploma	2	3	2
Other Programs*	64	81	83
Total	1383	1321	1299

* Including Certificate of Advanced Studies, Certificate, Special Programs, and Bridging Program.

Master's students accounted for some 81% of the annual total degree student enrolment. The number of Doctoral students averaged 241 in 1999 (11% higher than in 1998), representing 19% of degree program enrolment. (The actual proportion was 21%, inclusive of enrolment in the Certificate of Advanced Studies, thus achieving the 20% target set by the Board of Trustees).

1999 Enrolment by School			
School	Jan	May	Sept
SAT	207	338	358
SCE	298	184	291
SERD	569	568	343
SOM	309	231	307
Total	1383	1321	1299

Note: Including Bridging Program, Certificate of Advanced Studies, Certificate, and Special Program.

1999 Enrolment by Program

Program	Jan	May	Sept	1999	1998
Doctoral	234	235	255	241	217
Master's	1083	1002	959	1014	1057
Diploma	2	3	2	2	2
Total Degree Enrolment	1319	1240	1216	1257	1276
Other Programs*	64	81	83	76	92
Total	1383	1321	1299	1334	1368
<i>Doctoral enrolment as a percentage of total degree enrolment</i>	17.7%	18.9%	20.9%	19.1%	17%

* Including Certificate of Advanced Studies, Certificate, Special Program, and Bridging Program

The Institute admitted its first students from Portugal and Greece. As for regional groupings, average annual enrolments increased for Southeast Asia and the Pacific, North America, Europe and Africa.



The Postgraduate Technological Studies (PTS) Program, which is supported by the European Commission, enables the development of closer relations and cooperation among students from Asia and the European Union.

1999 Enrolment by Country			
Country	Jan	May	Sept
Argentina	1	1	
Australia	1	2	2
Austria			1
Azerbaijan	1	1	1
Bangladesh	58	50	43
Belgium	1	2	6
Bhutan	3	4	5
Cambodia	57	46	36
Canada	1	2	1
Chinese Taipei	27	20	22
Denmark		1	
Finland	4	4	10
France	8	8	14
Germany	4	2	9
Greece		1	
India	47	44	42
Indonesia	28	32	32
Iran	4	4	4
Italy	1	1	3
Japan	9	7	7
Kazakhstan	7	3	2
Korea	8	7	8
Kyrgyzstan	3	5	5
Laos	60	56	48
Malaysia	3	2	5
Mongolia	6	8	6
Myanmar	62	54	59
Nepal	89	82	74
Netherlands	1		1
Nigeria			1
Norway			1
Pakistan	33	24	23
PNG	1	1	
Philippines	30	28	23
PRC	69	52	47
Peru	1	1	
Portugal			1
Spain	1	2	1
Sri Lanka	45	38	36
Sweden		2	
Switzerland	2	3	2
Thailand	537	554	574
Tuvalu	1	1	
USA	1	2	
UK		1	
Vietnam	164	160	140
Tibetans living in India	4	4	4

1999 Women Enrolment*			
School	Jan	May	Sept
SAT	22.2	27.3	30.6
SCE	12.9	19	14.4
SERD	43.2	42.3	38.8
SOM	33.8	31.9	31.7

**As a percentage of total enrolment for each School.*



The largest number of women enrollees in 1999 joined SERD and SOM.

Graduates

Graduates Record

The Institute awarded degrees to 691 graduates in 1999. The largest group, 260, received degrees from SERD, followed by 174 graduates from SOM, 127 from SAT and 130 from SCE. By region, Southeast Asia and the Pacific accounted for the largest number of graduates in 1999. By nationality, the largest groups of graduates came from Thailand, Vietnam, Nepal, Cambodia, Myanmar and PRC.

1999 Graduates by Country

Country	Apr	Aug	Dec	Total
Argentina		1		1
Australia			1	1
Bangladesh	11	15	6	32
Bhutan			1	1
Cambodia	15	21	2	38
Chinese Taipei	10	1	2	13
France	1			1
Germany	1			1
India	10	10	5	25
Indonesia	3	9	3	15
Japan	4		1	5
Kazakhstan	3	2	1	6
Korea	1	3		4
Kyrgyzstan		1		1
Laos	5	17		22
Malaysia	1			1
Mongolia	1	1	1	3
Myanmar	14	16	8	38
Nepal	14	19	6	39
Pakistan	12	6	3	21
Peru		1		1
PRC	22	14	2	38
Philippines	5	8	2	15
Sri Lanka	9	10	7	26
Tuvalu		1		1
Thailand	101	66	68	235
USA	1			1
Vietnam	48	43	13	104
Tibetans living in India			2	2
Total	292	265	134	691

1999 Graduates by Degrees

Degree	Apr	Aug	Dec	Total
D.Eng.	6	1	7	14
D.Tech. Sc.	4	3	3	10
Ph.D.	4	2	1	7
M.Eng.	120	80	75	275
M.Sc.	13	152	37	202
MBA	137	25	10	172
Dip. AIT	8	2	1	11

1999 Graduates by School

School	Apr	Aug	Dec	Total
SAT	19	3	105	127
SCE	121	8	1	130
SERD	13	229	18	260
SOM	139	25	10	174



Speaking at the 85th graduation ceremony on 22 April, Dr. Za-Chieh Moh, President of Moh and Associate



Group Consulting Engineers and former AIT Vice President and Provost, encouraged the graduates to aspire to become 'the ideal engineer'.

"EPIC stands for the traits of an ideal engineer.

"E is for effective, efficient, excellent, ethical, and enterprising.

"P is for proper, productive, punctual, perfect and persistent.

"I is for imaginative, involved and informed.

"C is for current, compatible, clear and concise."

Graduation Awardees

On 20 August, Prof. Don George, AO, former Vice Chancellor and Principal of the University of Newcastle, NSW, and former Vice-Chair of the AIT Board of Trustees, conveyed the following advice to the members of the 86th graduating class:



"...There will be changes in technology that none of us can foresee and these will require you to be lifelong students, returning again and again to the fundamentals of your discipline in order to master the changes... As engineers and applied scientists, you will face many complex issues which will draw on your technical skills and your ethical values, your very humanity..."

At the 87th graduation on 17 December, H.E. Dr. Arthit Ourairat, Minister of Science, Technology and Environment of Thailand, remarked:



"It has been 40 years since AIT's foundation and 10 years since its award of the Ramon Magsaysay Medal for International Understanding. Please permit me to say how greatly impressed I am by what this Award signifies. In the words of the Ramon Magsaysay citation, AIT has 'shaped a new generation of engineers and managers committed to Asia in an atmosphere of academic excellence and regional camaraderie.'"

April

Mr. Shambhu Sagar Sharma Acharya
(SCE, GTE) Nepal
Chin Fung Kee Prize

Mr. Paramate Leartsakulpanitch
(SCE, GTE) Thailand
Barbara and John Hugh Jones Prize

Mr. Chumchoke Nanthawichit
(SCE, GTE) Thailand
Barbara and John Hugh Jones Prize

Mr. Tayyab Maqsood
(SCE, SEC) Pakistan
Mahesh Varma Prize

Mr. Theeraphong Chanpheng
(SCE, SEC) Thailand
Aoyaki Prize

Mr. Md. Raziul Hasan Mollah
(SCE, WEM) Bangladesh
Hisamatsu Prize

Mr. Le Trung Tuan
(SCE, WEM) Vietnam
Sukum Navapan Prize

Mr. Chanon Thaicharoen
(SCE, WEM) Thailand
Hodaka Prize

Ms. Sonu Govil
(SOM, IB) India
Mahesh Varma Prize
and Hiromichi Seya Prize

Mr. Amit Chhabra
(SOM, MT) India
Wilhelm Hill Prize
and Yoshiro Takasaki Prize

Mr. Do Ke chi
(SOM, MT) Vietnam
Institute Prize

Mr. Ravichandran Shanmugam
(SOM, EMBA) India
Thyssen Budd Automotive Prize

Ms. Atika Kongwittayapanit
(SAT, ISE) Thailand
Siemens Prize

August

Ms. Lam My Lan
(SERD, AASE) Vietnam
Chintana Boonthamjinda
Memorial Prize

Mr. Dev Sagar Shrestha
(SERD, AASE) Nepal
Y.Y. Kishida Prize

Ms. Gulsan Ara Parvin
(SERD, RDGR) Bangladesh
Alastair M. North Prize
and Yoh Kurosawa Prize

Mr. Pradip Poudel
(SERD, Energy) Nepal
Hisamatsu Prize

Mr. Guo Tao
(SERD, STAR) PRC
Tim Kendall Memorial Prize

Ms. Krishna B. Kakad
(SERD, RDGR) India
Institute Prize

Mr. Satchithanandam Eswaranandam
(SERD, PT) Sri Lanka
Albert Stevens Prize

Mr. Vo Quoc Lap
(SERD, PT) Vietnam
Sukum Navapan Prize

Mr. Iswar Lal Joshi
(SERD, UEEM) Nepal
James A. Linen III Memorial Prize

Ms. Xu Di
(SERD, UEEM) PRC
Robert B. Banks Prize

Mrs. Neera (Shrestha) Pradhan
(SERD, UEEM) Nepal
Yoshiro Takasaki Prize

Ms. Sudarat Poonapirat
(SOM, EMBA) Thailand
Thyssen Budd Automotive Prize

December

Ms. Hathai Tanta-Ngai
(SAT, CSIM) Thailand
Hisamatsu Prize and
Shoichiro Toyoda Prize

Ms. Patravadee Vongsumech
(SAT, CSIM) Thailand
Hisamatsu Prize

Ms. Pornthipa Ongkunarak
(SAT, ISE) Thailand
James A. Linen III Memorial Prize

Ms. Roongrat Seeluangsawat
(SAT, CSIM) Thailand
James A. Linen III Memorial Prize

Mr. Chanin Sinlapeecheewa
(SAT, ISE) Thailand
Tim Kendall Memorial Prize

Mr. Doan Ngoc Dung
(SAT, TC) Vietnam
Sonera Prize

Mr. Soracha Kirithaveep
(SAT, ISE) Thailand
Werner von Siemens
Excellence Award

Alumni

New AITAA Chapters

National chapters of the AIT Alumni Association were established in Bhutan, Central Asia and Mongolia bringing the total number of AITAA chapters to 26.

As a positive force committed to the interest of the Institute over the long-term, the AITAA and its national chapters foster the sharing of alumni feedback on matters that are crucial to the Institute's sustained growth and strength. Among these are the adoption of a strategic direction focusing on areas of specialization where AIT possesses a comparative advantage, the forging of alliances with partner institutions to promote academic collaboration and student recruitment, and the implementation of cost-effective measures in support of sustainable Institute operations.

In addition to providing professional and personal networking among all alumni, the AITAA and its national chapters carry out a promotional function for the Institute, particularly through orientation seminars and small group discussions with potential donors, collaborators and students.

28th Annual Governing Board Meeting

Jointly hosted by the AITAA-Thai Chapter and AIT, the 28th Annual Governing Board Meeting, held on 10-13 November 1999, featured an alumni homecoming attended by over 150 members. H. E. Fidel V. Ramos, former President of the Philippines, was the guest speaker at a special seminar, "Leadership Under the Asian Crisis."

Other events included AIT Day, which was organized by the Student Union for the visiting alumni, the AITAA Annual Governing Board meeting and annual general meeting of the AITANET, a consultancy network of alumni and their respective business firms and companies.

Alumni Distribution



by School	
Advanced Technologies	1861
Civil Engineering	3525
Environment, Resources and Development	3836
Management	727
Total	9949

by Degree	
D.Eng.	227
D.Tech.Sc.	80
Ph.D.	39
M.Eng.	6172
M.Sc.	2468
MBA	717
Diploma	246
Total	9949

by Region of Residence	%
Southeast Asia, the Pacific and Australia	52.38
South Asia and West Asia	18.60
North and South America and Europe	4.94
East Asia and Central Asia	11.95
Middle East	0.40
Africa	0.27
Others (<i>plus unknown address</i>)	10.90
Deceased alumni	0.56
Total	100.00



Special Day in Nepal



H. E. Mr. Krishna Prasad Bhattarai (right), the then Prime Minister of Nepal, inaugurated AIT Day.

Over 175 Nepalese alumni were on hand to welcome members of the Institute's delegation to AIT Day in Nepal, which was held on 10 December. Organized by the AITAA-Nepal Chapter, AIT Day was inaugurated by H.E. Mr. Krishna Prasad Bhattarai, the then Prime Minister of Nepal. A special ceremony was the conferment of the AIT Honorary Degree of Doctor of Technology on His Majesty King Birendra Bir Bikram Shah Dev. AITAA-Nepal arranged meetings between the Institute delegation, led by Prof. Jean-Louis Armand, President, and senior government and university officials.

Above: AIT President, Prof. Jean-Louis Armand, and Dr. Thanat Khoman, Chair Emeritus of the Board of Trustees, were joined by Mr. Surendra Shrestha, AITAA President, at the AIT press conference.



Right: Mr. Pramod Pradhan (third from left), AITAA-Nepal President, and Nepalese alumni are seen welcoming AIT Trustee Dr. Sukum Navapan, Mrs. Maewadee Navapan and Mrs. Candice Ann Armand.

by Nationality

Southeast Asia and the Pacific

Australia	1
Brunei	9
Cambodia	111
Fiji	1
Indonesia	476
Laos	69
Malaysia	280
Maldives	3
Myanmar	239
Papua New Guinea	9
Philippines	802
Singapore	28
Solomon Islands	1
Thailand	2412
Tonga	1
Tuvalu	1
Vietnam	664
Sub-total	5107

South Asia and West Asia

Afghanistan	19
Bangladesh	642
Bhutan	16
India	635
Iran	12
Nepal	590
Pakistan	603
Sri Lanka	645
Tibetans living in India	3
Tibetans living in Brunei	1
Turkey	6
Sub-total	3172

East Asia and Central Asia

Azerbaijan	2
Chinese Taipei	821
Hong Kong	87
Japan	65
Kazakhstan	12
Republic of Korea	126
Kyrgyzstan	2
Macau	7
Mongolia	21
PRC	467
Uzbekistan	1
Sub-total	1611

North America, Europe and Africa

Argentina	1
Belgium	1
Bolivia	1
Canada	5
Egypt	1
Ethiopia	1
Finland	2
France	5
Germany	3
Ghana	2
Honduras	1
Kenya	4
Malawi	3
Netherlands	2
Nigeria	1
Peru	1
Sweden	2
Tanzania	8
UK	2
USA	12
Zambia	1
Sub-total	59

Total 9949

Faculty

Faculty Strength

Taking the annual average of faculty full time equivalent, faculty strength increased by some 17% over the 1998 level. The appointment of new full time faculty in the September 1999 term increased the headcount.

1999 Faculty Headcount

	Term			Annual Average	
	Jan	May	Sept	1999	1998
Long-Term Faculty					
Direct-hire	103.16	105.66	115.32	108.05	98.34
Seconded	52.33	51.33	57.32	53.66	42.83
Short-term Faculty					
Visiting	20	26	38	28	11.33
Associated	45	67	87	66.33	46.33
Affiliated	16	17	17	16.67	16
Adjunct	10	12	14	12	5.33
Total	246.49	278.99	328.64	284.71	220.16

Faculty Activities

There was marked increase in the academic activities of faculty and staff, including sponsored and grant research projects, conferences, seminars, workshops, short courses, publications and related activities undertaken by the Schools and Centers.

* *Monographs, Working Papers, Consultancy Reports, Reviews, Academic Unit Research Reports, Occasional Papers, Newsletters, Reference Materials, Handbooks, Lecture Notes, Serial Publications, Databases, Technical Notes.*

Study Trips, Special Projects.

1999 Report on Faculty Activities

Activities	School/Center									Total	
	SAT	SCE	SERD	SOM	CEC	CLAIR	CLET	RCC	SAV	1999	1998
PUBLICATIONS											
Journal Papers	51	35	127	9		9	4			235	211
Conference Papers/ Proceedings	77	81	127	16		5	12			318	316
Research Reports	9	6	47				5		25	92	54
Books/Chapters in Books	2	6	16	13			2			39	39
Others*	23	13	89	9		31	10		30	205	72
SPONSORED AND GRANT RESEARCH											
Completed	15	9	26	5	2	3				60	75
On-going	31	25	89	12	2	9			2	170	135
CONTINUING EDUCATION ACTIVITIES											
Conferences	11	11	16	1		5	2			46	10
Workshops	11	15	35	22	1		7	6	2	99	38
Seminars					4					4	82
Short Courses	1	20	19	12	58	9			18	137	87
Special Lectures	31	17	55	9		5	5	37	2	161	7
Others*	10		51		10				6	77	20
Total	64	63	176	44	73	19	14	43	28	524	244

1999 Student-to-Faculty Ratio

Based on student and faculty full time equivalents, the 1999 average student-to-faculty ratio was computed at 7.6, which was below the optimum student-to-faculty ratio of 9:1 set by the Board of Trustees. However, SOM faculty are experiencing relatively higher loads of degree level teaching and student supervision.

1999 Student-to-Faculty Ratio

School	Term			Average
	Jan	May	Sept	
SAT	6.66	10.48	8.22	8.47
SCE	9.55	5.11	7.18	7.19
SERD	7.02	6.95	3.77	5.84
SOM	17.05	12.43	12.60	13.84
1999 Average	20.94	7.83	6.57	7.59
1998 Average	11.26	8.77	7.69	9.71

Faculty and Staff Secondments

In 1999, the majority of seconded faculty and staff were sponsored by Japan (159 man-months), followed by France (101), and Finland (98).

Faculty and Staff Secondments FY 1998-99 (man-months)

Governments

Canada	42.50
Chinese Taipei	12.00
Denmark	49.50
CEC	12.00
Finland	98.00
France	101.00
Germany	62.50
India	12.50
Italy	1.50
Japan	159.00
Republic of Korea	21.50
Norway	12.00
Switzerland	77.50
United Kingdom	57.00

National Government Agencies

Institute of Research for Development, France	2.00
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International Organizations

ADB	4.50
European Space Agency	12.00
IUCN	34.00
NFFPA International	11.00
UNEP-EAP/AP	6.00
WWF	20.50

Business and Industry

ADEME	18.00
University of Wales	22.00
Ahlstrom Machinery Corp.	4.00
Sanpo International	10.00
Others	16.00

Total 878.50

Thailand's National Distinguished Researcher

Prof. Worsak Kanok-Nukulchai, Dean of the School of Civil Engineering, was named one of Thailand's National Distinguished Researchers for 1999. He received the award from H.E. Mr. Chuan Leekpai, Prime Minister of Thailand, at a ceremony held on 27 September 1999. Presented by the National Research Council (NRC) of Thailand, the award recognizes efforts made by Thai researchers to introduce new and creative ideas, uphold the highest standard of professional integrity and serve as role models for the society.



Prof. Worsak, an AIT alumnus (SEC '73), obtained his Ph.D. from the University of California at Berkeley under a Fulbright Scholarship and B.Eng. from Chulalongkorn University in 1971.

Promotion to Full Professor

In 1999 three faculty members from the School Environment, Resources and Development were promoted to the rank of Full Professor.



Prof. Shrestha



Prof. Athapol



Prof. Kammeier

Prof. Ram Manohar Shrestha is an expert in energy economics and policy, electric utility demand side management in developing countries, environmental implications and the economics of utility planning. An AIT alumnus (IEM '82, '86), Prof. Shrestha studied Law at Tribhuvan University in Nepal and Electrical Engineering at the University of Baroda, India.

Prof. Athapol Noomhorm has made significant research contributions to post harvest technology and food process engineering. He obtained his B.Sc. (Agricultural Mechanization) from Kasetsart University, Thailand; M. Eng. from Lamar University, Texas, USA; and

Ph.D. (Engineering Science) from Louisiana State University, Louisiana, USA.

Prof. Hans Detlef Kammeier has more than 30 years' experience in urban and regional planning. His research and outreach interests cover urban and rural infrastructure, urban conservation, computer applications in planning, and environmental management. He obtained his M.Eng. (Architecture) from the Technical University of Munich. Prof. Kammeier holds a high-level civil service qualification which is required of urban planning professionals in Germany. He is Vice President of the International Society of City and Regional Planners.

The on-going sponsored and grant research projects described in these and the following pages reflect the wide range of subject areas covered by AIT's four Schools.

Research contracts signed in 1999 are listed on page 49. A complete list of completed and on-going research projects starts on page 50.

School of Advanced Technologies

Tax Administration Project

Jointly carried out with the School of Management (SOM), the project has two main components: overall management, handled by the SOM collaborators and use of information technology, handled by the SAT team. The overall management component examines internal and external environmental changes. A SWOT analysis will be carried out for the Thai Revenue Department in order to formulate strategic plans for the next three to five years. The IT skills required will be analyzed in order to design an appropriate skills development program.

Investigators: Information technology component:

V. Esichaikul, V. Wuwongse, T. Sanguankotchakom;

Overall Management component:

S. Siengthai, F. Swierczek
Sponsor: Revenue Department, Ministry of Finance, Thailand

Development of Computer Simulation Library for Teaching Factory

Under development is a computer simulation library to support the School's teaching factory focus area. The proposed library components are simulation software, simulation models of factories, simulation modelling tools, tools for analyzing simulation results, and instructional material on how to use the library for various courses in the curriculum.

Investigator: V. Kachitvichyanukul

Sponsor: AIT Research Initiation Grant

Development of Autonomous Intelligent Robots

This project aims to design and develop new mechanisms for autonomous intelligent robots. So far it has completed a mobile learning robot, a kinematics controlled six-legged robot, a positioning sensor based flying robot and a biped robot. Under study are a wall climbing robot, a jumping robot and an omnidirectional robot.

Investigator: M. Parnichkun

Sponsor: Minebea Thai Ltd.

Postprocessor Development for 5-Axis Machine

This concerns the development of a basic mathematical model for the work piece to machine coordinates transformation. The postprocessor will take as input the standard ISO CL-file and generate correct G-code for 5-axis simultaneous machining of complex work pieces. Three modules will be developed: inverse kinematic and calibration, linearisation and feed rate adjustment.

Investigator: E. Bohez

Sponsor: Thai-German Institute

Medical Technology: Design and Manufacture of Personalized Implants, Medical Models and Surgical Aids

A four-year research collaboration with the Division of Biomechanics and Engineering Design of the Katholieke Universiteit Leuven (Belgium), this project is aimed at the transfer of knowledge in the design and production of medical devices to the South-east Asian region. The plan is to introduce the technology in major university hospitals.

Medical models, implants or surgical aids are produced, based on medical images (CT-MR) using a CAD-CAM system, rapid prototyping technology (FDM) and advanced manufacturing techniques (5-axis CNC-milling, investment casting, injection molding, deep drawing).

Investigators: Prof. Sloten (KUL, Belgium), E. Bohez,

P. Oris, K. Sitthiseriratip, Le Chi Hieu, A. Pinnoi

Sponsors: Flemish Inter-University Council (VLIR-ABOS, Belgium) and MTEC, Thailand



Development of Automatic Quality Inspection System for IC Package in Semiconductor Industry by Using CCD Camera Image

Manual investigation of the quality of the IC package for the semiconductor industry is expensive and time-consuming. The use of a machine vision in semiconductor production can help improve such investigation, resulting in improved product consistency and reliability.

This project seeks to develop an automatic quality inspection system that will detect more than 20 kinds of defects, such as mark defects. The system will analyze production capability in statistical representation.

Investigators: M. Parnichkun, C. Ngaecharoenkul, C.M.Naravane
Sponsors: Circuit Electronics Industries Public Co., Ltd., and NSTDA, Thailand

Development of a PLC-based Ball Catching Machine

Designing and building products based on mechatronics principles make use of an integrated approach to design each of the subsystems, such as mechanical manipulators, actuators, electrical drivers, and electronic controllers. The resulting product is considerably more cost-effective, functional, and reliable. Mechatronics concepts are applied to design, construct and test a high speed two-axis mechanism, using linear actuators and industrial controllers to catch a ball falling under gravity from a fixed height. The objective is to investigate the use of an industrial CNC controller in studying the characteristics of high speed motion of linear actuators.

Investigator: N. Afzulpurkar
Sponsor: Siemens Thailand Co., Ltd.

Career Management and Organizational Performance

Some 200 employees from different firms are the subject of a survey to identify differences in the organizational performance of firms that provide career plans and those that do not. Large organizations are being downsized and some are adopting network structures as an alternative to expanding full time employment. Growing information technology applications have given rise to the establishment of virtual organizations. These changes affect the traditional concepts of lifelong employment, organizational commitment, and so on. Nevertheless, motivation theories still advocate that career growth enhances employees' productivity and commitment and hence organizational effectiveness.

Investigators: S. Siengthai, S. J. Appold (NUS), J. Kasarda (UNC)
Sponsor: Self-support

Strategic Human Resource Management and Business Firm Innovation

Without continuous innovation, it would be difficult for business firms to compete in what has become an increasingly borderless world. Innovation requires the application of new knowledge of technology and the market to support the introduction of new products and services. This study investigates the importance of strategic human resource management in building a firm's competence and capability to innovate. It examines organizational strategies as well as human resource management processes at different stages of a firm's life cycle.

Investigator: S. Siengthai
Sponsor: AIT Initiation Research Grant

School of Environment, Resources and Development

Developing Database for Greenhouse Gas Emission with Reference to Methane in Thailand

Methane is a principal cause of large scale global warming for three main reasons: its increasing concentrations, its strong absorption and emission of infra-red radiation, and the location of its absorption and emission bands at wave lengths where carbon dioxide and water vapor are not absorbed. Rice fields contribute to large concentrations of methane. Thailand, being a major rice-producing country, has found it necessary to determine the amount of methane from rice fields and wetlands and to spatially delineate them for future strategy formulation. A relevant geographical database with spatial attributes is under development, using field and laboratory based techniques, satellite remote sensing and geographic information systems.

Investigators: A. Eiumnoh, P. Parkpian, (AIT) A. Jugsujinda (Louisiana State University, USA), S. Satawathananont, P. Paiboonrat (DOA, Thailand), S. Baimoung (DOM, Thailand)

Sponsor: Thailand Research Fund

Design and Development of a Pineapple Transplanter

Thailand, a major producer and exporter of pineapples, loses agricultural labor to the industrial sector particularly during peak planting period. Pineapple cultivation involves a number of manual tasks. Currently, there is no mechanical device for planting pineapple shoots. Under development is a semi-automatic pineapple transplanter machine that needs four feeders and a special metering device. A soil opener has been designed and the optimum feed rate determined using ergonomic principles. Detailed investigations are continuing.

Investigators: V. M. Salokhe, K. Tiratanasirichai, S. Wongpichet
Sponsor: Ministry of Science, Technology and Environment, Thailand

Mitigating Environmental Emissions from the Power Sector: Analyses of Technical and Policy Options in Selected Asian Countries

The project deals with three key issues concerning the mitigation of greenhouse gases and other harmful emissions from the power sector in China, India, Indonesia, Sri Lanka, Thailand and Vietnam. The first issue is the determination of least cost technological options, such as clean generation technologies, fuel switching and power system loss reduction. The second issue focuses on the identification of major environment- and climate-friendly technologies in the power sector (particularly those that can be implemented under the clean development mechanism established by the Kyoto Protocol) and assessment of their greenhouse gases and other harmful emission mitigation potential. The third issue is related to environmental implications of independent power producers and decentralized power generation.

Investigators: R.M. Shrestha, S.C. Bhattacharya
Sponsor: Sida

Creating Space for Local People and Forest Management

The impact of devolution policies to promote forest management by local communities is not well understood and there is little appreciation of the change brought about by these policies. Shifting sources of control and resources are also changing the context in which policies can be effective. New approaches to enhance policy impact and the capacity of local communities to initiate policy changes and respond to them need to be identified.

The project assesses the effects on local forest and social conditions of policies that promote devolution of forest management. It also examines approaches to improve the adaptive management capacities of policymakers and local communities. The key research questions focus on the impact of devolution policies, factors that have influenced policy impact, and strategies and methods to improve policy.

A special area of inquiry is the interaction among gender relations, livelihood and forest management. This research is coordinated by AIT and covers China, India, Thailand, Malaysia and Nepal.

The research is focused on identifying and analyzing the effectiveness of approaches for improving (i) alliances among and between local and national level actors and organizations that promote effective policy outcomes; (ii) methods for enabling adaptive management in policymaking, involving both communities and state policymakers; (iii) improving gender relations and livelihood conditions.

Investigators: G. Kelkar, G. Singh
Sponsor: IFAD, CIFOR-AIT

Biological/Ecological Water Environment Renovation Technologies Applicable to Thailand

The main objective is to purify domestic wastewater in tropical areas using hydroponic bio-filtering method (a combination of aquatic plants). The construction of the biopark unit involves testing of operating conditions, such as feeding rate, hydraulic retention time and water depth in different channels. The growth of plants and organisms is monitored weekly, including the quality of both influents and effluents. This method has proved effective in identifying aquatic plants that are useful for wastewater purification. However, further modification of operating conditions is needed.

Investigators: P. Parkpian, K. Fukushi, I. Nakazato
Sponsor: Top Ecology Co., Ltd. (Japan) and National Institute of Environmental Studies

Small and Medium Scale Industries in Asia: Energy, Environment and Climate Inter-relations

Insufficient investment, unskilled manpower and limited knowledge of energy efficient operations characterize many of the region's small scale industries (SMIs). This research is aimed at mitigating greenhouse gas emissions and other forms of pollution in selected SMIs in China, India, the Philippines, Sri Lanka and Vietnam. Under study are operational practices, issues related to the promotion of energy-efficient and environmentally sound technologies and processes, capacity mobilization and enhancement in view of pollution mitigation and energy efficiency, and policy reviews.

Investigators: C. Visvanathan, S. Kumar
Sponsor: Sida

Survival of Bio-indicators in Soil Applied with Bangkok Domestic Sludge

The main objective is to determine the effectiveness of different drying processes for both nightsoil and sewage sludges. The design experiments emphasize maintenance of sludge nutrient quantity as well as minimization of pathogenic contaminants in the sludge. The scope of the study includes sludge characterization before and after exposure to different drying processes, such as sun drying and hot air drying.

Investigator: K. Fukushi
Sponsor: Regional Educational Development Program, Government of Japan

Development of Synoptic Climatological Models to Predict Ambient SO₂ Concentration at Mae Moh Valley, Chiang Mai, Thailand

The Mae Moh coal-fired power plant is located in a mountainous area in Lampang, north of Thailand. To a large extent, the dispersion of pollutants is affected by local meteorological parameters, such as wind speed and direction. Under stagnant conditions, the dispersion is reduced, resulting in high concentrations of SO₂ in the valley.

This practice-oriented research is aimed at developing synoptic climatological models to predict ambient concentration of SO₂ in the Mae Moh valley.

The planned activities include classification of synoptic situations dominating the northern part of Thailand (covering the plant location at different times of the year), model development to predict SO₂ concentrations for identified synoptic situations and model evaluation and application guidelines.

Investigator: Nguyen Thi Kim Oanh
Sponsor: EGAT through PCD, Thailand

Biocatalytic Production of Chitin and Chitosan from Shrimp Biowaste

Processes based on biocatalytic conversion to produce shrimp chitin and chitosan are a better alternative to chemical procedures. Laboratory scale production of chitin can be accomplished using lactic acid bacteria fermentation. Chitin is converted to chitosan by enzymatic deacetylation using a deacetylase enzyme from fungi. Both processes are being developed for pilot scale application.

Investigators: W. F. Stevens, M. S. Rao, Naing Naing Win
Sponsor: CIRAD France

Application of High Quality Chitosan in Membranes and Beads for Controlled Drug Delivery

Controlled release of drug, resulting in a constant supply of the active agent at the right concentration, is preferable to a single release at a high concentration that gradually decreases to a no-effect level. Chitosan can be used to contain drugs in membranes or beads with different pore sizes and permeability. Specific drugs are being tested in this system for transdermal application.

Investigators: S. Chandkrachang, W. Stevens, A. Kumar Anal
Sponsor: MTEC/NSTDA

Improved Performance of Rice Flour and Starch for Food Application

Large quantities of broken rice grains resulting from the milling of rice are used to produce flour or rice starch and other rice products. However, their utilization is limited by the functional properties of native starch. These properties need to be improved. The physical and chemical modification of native flour and starch can be done by mixing different types of flour or composite starch, overcoming the limitation of native starch by controlling gel strength, viscosity, water dispersion, hydration, clarity and stability. With this technology, a variety of value-added products could be processed and used for different applications.

Investigator: A. Noomhorm
Sponsor: NSTDA, Thailand

Irradiation of Semi-dried Shrimp and Cooked Fish Sausage

Dried shrimps and cooked fish sausages are popular in the Thai market. Because of the high variation of water activity, aggravated by improper and inadequate drying, dried shrimps are susceptible to pathogen growth and toxin formation. Excessively dry and salty shrimps are not palatable. To ensure their palatability and long shelf life at ambient conditions through irradiation, dried shrimps should have a high moisture content with a moderate amount of salt. The same goes for cooked fish sausage, which has a high moisture content but is nevertheless susceptible to spoilage even when refrigerated.

Investigator: A. Noomhorm
Sponsor: IAEA

Genetic Engineering, Plant GMO and Biosafety

A new venture in genetic engineering, including GMO and biosafety, is under development. Research includes gene cloning and the development of fungal strains useful for shrimp biowaste valorization. Research is continuing on the construction of a passport for tilapia fish and the detection of pathogenic shrimp virus. A special project in plant molecular biology is devoted to the application of advanced methods for detecting plant GMO material in raw materials and food products and to the evaluation of the pros and cons of GMO crop cultivation and processing.

Investigator: W. F. Stevens
Sponsor: John F. Kennedy Foundation, Thailand

Coal and Natural Gas Competition in APEC Economies

The study examines and summarizes the impact of the following factors on the present and expected future roles of coal and natural gas in each of the APEC economies:

- *more stringent environmental requirements for power production;*
- *improvement in power plant efficiencies;*
- *advances on gas and clean coal technologies;*
- *competing sources of supply for coal and natural gas;*
- *increasing role of independent power producers;*
- *outcomes on global climate change mitigation arising from the Kyoto Conference of the Parties;*
- *continued trend toward open market determined energy prices; and*
- *representative economics of electricity generation for coal and natural gas.*

The survey highlights the policy options that can enhance private sector participation in the selection and use of competing energy sources in meeting long-term electricity needs at the lowest long-term costs while achieving acceptable social and environmental goals. The survey also focuses on how these market-oriented policy options impact on the competitive position of coal and natural gas.

The study evaluates the benefits and costs, scope and timeliness of a second-phase study that will evaluate the long-term economic and environmental costs of alternative energy scenarios, stressing the role of coal and natural gas in each of them. This study focuses on the power sector, the largest and most viable market for coal and natural gas to which current developments will bring important challenges in coal and natural gas utilization.

The study covers the economies of all 21 APEC member in terms of their roles as producer and consumer of coal and natural gas. The study concludes that competition between coal and natural gas is a complex process which involves the interplay of several parameters. It is found that competition between coal and natural gas results from the interaction among the above-mentioned factors, inextricably inter-twined with the historical development of the energy sector.

Investigators: T. Lefèvre, R. Pacudan, J. Todoc, M. Cabrera, S. Shrestha, M. Todoc, Jiang Yan
Sponsors: APEC Secretariat/APEC Expert Group on Clean Fossil Energy

School of Civil Engineering

Relationship between Traffic and Ambient Air Quality in Bangkok

Underway is a strategic investigation of the levels of pollutants from motor vehicle emissions associated with traffic flow. The effects on human health are also being studied. A monitoring program for the pollutants, including benzene, will be established. Appropriate management measures and air pollution control strategies will be recommended.

Investigators:

Y. Tanaboriboon, S. Muttamara

Sponsor: Honda Motor Co., Ltd.

Vocational and Technical Education Project with the Bandung Institute of Technology (Indonesia)

This project is under the framework of AIT's Regional Educational Development Program (REDP), which helps countries in developing their capabilities in the education sector and in producing qualified teaching personnel. SCE is engaged in other twinning programs with top universities in support of the REDP.

Investigators: A. Das Gupta,

W. Kanok-Nukulchai

Sponsor: Ministry of Education and Culture, Indonesia

Feasibility Study for Dredging New Canal Connecting Khlong Tawee Wattana and Khlong Khun Ratpinidjai

The dredging of a new canal in the above mentioned areas (with the operation of existing hydraulic structures - BMA and RID regulators and pumping stations) is aimed at improving drainage efficiency in the flood season and in alleviating flood damage in the Chao Phraya West Bank area which experienced severe flooding in 1995 and 1996.

Investigator:

S. Vongvisessomjai

Sponsor: Drainage and Sewerage Dept., BMA

Effects of Electro-Osmotic Consolidation on Soft Bangkok Clay Improved with Mebra PVD

Electro-osmosis has proved effective in stabilizing and consolidating soils in both laboratory and field conditions. Tests following electro-osmotic consolidation indicate a reduction in the moisture content and compressibility and an increase in shear strength. Since the induced pore pressures vary linearly - from minimum at the cathode to maximum at the anode, polarity reversal produces more uniform settlements.

Further studies of the effectiveness of electro-osmotic consolidation on soft Bangkok clay with Mebra drain are being carried out. Geotechnical data related to the physical and chemical properties of soft Bangkok clay will be collected from existing literature, after which electro-osmotic consolidation combined with Mebra PVD improvement will be performed using both undisturbed and reconstituted clay specimens. Finally, factors affecting electro-osmotic consolidation and its advantages will be evaluated. Mebra drain from Geoplast (Thailand) Co., Ltd. will be used with copper electrodes and polarity reversal.

Investigators: D. T. Bergado

Sponsor: Geotechnics Holland, B.V. the Netherlands

Covering Klong Prapa Canal

The 40-meter wide Klong Prapa Canal is an open channel that has been delivering raw drinking water to Bangkok over the past 100 years. In response to His Majesty the King's concern over the growing effects of domestic waste, pollution and road traffic on the quality of raw water, a Royal Project has been initiated to enclose the open-channel and protect it from intrusion. The by-product is an elevated Klong Prapa Corridor that will provide a multi-mode transportation system that is environment-friendly and pollution-free. The enclosure system must meet strict requirements as specified by the Metropolitan Waterworks Authority, and the project must ensure its constructability.

Investigators:

W. Kanok-Nukulchai,

T. Tingsanchali, N. Phien-vej,

Y. Tanaboriboon

Sponsor: Dept. of Highways, Ministry of Communications, Thailand

Resources and Administration

Resources Generation

Summary of Donations Received FY 1998-99

In Cash and in kind (Baht '000)		
Governments	Amount	Percentage
Austria	38,409	4.353
Bangladesh	201	0.023
Belgium	432	0.049
Bhutan	7,263	0.823
Canada	1,366	0.155
China, PR	1,057	0.120
Chinese Taipei	3,712	0.421
Denmark	71,409	8.093
Finland	52,783	5.982
France	45,081	5.109
Germany	52,377	5.936
India	1,912	0.217
Indonesia	6,682	0.757
Iran	1,522	0.172
Italy	162	0.018
Japan	99,100	11.232
Korea	2,888	0.327
Laos	1,780	0.202
Malaysia	139	0.016
Nepal	1,024	0.116
Netherlands	17,501	1.983
New Zealand	5,060	0.573
Norway	39,107	4.432
Pakistan	297	0.034
Philippines	1,297	0.147
Sri Lanka	2,684	0.304
Sweden	93,493	10.596
Switzerland	49,536	5.614
Thailand	156,859	17.778
Tuvalu	61	0.007
UK	8,295	0.940
USA	500	0.057
Vietnam	4,416	0.500
<i>Sub-total</i>	<i>768,405</i>	<i>87.088</i>
Add: European Commission	20,206	2.290
<i>Sub-total</i>	<i>788,611</i>	<i>89.378</i>
International Organizations		
ADB	18,790	2.130
Commonwealth Secretariat	530	0.060
European Space Agency	1,514	0.172
FAO	255	0.29
Mekong River Commission	1,197	0.136
NFPA International	688	0.076
UNDP	676	0.077
WHO	1,458	0.165
World Bank	1,462	0.166
<i>Sub-total</i>	<i>26,550</i>	<i>2.999</i>
Corporations	43,821	4.967
Foundations, Private and Others	23,349	2.646
Total Donations	882,331	100.000

EC - European Commission

Summary of Donations Received FY 1989-90 to FY 1998-99

In Cash and in kind (Baht '000)		
Governments	Amount	Percentage
Australia	84,189	1.750
Austria	106,701	2.217
Belgium	72,206	1.501
Brunei	1,026	0.021
Bangladesh	9,712	0.202
Bhutan	17,396	0.362
Bulgaria	199	0.004
Cambodia	1,136	0.024
Canada	144,103	2.995
China, PR	36,728	0.763
Chinese Taipei	103,135	2.143
Denmark	171,428	3.563
Fiji	88	0.002
Finland	208,899	4.341
France	193,881	4.029
Germany	380,119	7.899
Iran	4,402	0.091
India	16,507	0.343
Indonesia	54,260	1.128
Italy	1,163	0.024
Japan	664,547	13.810
Korea	19,512	0.405
Laos	3,286	0.068
Malaysia	18,193	0.378
Nepal	2,788	0.058
New Zealand	27,648	0.575
Netherlands	83,977	1.745
Norway	149,915	3.115
Pakistan	15,308	0.318
Papua New Guinea	481	0.010
Philippines	15,499	0.322
Sri Lanka	10,573	0.220
Spain	8,865	0.184
Sweden	211,195	4.389
Switzerland	210,565	4.376
Thailand	909,523	18.901
Tuvalu	646	0.013
Tanzania	428	0.009
UK	119,980	2.493
USA	119,503	2.483
Vietnam	7,534	0.157
Zambia	136	0.003
<i>Sub-total</i>	<i>4,207,380</i>	<i>87.436</i>
Add: European Commission	56,912	1.183
<i>Sub-total</i>	<i>4,264,292</i>	<i>88.619</i>
International Organizations	170,560	3.548
Corporations	243,238	5.053
Foundations, Private and Others	133,859	2.780
Total	4,811,949	100.000


**Total Contributions Received
FY 1959-60 to FY 1998-99**
In Cash and in kind (Baht '000)

Governments	Amount	Percentage
Australia	351,313	2.89
Austria	107,971	0.889
Bangladesh	2,205	0.018
Belgium	129,806	1.070
Bhutan	13,144	0.108
Brunei	7,073	0.058
Bulgaria	199	0.002
Canada	402,159	3.316
China, PR	35,734	0.295
Chinese Taipei	256,431	2.114
Denmark	360,180	2.970
Finland	220,203	1.816
France	434,410	3.582
Germany	870,922	7.181
Hong Kong	390	0.003
India	31,125	0.257
Indonesia	15,141	0.125
Iran	2,404	0.020
Israel	2,033	0.017
Italy	16,608	0.137
Japan	1,227,022	10.118
Korea	33,112	0.273
Laos	5,408	0.045
Malaysia	5,347	0.044
Marshall Islands	93	0.001
Mozambique	150	0.001
Nepal	4,158	0.034
Netherlands	274,181	2.261
New Zealand	73,347	0.605
Norway	301,463	2.486
Pakistan	16,597	0.137
Philippines	20,453	0.169
Singapore	846	0.007
Spain	11,709	0.097
Sri Lanka	9,494	0.078
Sweden	459,195	3.786
Switzerland	248,716	2.051
Thailand	1,370,731	11.303
Tuvalu	646	0.005
UK	442,687	3.650
USA	854,234	7.044
Vietnam	6,805	0.056
<i>Sub-total</i>	8,625,845	71.127
International Organizations	1,327,006	10.942
National Gov't. Agencies	949,880	7.833
Business, Foundations, Private and Others	1,224,681	10.098
Total	12,127,412	100.000

Renewal of Major Donor Support in 1999
Austria

The 1999-2001 cooperation program was signed in March 1999, providing scholarships valued at US\$1,234,852.

Denmark

The 1999-2004 general program agreement valued at US\$2,120,000, was signed in July 1999 supporting scholarships, faculty secondments, faculty teaching/research, twinning arrangements and program administration. Phase II of the AIT Aqua Outreach Program in Indochina and North-east Thailand (1999-2001), valued at US\$2,502,000, was signed in March 1999. Support for three special programs (*see page 8*) was signed in December 1999.

France

The 1999 support package, valued at US\$ 1,905,047, provided scholarships, short- and long-term faculty, secondments, support to CLET, BPT, the French Steering Committee/French Program Management, and French missions in Asia in the STAR Program.

Germany

DAAD scholarship grant totalled US\$1,403,000. GTZ is supporting four long-term faculty secondments (as well as funding their research), short-term experts, office automation and laboratory equipment, and employee Doctoral students.

Japan

The FY 1999-2000 support package, valued at US\$2,400,743, provided scholarships, short- and long-term faculty secondments, operating and equipment grants, and support to visiting faculty and staff from Vietnam, Laos and Cambodian universities.

Norway

NORAD support for July 1998 to June 2001 was signed in December 1999, providing NOK 27.648 million to cover scholarships, faculty secondments, cooperation between AIT and NTNU, the Gender Development Studies Program, the AIT NGDO unit, and short-term experts for the PPT Program.

(Continued on page 32)

**SUMMARY OF CASH RECEIVED FOR RESEARCH PROJECTS, SEMINARS, WORKSHOPS, AND RELATED ACTIVITIES
FY 1998-99 (Baht '000)**

SCHOOLS										CENTERS			
SCE	SERD	SAT	SOM	Sub-total	CEC	RCC	CLAIR	Sub-total	TOTAL	%			
					252			252	252	0.17			
1,526	182			1,708	1,408			1,408	1,408	0.95			
					6,425		111	6,536	8,244	5.56			
					88			88	88	0.06			
					4,322			4,322	4,322	2.91			
	250			250	200			200	450	0.30			
	109			109	1,955			1,955	2,064	1.39			
1,834	107			1,941	189			189	2,130	1.44			
	2,014			2,014	2,798		324	3,122	5,136	3.46			
	93			93					93	0.06			
	150			150					150	0.10			
	163			163	81	492		573	736	0.50			
					8,958			8,958	8,958	6.04			
					81			81	81	0.05			
									92	0.06			
	148	92		333	1,754			1,754	2,067	1.41			
	5,321	185		19,431	2,070	3,867		5,937	25,368	17.10			
12,436	11,287	1,674		11,287					11,287	7.61			
	2,478			2,478	216			216	2,694	1.82			
					2,054			2,054	2,054	1.38			
15,796	22,302	1,951		40,049	32,851	4,359	435	37,645	77,694	52.38			
	1,162	146		1,308					1,308	0.88			
15,796	23,464	2,097		41,357	32,851	4,359	435	37,645	79,002	53.27			
	919			919					919	0.62			
			498	498					498	0.34			
	1,578			1,578					1,578	1.06			
	1,879			1,879	1,536			1,536	3,415	2.30			
	373			373					373	0.25			
	1,841			1,841					1,841	1.24			
	4,098			4,098	185			185	4,283	2.89			
					294			294	294	0.20			
					2,670			2,670	2,670	1.80			
	286			286					286	0.19			
	2,698			2,698					2,698	1.82			

GOVERNMENTS & GOVERNMENT AGENCIES

AUSTRIA
 BANGLADESH
 BHUTAN
 BRUNEI
 DENMARK (DANIDA)
 GERMANY
 INDIA
 INDONESIA
 LAOS
 MALAYSIA
 MOZAMBIQUE
 NEPAL
 NEW ZEALAND
 NORWAY (NORAD)
 SINGAPORE
 SRI LANKA
 THAILAND
 UK
 USA
 VIETNAM

Sub-total
 Add : EUROPEAN COMMISSION

INTERNATIONAL ORGANIZATIONS

ADB
 COMMONWEALTH SECRETARIAT
 ESCAP
 FAO
 ICLARM
 IFAD
 ILO
 INTERNATIONAL ATOMIC ENERGY AGENCY
 MEKONG RIVER COMMISSION
 SEAMEO
 UN UNIVERSITY

SCHOOLS										CENTERS				
SCE	SERD	SAT	SOM	Sub-total	CEC	RCC	CLAIR	Sub-total	TOTAL	%				
	2,442			2,442					2,442	1.65				
	5,747			5,747	656	720		1,376	7,123	4.80				
	323	242		565	227			227	792	0.53				
	1,996			1,996	359			359	2,355	1.59				
					1,579	224		1,803	1,803	1.22				
	24,180	242	498	24,920	7,506	944		8,450	33,370	22.50				
	18			18	255			255	255	0.17				
	819			819	272			272	18	0.01				
	553			553					272	0.18				
	169			169					819	0.55				
	30			30					553	0.37				
	161			161					169	0.11				
	20			20					30	0.02				
	39		82	82					161	0.11				
	10			10					20	0.01				
	100			100					82	0.06				
	37			37					39	0.03				
	50			50					10	0.01				
	37	56		56					56	0.04				
	157			157					137	0.09				
	1,501			1,501					100	0.07				
	214			214					37	0.02				
	45			45					50	0.03				
	197			197					1,501	1.01				
									214	0.14				
									37	0.02				
									45	0.03				
									708	0.48				
									40	0.03				
									197	0.13				
									306	0.21				
									984	0.66				
									30	0.02				
									559	0.38				
									670	0.45				
									100	0.07				
									909	0.61				
									10	0.01				
									79	0.05				
									50	0.03				
									321	0.22				
									184	0.12				
									157	0.11				

UNCHS
UNDP
UNESCO
WHO
WORLD BANK

Sub-total

CORPORATIONS

ACL EDUCATION, INC., JAPAN
ADIDAS CO., LTD.
A.M. GROUP, KANSAS
ASIA WORLD GROUP, CHINESE TAIPEI
ASPAC CONSULTANTS CO., LTD.
BANGKOK ENG'G SERVICE & TECH. CO., LTD.
BANGKOK GLASS INDUSTRY CO., LTD.
BANGKOK RUBBER PLC. CO., LTD.
BANK OF AYUDHYA PLC. CO., LTD.
BAYER A.G. LEVERKUSEN
BLOCK AND VEATCH, USA
CAL-COMP ELECTRONICS (THAILAND) CO., LTD.
CARLSBERG BREWERY (THAILAND) CO., LTD.
CHAROEN POKPHAND FEEDMILL PLC. CO., LTD.
COCA-COLA (THAILAND), LTD.
CONSTRUCTION & ENG'G SPECIALIST CO., LTD.
CONSTRUCTION LINES CO., LTD.
CORE CORPORATION, INC.
CPL GROUP PLC. CO., LTD.
CTCI (THAILAND)
CVS DISTRIBUTOR CO., LTD.
DAMRONG CONSTRUCTION CO., LTD.
DELTA ELECTRONICS (THAILAND) CO., LTD.
DOMTEC CO., LTD.
DRUK AIR CORPORATION LTD.
EBARA CORPORATION, JAPAN
EIC THAILAND CO., LTD.
ENERGY RESOURCES INTERNATIONAL INC.
FINANCIAL TIMES BUSINESS ASIA/PACIFIC
GEOASIA CO., LTD.
GITEC CONSULT GMBH
GOLAY BUCHEL (THAILAND) LTD.
HIGHWAY AND TRAFFIC CONSULTANTS LTD., NZ
HONGSA LIGNITE (LAO) CO., LTD.
INDEX INTERNATIONAL GROUP CO., LTD.
INNOVATION NAKORN LUANG FOOTWEAR CO., LTD.
JAPAN SURVEYORS ASSOCIATION

FOUNDATIONS, PRIVATE & OTHERS
 HOKKAIDO RIVER DISASTER PREVENTION
 RESEARCH CENTER FOUNDATION
 HRH PRINCESS MAHA CHAKRI SIRINDHORN
 JAPAN FOUNDATION
 JAPAN SCIENCE & TECHNOLOGY
 NISHIHARA CULTURAL FOUNDATION, JAPAN
 RESEARCH FOUNDATION, INDIA
 ACADEMY FOR EDUCATIONAL DEVELOPMENT
 ASSOCIATION OF CANADIAN COMMUNITY
 COLLEGES
 CARE-BANGLADESH
 CARE-INDIA
 HELVETAS, BHUTAN
 JIRI TECHNICAL SCHOOL, NEPAL
 JOHN HUGH JONES, DR.
 MILTON E. BENDER, JR., DR.
 NORWEGIAN PEOPLE'S AID, CAMBODIA
 REDD-BARNA, LAO PDR
 SAVE THE CHILDREN FUND (UK)
 SECRETARIAT OF THE PACIFIC COMMUNITY
 UNIVERSITY OF TECHNOLOGY
 WATER RESOURCES ORGANIZATION

CENTERS										
SCHOOLS					CENTERS					
SCE	SERD	SAT	SOM	Sub-total	CEC	RCC	CLAIR	Sub-total	TOTAL	%
71		291		71					71	0.05
				291					291	0.20
215				215			732	732	732	0.49
188				188					215	0.14
					540			540	188	0.13
	1,501			1,501					540	0.36
									1,501	1.01
					718			718	718	0.48
					1,215			1,215	1,215	0.82
					92			92	92	0.06
140				140					140	0.09
36				36			111	111	111	0.07
37				37					36	0.02
									37	0.02
					311			311	311	0.21
					180			180	180	0.12
					77			77	77	0.05
					142			142	142	0.10
836	50			836					50	0.03
									836	0.56
1,523	1,551	291	580	3,365	3,275		843	4,118	7,483	5.05
27,230	59,243	4,302	580	91,355	49,648	5,609	1,278	56,535	147,890	100.00
									1,030,221	

Sub-total

TOTAL

GRAND TOTAL

Renewal of Support

(Continued from page 27)

Sweden

An external evaluation fielded in the latter part of 1999 recommended continuation of the Sida/AIT cooperation program, following completion of the most recent phase in December 1999. A proposal covering January 2000 to 31 December 2002 was submitted in August 1999. A bridging phase for the period January-December 2000 was also submitted.

Switzerland

Phase IV of the SDC-AIT Cooperation Program, covering July 1999 to June 2001, was signed in August 1999, providing scholarships, faculty support, operating grants for SOM and SERD's UEEM Program and support to launch the Asian Case Clearing House at SOM.

Thailand

Fifteen scholarships from Their Majesties the King and Queen, valued at US\$302,368 were granted for the period July 1998 to June 1999. The Royal Thai Government also provided an operating grant (US\$165,007) and tax reimbursements (US\$1,407,278).

A proposal for Phase VII (2000-2004) was submitted in February 1999. A request to extend the Institute's land lease from the Treasury Department under the Ministry of Finance was also submitted.

Prospects

Sri Lanka

Proposals were presented to engage AIT as a third country venue for graduate education and/or short-term training, tapping World Bank and ADB support to projects in Sri Lanka. World Bank-supported candidates from the Ministry of Education and Higher Education are thus expected to enrol in the January 2000 term. Another batch of World Bank-supported students is expected to join CLET under the Bank's teacher education and teacher deployment projects.

Support from the Sri Lankan President's Scholarship Fund, which is intended for the overseas education of outstanding Sri Lankan students, was also explored.

South Africa

AIT participated in the Premier Mail and Guardian Graduate Recruitment Fair, held in Cape Town in February and August 1999. In November 1999 AIT signed an MoU with the University of Witwatersrand, Johannesburg, covering faculty and staff exchanges, joint executive programs, establishment of industrial linkages and partnerships with South African business.

Middle East

Significant contacts were established at two education exhibitions in April 1999, namely the 11th Gulf Education and Training Exhibition in Dubai, UAE, and the Qatar Education and Training Exhibition in Doha.

Private Sector Partnerships

In the main, scholarship support was the focus of partnerships with the private sector, including (in Thailand) Asia-Pacific Potch Corp. Ltd.; Tipco Asphalt Public Co. Ltd.; Norske Skog Co. Ltd.; Nokia Telecommunications; and Siam Cement Plc., Thailand; and (overseas) Sonera (Telecom Finland); Overseas Construction Association of Japan; Nishihara Environmental Sanitation Research Corporation of Japan; Siemens, Germany; Oceanographic Co., Norway; Lyonnaise des Eaux, France; and Sunds Defibrator Industries AB, Sweden.

New Partner Institutions

Germany: International University in Germany, Bauhaus-Universitaet Weimar, University of Technology of Munich

France: University of La Rochelle, ECS-Rennes, Ecole Supérieure de Commerce de Paris (ESCP), École des Hautes Études, Commerciales du Nord, Institut National des Sciences et Techniques Nucléaires, Électricité de France, Paris Chamber of Commerce and Industry.

Switzerland: Aga Khan Foundation

Central Administration Functions

New Administrative Structures

The creation of the new position of Provost and the establishment of the President's Executive Council (PEC) were major structural changes introduced in 1999.

The newly constituted PEC is an advisory body to the President. It is composed of the Provost, School Deans and Treasurer. Other members of the AIT community are invited to attend the Council's weekly meetings, as required.



Prof. Mario T. Tabucanon, former Vice President (Academic), was appointed to the position of Provost effective 1 July. Prof. Tabucanon served as Dean of the School of Advanced Technologies from September 1995 to June 1999 and as Chair of the former Division of Industrial Engineering and Management from 1986 to 1989. An AIT alumnus (IEM '74, '77), he became a Full Professor in 1990. Prof. Tabucanon has played a key role in introducing high technology programs at AIT.

New Buildings and Offices

The Geoinformatics Center (right), an 820 sq.m. two-storey building, houses the Asian Center for Research on Remote Sensing, the GIS Applications Center and other related offices. It was inaugurated on 19 February.

The School of Management Building (far right) was inaugurated on 26 February. The building is located near the Chalerm Prakit Building.

Office space on the newly-constructed second floor of the administration building (south wing) was allocated to development-related and academic support offices. Repair work was carried out on the ground floor to solve the problem of land subsidence.



Renovation and Maintenance

Campus-wide beautification was carried in time for the 40th Anniversary celebration, particularly in the Administration area, the east-west academic building, the Environmental Engineering Laboratory, and the Chalerm Prakit Building.

Pipes were laid to hook up with the water lines of the Provincial Waterworks Authority, the Institute's new source of water supply. A study was carried out to determine the appropriate balance between the available water supply and corresponding water pressure. Water meters were installed to further encourage water conservation.

Revenues and Expenditures FY 1998-99 (Baht '000)

Revenues		Expenditures	
Tuition and fees	381.93	Schools/Programs	217.56
Center contributions		Academic centers	51.15
CEC	6.97	Capital purchases	13.07
ADPC	1.69	Academic support	20.22
RCC	3.90	Student activities	2.22
AIT Center Vietnam	1.92	Administrative departments	82.43
Auxiliary operations	19.27	Campus services	73.13
Sub-total	33.75	Campus wide support	9.81
Indirect cost contribution from contract research	23.65	Budget contingency and reserves	9.08
Government grants	12.40		
Other sources:			
Investment revenue	23.13		
Other revenues	1.74		
Sub-total	24.87		
Total	476.60	Total	478.67

The FY 1998-99 revenue of Baht 476 million increased by 12.5 percent over that of FY 1997-98. Tuition fees accounted for the largest increase in income.

FINANCIAL STATEMENTS AND AUDITORS' REPORT**Auditors' Report**


To The Board of Trustees of the Asian Institute of Technology

We have audited the balance sheets of the Asian Institute of Technology as at June 30, 1999 and 1998, the statements of revenues and expenditures of unrestricted current fund and restricted general fund and the related statements of changes in fund balance for the years then ended. The Organization's management is responsible for the correctness and completeness of information presented in these financial statements. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material mis-statement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Asian Institute of Technology as at June 30, 1999 and 1998, the revenues and expenditures of unrestricted current fund and restricted general fund and the changes in fund balance for the years then ended, in conformity with generally accepted accounting principles appropriate for non-profit organizations as set out in Note 2 to the financial statements.

We draw attention to Note 1 to the financial statements. The operations of the Asian Institute of Technology have been affected and will continue to be affected for the foreseeable future by the economic conditions in Thailand and the Asia-Pacific Region in general.



Somboon Supasiripinyo
Certified Public Accountant
Registration Number 3731

KPMG Audit (Thailand) Limited
Bangkok, September 17, 1999

ASIAN INSTITUTE OF TECHNOLOGY NOTES TO FINANCIAL STATEMENTS JUNE 30, 1999 AND 1998**NOTE 1 - ECONOMIC ENVIRONMENT AND BASIS OF PRESENTATION**

Certain Asia-Pacific countries, including Thailand, have experienced economic difficulties since the second half of 1997. The accompanying financial statements reflect the assessment, as at June 30, 1999, of the possible impact of this economic situation on the financial position of the Asian Institute of Technology. The ultimate effect of these uncertainties on the Institute's financial position cannot presently be determined.

The accompanying financial statements are not intended to present the financial position and results of operations in accordance with accounting principles and practices generally accepted in countries and jurisdictions other than Thailand. The standards, procedures and practices to audit such financial statements are those generally accepted and applied in Thailand.

NOTE 2 - BASIS OF PREPARATION OF FINANCIAL STATEMENTS**■ Fund Accounting**

In order to ensure observance of limitations and restrictions placed on the use of the resources available to the Institute, the books of account of the Institute are maintained in accordance with the principles of "fund accounting". This is the procedure by which resources for various purposes are classified for accounting and reporting purposes into funds which are in accordance with activities or objects specified. Within each fund group, fund balances which are restricted by outside sources are so indicated and are distinguished from unrestricted fund allocated to specific

purposes by action of the governing board. As for the unrestricted fund, the governing board retains full control to use in achieving any of its institutional purposes.

Investment incomes are recognized as income in the unrestricted current fund, except for endowments, general reserve and capital funds which are accounted for in the fund to which they are restricted.

Other unrestricted revenues are recognized as income in the unrestricted current fund.

Restricted contributions, grants, appropriations and other restricted resources are accounted for in the appropriate restricted funds.

NOTE 3 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**■ Accrual Basis**

The financial statements have been prepared on an accrual basis except for depreciation of fixed assets and contributions.

Depreciation of fixed assets is not recorded in accordance with the fund accounting concept.

Contributions are recognized on a cash basis due to the uncertainty in receiving contributions which are at the discretion of the donors.

The statement of revenues and expenditures of the unrestricted current fund and restricted general fund is a statement of financial activities of the current fund related to the current reporting period. It does not purport to present the results of operations for the period as would an earnings statement.

Appendix

- **Contributions in Kind**
Contributions in kind are reflected in the financial statements on a fair value basis at the time of receipt.
- **Inventories**
Inventories are valued at the lower of cost (first-in, first-out basis) and net realizable value.
- **Investments**
Investments in debentures and warrants are stated at total lower of cost or market value.
- **Fixed Assets**
Fixed assets are stated at cost at the time of acquisition or fair value at the time of donation in the case of contributions in kind.
- **Foreign Currencies**
Exchange rates adopted:
Foreign currency transactions during the year
 - at the commercial bank rates ruling on transaction dates.
 Foreign currency transactions during the year recorded from AITCV's statements
 - at the commercial bank average rate recorded ruling on AIT's recorded month.
 Assets and liabilities in foreign currency outstanding on the balance sheet date
 - at the commercial bank rates ruling on the balance sheet date.
 Exchange gains and losses are included in determining income.

NOTE 4 - INVESTMENTS

Investments as at June 30, consisted of :

	1999 Baht	1998 Baht
Time deposits with banks	385,656,224	504,840,795
Deposits with finance companies	157,021,383	1,769,684
Debentures	7,805,765	8,117,136
Warrants	275,500	29,250
Total	<u>550,758,872</u>	<u>514,756,865</u>

The investments of each fund as at June 30, are as follows :

	1999 Baht	1998 Baht
Unrestricted current fund	-	23,755,575
Restricted fund		
General	175,443,857	184,448,559
Endowment	114,018,970	94,787,458
General reserve	122,584,029	110,214,302
	<u>412,046,856</u>	<u>389,450,319</u>
Sponsored program fund	46,955,480	-
Capital fund		
Liquid assets	-	42,276,055
Repairs and Maintenance reserve	2,119,523	2,119,523
	<u>2,119,523</u>	<u>44,395,578</u>
Agency fund	89,637,013	57,155,393
Total	<u>550,758,872</u>	<u>514,756,865</u>

Time deposits with banks amounting to Baht 59,115,681 (1998: Baht 16.72 million) of the restricted fund, capital fund and agency fund have been pledged to secure a bank overdraft contract and as a collateral against outstanding letter of guarantee issued by the bank (see Note 14).

NOTE 5 - ADVANCE DUTIES AND TAXES

These represent advance duties and tax payments to the Government of Thailand which will be subsequently refunded to the Institute in accordance with the letter of the Office of the Secretary-General to the Cabinet dated July 16, 1985. The refund of the advance is for non-Thai faculty and staff and is subject to the annual government budget of the Government of Thailand.

The details of advance duties and taxes as at June 30 are as follows:

	1999 Baht	1998 Baht
Employees personal income tax	33,784,015	10,412,858
Import and tax duties		
- Automobiles	598,852	
	<u>34,382,867</u>	<u>10,412,858</u>

As at June 30, 1999 advance duties and taxes in the amount of Baht 27,964,706 are the withholding tax which the Institute has requested for refund from the annual government budget of the Government of Thailand.

NOTE 6 - FIXED ASSETS

Fixed assets as at June 30 are as follows:

	1999 Baht	1998 Baht
Campus development	37,721,426	34,920,340
Buildings	955,980,273	846,204,437
Furniture and equipment	782,761,442	748,626,285
Library acquisitions	146,163,754	132,139,222
Construction in progress	5,509,984	54,170,467
	<u>1,928,136,879</u>	<u>1,816,060,751</u>

The Institute made the agreement to lease land with the Ministry of Finance for 30 years from January 19, 1971 to January 18, 2001 and when this lease agreement is over, the Institute can continue leasing.

Depreciation for the year in the approximate amount of Baht 91,702,006 (1998: Baht 89,087,116) has not been recorded in accordance with the fund accounting concept.

In the period June 30, 1999 the Institute devalued the building received as donation in the amount of Baht 11 million in order to present the actual construction cost instead of the estimated construction cost.

NOTE 7 - CONTRIBUTIONS IN KIND

This represents services donated to the Institute in the form of seconded faculty or staff the value of which is estimated in accordance with the approved Institute professional salary scale. The amounts are recognized as revenues and expenditures in the restricted general fund.

Appendix

NOTE 8 - FUND BALANCES

Fund balances as at June 30 are as follows:

	1999 Baht	1998 Baht
Restricted fund		
General	150,384,467	147,694,118
Endowment	114,198,670	95,258,513
General reserve	254,917,289	244,205,586
	<u>519,501,026</u>	<u>487,158,217</u>
Capital fund		
Fixed assets	1,928,136,879	1,816,060,751
Liquid assets - Unallocated	9,466,696	8,952,770
Liquid assets - Allocated	(21,381,807)	38,584,081
Repairs and maintenance reserve	2,119,523	2,119,523
	<u>1,918,341,291</u>	<u>1,865,717,125</u>

NOTE 9 - INCOME AND EXPENDITURE

Income and expenditure of restricted fund operated at the Asian Institute of Technology Center in Vietnam were recorded based on detailed statement received, whereas those corresponding documents were normally retained at the Asian Institute of Technology Center in Vietnam, in the amount of Baht 6.39 million and Baht 27.24 million, respectively (1998: Baht 15.72 million and Baht 28.59 million).

NOTE 10 - TUITION AND FEE EXCHANGE RATE DIFFERENTIAL

This presented the excess of tuition fee and academic service fee income over the budget, based on a fixed rate of Baht 35 per USD (1998: Baht 26.50 per USD).

NOTE 11 - SALARIES AND ASSOCIATED COSTS

In the period June 30, 1999 and 1998, salaries and associated costs of unrestricted current fund had been reclassified to record as expenditure for each responsibility center, as follows:

	1999 Baht	1998 Baht
Salaries and associated costs	-	18,684,847
Academic units	217,554,013	184,558,502
Administrative units	83,820,971	65,326,045
Campus wide services	34,160,761	28,316,956
	<u>335,535,745</u>	<u>296,886,350</u>

In the period June 30, 1998, salaries and associated costs of restricted current fund - general included supplementary salaries in the amount of Baht 34.20 million, which was from the tuition and fees exchange rate differential account (CFA) by the Executive Committee's approval.

NOTE 12 - INTER FUND TRANSFER

In the period June 30, 1999 expenditure in the approximate amount of Baht 6.74 million was approved by the Board of Trustees to be recorded as expenditure in the unrestricted current fund, although the said amount had been transferred and recorded as income and expenditure in the restricted fund - general.

NOTE 13 - AIT INSURED SAVINGS FUND

The Institute and its staff have jointly set up an Insured Savings Fund scheme. The fund is contributed by staff and the Institute at the rate of 5% and 10% of basic salary, respectively. This Fund is managed by an expert hired by the Institute. Withdrawal and refund of the contributions and the related earnings by staff have to comply with the rules of the Insured Savings Fund.

NOTE 14 - COMMITMENTS AND CONTINGENT LIABILITIES

The commitments and contingent liabilities as at June 30, 1999 are as follows:

- Capital commitments in respect of building construction amounting to approximately Baht 6.14 million (1998: Baht 66.22 million).
- Bank guarantees of approximately Baht 16.96 million (1998: Baht 16.72 million) issued by a bank on behalf of the Institute in respect of certain performance bonds as required in the normal course of activities of the Institute.
- Claim to compensate staff on charge of breach of employment contract in the amount of Baht 2.84 million is under consideration by the Court.

As at June 30, 1998 the Institute has commitment from a letter of credit in respect of equipment purchased amounting to approximately Baht 8.48 million.

NOTE 15 - YEAR 2000 PROBLEM AND COMPUTER REMEDY PLAN (UNAUDITED AND NOT FORMING PART OF AUDITORS' REPORT)

The Year 2000 problem arises because many computerized systems use two digits rather than four to identify a year. Date-sensitive systems may recognize the year 2000 as some other dates, resulting in errors when information using year 2000 dates in processed. Entities may experience the effects of Year 2000 problem before, on, or after January 1, 2000, and that the effects on operations and financial reporting, if not addressed and repaired properly and timely, may range from minor errors to significant systems failure which could affect an entity's ability to conduct normal business operations. In addition, it is not possible to be certain that all aspects of the Year 2000 problem affecting the entity, including those related to the efforts of other third parties, will be fully resolved.

The Institute has been fully aware of the impact of the Y2K issues on the computerized administrative applications in use. Testing of the General Ledger / Financial Reporting System in the Finance Department was carried out and these were found to be Y2K compliant. This was achieved by upgrading the operating system hosting the application to year 2000 compliant version prior to the tests. Other in-house developed applications in the areas of student information and financial information used in the Institute have been modified, tested and deployed to address the Y2K problem. The major expenditure of the Y2K project is the cost of upgrading the operating system which amounted to about Baht 300,000. Accordingly, the Institute has used computer software and computer equipment which are considered suitable to the Y2K issue. However, the Institute still faces risk that other parties with which the Institute does business may be unsuccessful in their computer remedy projects within the time limit.

**ASIAN INSTITUTE OF TECHNOLOGY
BALANCE SHEETS
AS AT JUNE 30, 1999 AND 1998**

	Unrestricted Current Fund		Restricted Fund		Sponsored Program Fund		Capital Fund		Agency Fund		Total	
	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT
ASSETS												
Cash at banks	(51,390)	7,289,960	84,887,508	96,416,002	32,240,818	72,358,849	(10,557,024)	18,877,749	103,296,014	50,352,732	209,815,926	245,295,292
Investments (Note 4)	-	23,755,575	412,046,856	389,450,319	46,955,480	-	2,119,523	44,395,578	89,637,013	57,155,393	550,758,872	514,756,865
Advance duties and taxes (Note 5)	34,382,867	10,412,858	-	-	-	-	-	-	-	-	34,382,867	10,412,858
Accounts receivable and accrued income	18,252,188	1,688,131	27,519,215	9,889,065	11,812,263	13,889,059	24,923	1,644,733	372,869	595,158	57,981,458	27,706,146
Deposits	1,230,089	1,060,122	63,861	63,861	-	-	-	-	-	-	1,293,950	1,123,983
Inventories	-	-	316,761	349,778	-	-	-	-	-	-	316,761	349,778
Due from other funds	-	-	131,326,307	131,326,307	-	-	-	-	-	-	131,326,307	131,326,307
Fixed assets (Note 6)	-	-	-	-	-	-	1,928,136,879	1,816,060,751	-	-	1,928,136,879	1,816,060,751
Total Assets	53,813,754	44,206,646	656,160,508	627,495,332	91,008,561	86,247,908	1,919,724,301	1,880,978,811	193,305,896	108,103,283	2,914,013,020	2,747,031,980
LIABILITIES AND FUND BALANCES												
LIABILITIES												
Accounts payable and accrued expenses	5,158,269	3,505,881	2,862,922	6,443,445	914,668	779,228	1,383,010	15,261,686	831,523	1,053,885	11,150,392	27,044,125
Deposits	2,369,910	2,186,050	2,470,253	2,567,363	-	-	-	-	-	-	4,840,163	4,753,413
Due to other funds	-	-	131,326,307	131,326,307	-	-	-	-	-	-	131,326,307	131,326,307
Total Liabilities	7,528,179	5,691,931	136,659,482	140,337,115	914,668	779,228	1,383,010	15,261,686	831,523	1,053,885	147,316,862	163,123,845
FUND BALANCES (Note 8)	46,285,575	38,514,715	519,501,026	487,158,217	90,093,893	85,468,680	1,918,341,291	1,865,717,125	192,474,373	107,049,398	2,766,696,158	2,583,908,135
Total Liabilities and Fund Balances	53,813,754	44,206,646	656,160,508	627,495,332	91,008,561	86,247,908	1,919,724,301	1,880,978,811	193,305,896	108,103,283	2,914,013,020	2,747,031,980

The accompanying notes are an integral part of the financial statements.


 PRESIDENT

ASIAN INSTITUTE OF TECHNOLOGY
STATEMENTS OF REVENUES AND EXPENDITURES – UNRESTRICTED CURRENT FUND AND RESTRICTED FUND – GENERAL
FOR THE YEARS ENDED JUNE 30, 1999 AND 1998

	Unrestricted Current Fund		Restricted Fund – General		Total
	1999 BAHT	1998 BAHT	1999 BAHT	1998 BAHT	
REVENUES:					
Tuition and fees:					
Academic units	375,384,835	288,814,631	10,833,130	13,670,883	302,485,514
Computer center	6,350,000	3,243,600	-	-	3,243,600
Gifts and contributions:					
Cash	381,934,835	292,058,231	10,833,130	13,670,883	302,485,514
In-kind (Note 7)	-	-	-	-	-
Tuition & fee exchange rate differential (Note 10)	12,409,079	11,032,121	128,330,387	121,822,278	140,739,466
Grants and contracts	12,409,079	11,032,121	145,862,197	145,193,053	145,193,053
Sales and services:					
Educational activities	35,414,781	31,213,005	274,192,584	267,015,331	278,047,452
Others	61,067	46,007	11,519,389	22,293,292	53,506,297
Income from investments	61,067	46,007	89,121,253	89,871,094	89,871,094
Auxiliary services	61,067	46,007	1,385,520	1,504,703	1,550,710
Recovery of indirect costs	23,126,341	28,370,427	90,506,773	91,375,797	91,421,804
AIT sponsored programs	23,651,159	31,371,247	144,456,327	135,714,030	28,370,427
Physical plant support	-	-	9,262,350	10,867,716	135,714,030
Exchange stabilization	-	-	7,618,469	18,269,786	31,371,247
Miscellaneous	476,597,262	394,091,038	17,029,892	143,629,441	10,867,716
Total Revenues					
	476,597,262	394,091,038	30,022,741	81,176,422	81,176,422
			629,052,450	936,972,718	1,331,063,756
EXPENDITURES:					
Salaries and associated costs:					
Cash (Note 11)	-	18,684,847	8,333,848	37,862,943	56,547,790
In-kind (Note 7)	-	-	145,862,197	145,193,053	145,193,053
Academic units operating costs					
Student related costs	274,788,896	208,883,117	170,639,604	178,667,298	387,550,415
Administrative support costs	2,253,925	1,987,630	11,624,028	11,472,126	13,459,756
Capital purchases	94,114,377	62,787,340	122,316	40,111	62,827,451
Campus wide services	13,071,942	13,217,336	224,544	180,987	13,296,486
Physical plant support costs	94,442,076	87,358,276	-	-	94,442,076
AIT sponsored programs	-	-	25,867,887	34,785,941	34,785,941
Auxiliary services costs	-	-	14,982,796	17,407,336	17,407,336
Exchange stabilization	-	-	88,774,055	91,082,282	91,082,282
Other costs	-	-	43,486,225	97,807,398	97,807,398
Total Expenditures					
	478,671,216	392,918,546	598,301,481	692,732,387	1,085,650,933
Excess of revenues over expenditures (expenditures over revenues)	(2,073,954)	1,172,492	30,750,969	244,240,331	245,412,823

The accompanying notes are an integral part of the financial statements.

ASIAN INSTITUTE OF TECHNOLOGY
STATEMENT OF CHANGES IN FUND BALANCES
FOR THE YEAR ENDED JUNE 30, 1999 (WITH COMPARATIVE TOTALS FOR 1998)

	CAPITAL FUND										
	RESTRICTED FUND					CAPITAL FUND					Total
	Unrestricted Current fund	General	Endowment	General	Sponsored	Fixed Assets	Liquid Assets	Repair and	Agency Fund	1999	
BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	BAHT	
Balances July 1, 1998 (Note 8)	38,514,715	147,694,118	95,258,513	244,205,586	85,468,680	1,816,060,751	38,584,081	2,119,523	107,049,398	2,583,908,135	2,368,144,994
Adjustments:											
Accounts Receivable	7,770,860	506,250	-	-	-	-	-	-	-	8,277,110	-
Disposal of assets	-	-	-	-	-	(32,353,940)	-	-	-	(32,353,940)	(10,077,218)
Devaluation of building	-	-	-	-	-	(11,000,000)	-	-	-	(11,000,000)	-
Devaluation of Debenture & Warrant	-	-	-	(65,121)	-	-	-	-	-	(65,121)	(8,393,614)
R.O.E. in Vietnam	-	5,498,011	-	-	-	-	-	-	-	5,498,011	-
Closed ADPC account	-	14,445,274	-	-	-	-	-	-	-	14,445,274	-
Additions:											
Excess of revenues over expenditures (expenditures over revenues)	(2,073,954)	30,750,969	1,173,633	12,851,378	1,735,463	-	-	-	91,424,975	121,837,453	177,491,471
Investment income	-	-	1,545	-	-	-	-	-	-	14,025,011	25,243,716
Government grants and appropriations	-	-	(2,835,000)	-	-	1,423,773	25,714,924	-	-	27,140,242	43,295,208
Miscellaneous income and contributions	-	-	-	-	-	-	8,494,975	-	-	5,659,975	29,327,752
Contributions - in kind	-	-	-	-	-	-	11,121,238	-	-	11,121,238	37,401,431
Due from other fund	-	-	-	-	-	-	-	-	-	-	33,326,037
Total	44,211,621	198,894,622	93,598,691	256,991,843	87,204,143	1,772,706,811	10,376,543	2,119,523	198,474,373	2,748,493,388	2,695,759,757
Deductions:											
Inter-fund transfer from (to)	-	-	-	(2,073,954)	-	-	-	-	-	(2,073,954)	1,172,492
Unrestricted Current Fund	-	-	20,599,979	-	(3,110,250)	-	31,020,426	-	-	48,510,155	92,912,673
Restricted Current Fund	-	(20,599,979)	-	-	-	-	-	-	-	(20,599,979)	(3,000,000)
General	-	-	-	-	-	-	-	-	-	2,073,954	12,875,125
Endowment	-	-	-	-	-	-	-	-	-	(2,889,750)	-
General Reserve	-	-	-	-	-	-	-	-	-	(31,020,426)	(158,089,653)
Sponsored Program Fund	2,073,954	3,110,250	-	-	600,000	-	-	-	-	6,000,000	(5,928,927)
Liquid Assets Capital Fund	-	-	-	-	-	-	-	-	(6,000,000)	-	-
Allocated	-	(31,020,426)	-	-	-	-	-	-	-	-	-
Agency Fund	-	-	-	-	-	-	-	-	-	-	-
Expenditures for plant facilities	-	-	-	-	-	144,308,830	(18,458,116)	-	-	125,850,714	93,792,323
Cash	-	-	-	-	-	11,121,238	(11,121,238)	-	-	-	-
Kind	-	-	-	-	-	-	-	-	-	-	-
Other cost	-	-	-	-	-	-	-	-	-	-	-
General	-	-	-	-	-	(909,847)	(106,738,097)	-	-	(107,647,944)	(112,259,618)
Due to other fund	-	-	-	-	-	-	-	-	-	-	(33,326,037)
Total	2,073,954	(48,510,155)	20,599,979	(2,073,954)	2,889,750	155,430,068	(909,847)	(105,297,025)	(6,000,000)	18,202,770	(111,851,622)
Balances June 30, 1999 (Note 8)	46,285,575	150,384,467	114,198,670	254,917,889	90,093,893	1,928,136,879	9,466,696	2,119,523	192,474,373	2,766,696,158	2,583,908,135

The accompanying notes are an integral part of the financial statements.

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Obituary

Dr. Puey Ungphakorn, the first Chairperson of the AIT Board of Trustees, passed away in London on 28 July 1999 at the age of 83. Dr. Puey served as Board Chair from 1968 to 1973.

Dr. Puey read law at the University of Moral and Political Sciences (now Thammasat University) before proceeding to the London School of Economics, where he obtained first class honours in Economics in 1941. During the Pacific War, Dr. Puey returned to Thailand to serve in the Free Thai Movement in the British Army, attaining the rank of Major. He was made a Member of the British Empire (MBE) for his war service.

Dr. Puey subsequently returned to the London School of Economics, completing his Doctoral program in Economics in 1949.

Dr. Puey was a leading economist and economic advisor in the Ministry of Finance from 1949 to 1960. He served as Governor of the Bank of Thailand from 1957 to 1971. He was appointed Dean of the Economics Faculty at Thammasat University (1964) and became Rector of the same University in 1975, a position he held until late 1976. Dr. Puey was a recipient of the highest decorations given in Thailand to public servants. He received the prestigious Ramon Magsaysay Award for Government Service in 1964.



Dr. Puey

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B.Eng., Chulalongkorn;
M.Eng., D.Eng., Tokyo.

Mathuros Ruchirawat

B.Sc., Liverpool; Ph.D., MIT.

Jutamaad Satayavivad

B.Sc., Ph.D., Mahidol.

Korbtham Sathirakul

B.Sc., Chulalongkorn;
M.B.A., Sasin; M.S., Ph.D., Tokyo.

Anond Snidvongs

Ph.D., Hawaii.

Kianarong Sriroth

B.Sc., Kasetsart;
M.Sc., Univ. of Phil., Los Banos;
M.Eng., D.Eng., Technical Univ. of Berlin.

Manee Tantirungkij

B.Sc., M.S., Kasetsart; D.Eng., Osaka.

Sornthep Tumwasorn

B.S., M.S., Kasetsart; Ph.D., Florida.

Nuntavarn Vichit-Vadakan

B.Sc., California (Los Angeles);
M.Sc., California State;
M.P.H., D.P.H., California (Los Angeles).

Cherdsak Virapat

B.Sc., Kasetsart; M.Sc., Helsinki;
Ph.D., Dalhousie.

Supat Wangwongwatana

B.Sc., Mahidol; M.Sc., AIT;
Ph.D., Cincinnati.

SCHOOL OF MANAGEMENT

Bunlue Khongchantra

M.Sc. Law, Juris Doctor, Univ. of Tulane.

Kopr Kritayakirana

B.Sc., Chulalongkorn; Ph.D., Harvard.

Suvit Yodmani

Ph.D., Boston Univ., MIT.

AFFILIATED FACULTY

SCHOOL OF

ADVANCED TECHNOLOGIES

Md. Ahsan Akhtar Hasin

B.Sc., BUET; M.Eng., D.Eng., AIT.

Surat Lertlum

B.Sc., Norwich; M.Sc., George Washington;
D.Tech.Sc., AIT.

Lal Samarakoon

B.Sc. (Hons.), Kelaniya;
M.Sc., Saga; Ph.D., Ehime.

Robert L.G. Schumann

B.Sc., Polytechnic of Central London.

Aekavute Sujarae

B.Eng., Florida Inst. of Tech.;
M.Eng., D.Eng., AIT.

Hoang Le Tien

B.Eng., Polytech, Prague, Czech;
M.Eng., D.Eng., AIT.

**SCHOOL OF ENVIRONMENT,
RESOURCES AND DEVELOPMENT**

Rajan K. Gengaje

B.A. (Hons.), LL.B., M.P.M., Poona;
M.Sc., Ph.D., AIT.

Pham Hoang-Luong

B.Eng., Hanoi Univ. of Tech.;
M.Eng., AIT; Ph.D., INP-Toulouse.

Chaiyaphol Kaewprakaisaengkul

B.Eng., Kasetsart; M.Eng., D.Eng., AIT.

Heikki Kolehmainen

M.Sc., Ph.D., Helsinki Univ. of Tech.

Graham Charles Mair

B.Sc., Liverpool; Ph.D., Wales.

Athula Rajapakse

B.Sc.Eng. (Hons.), Moratuwa;
M.Eng., AIT; D.Eng., Tokyo.

Daniel V. Savin

B.Sc., M.Sc., D.E.S., D.E.S.S. Paris I;
M.B.A., Ph.D. (Hons.), Northwestern

Rajenda P. Shrestha

B.Sc. (Hons.), H.A.U., Hisar; M.Sc.,
D.Tech.Sc., AIT.

VISITING FACULTY

SCHOOL OF

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Dipl., M.Sc., D.E.A., Univ. Paris;
Ph.D., Ecole des Hautes Etudes
Sc Paris.

Thomas H. Baker

B.A., Amherst; M.A., Ph.D., Stanford.

Gustavo Belforte

Laurea Degree, Politecnico di Torino,
Italy.

Andrew Davison

B.Sc., UMIST, UK; M.Sc., Lehigh Univ.,
USA; Ph.D., Imperial College, UK.

Francis J. Devadason

B.Sc., B.Lib.Sc., Madras; Associateship
in Documentation (DRTC) ISI, Calcutta;
Ph.D., Karnatak Univ., Dharwad.

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M.S., Univ. of Tokyo;
M.S., Ph.D., Univ. of California, Berkeley.

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B.Sc., Banaras; M.Tech., IIT Kanpur;
M.S. Eng., Ph.D., Cornell.

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Univ. of Science & Tech. of China.

SCHOOL OF CIVIL ENGINEERING

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M.Sc., D.Tech.Sc., AIT.

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Dipl., Inst. of Nuclear Science & Eng.,
Illinois.

Karl Iver Dahl-Madsen
M.Sc., Danish Technical Univ.

B. Mohanty
B.Sc., SAICE; M.Sc., AIT;
Ph.D., INP Toulouse.

Gilbert Naudet
Dipl., Ecole Centrale de Paris.

Antti Palokangas
M.Sc., Helsinki Univ. of Tech.

Jacques Percebois
M.Econ., Grenoble; Ph.D., Paris;
Ph.D., Grenoble.

A. Sathasivan
B.Sc.Eng. (Hons.), Peradeniya;
M.Eng., AIT; Ph.D., Tokyo.

Ganesh P. Shivakoti
B.S., M.S., Udaipur;
Ph.D. Michigan State.

Nguyen Cong Thanh
B.Sc., D.Sc., Laval.

D. Thukaram
B.E., Osmania; M.Tech., Nagpur;
Ph.D., IIS-Bangalore.

Jean-Claude Vincent
B.sc., M.Sc., Ing. (AI Gx-Belgium).

SCHOOL OF MANAGEMENT

François Joël Broustail
Master's (Econ.), Master's (Hist. of
Technology & Civilizations), Sorbonne
Univ.; Ph.D., Sorbonne Univ.
and HEC, France.

Young-Suk Hyun
B.S., MBA, Seoul National Univ.;
Ph.D., KAIST.

Truong Quang
MPA, Inst. of Social Studies, The Hague;
Ph.D., Free Univ., Amsterdam.

Neelakhantan Ramachandran
M.Com., Univ. of Kerala.

Gerard Tocquer
M.A., Univ. of Sherbrooke, Quebec CPD;
Cornell Univ.; Ph.D., Univ. of Nice-
Sophia Antipolis, France.

**CENTER FOR LANGUAGE AND
EDUCATIONAL TECHNOLOGY**

Hanne L.K. Hansen
B.A., M.A., Univ. of Copenhagen.

ADJUNCT FACULTY

**SCHOOL OF
ADVANCED TECHNOLOGIES**

Patrick Brézillon
M.Sc., Ph.D., Univ. Paris 6.

Thomas P. Keenan
B.A., M.A., M.Sc., Ed.D., Columbia Univ.

Kang Peng
B.S. Eng., Tunghai, Taiwan;
M.Eng., AIT; Ph.D., North Carolina.

Klaus Rall
Ph.D., Hannover.

Jos Vander Sloten
M.Sc., Ph.D., K.U. Leuven, Belgium.

**SCHOOL OF ENVIRONMENT,
RESOURCES AND DEVELOPMENT**

Heinz Eckhardt
Dipl. Ing., Technical Univ., Darmstadt;
Dr. Ing., Ruhr Univ., Bochum.

John B. Hambrey
B.A., Cantab; D.Tech.Econ., Ph.D., Stirling.

Y. Ishibashi
B.Eng., M.Eng., D.Eng., Tohoku Gakuin Univ.

Jy S. Wu
B.Sc.Ch.E., National Taiwan; M.Eng., AIT;
Ph.D., Rutgers.

SCHOOL OF MANAGEMENT

Zong-Tae Bae
B.Sc., Seoul National Univ.;
M.Sc., Ph.D., KAIST

Sang-Hoon Kim
M.Sc., Ph.D., KAIST.

I.M. Pandey
M.Com., Ph.D., Univ. of Delhi.

K. Ramanathan
B.Sc. (Hons), Univ. of Ceylon;
Post Grad. Dip. Appl. Stat., Univ. of
Colombo; M.Eng., D.Eng., AIT.

INSTITUTE ADMINISTRATION

SENIOR ADMINISTRATIVE OFFICERS

President	Prof. Jean-Louis Armand
Provost	Prof. Mario T. Tabucanon
Treasurer	Mr. Avinash Patel

DEANS OF SCHOOLS

Advanced Technologies	Prof. H. N. Phien
Civil Engineering	Prof. Worsak Kanok-Nukulchai
Environment, Resources and Development Management	Prof. Chongrak Polprasert
	Prof. Himangshu Paul

CENTER DIRECTORS

Center for Language and Educational Technology	Dr. Nicholas Dimmit (Chair)
Center for Library and Information Resources	Dr. Francis Devadason
Continuing Education Center	Dr. Nicanor C. Austriaco
Regional Computer Center	Dr. Charoon Chirapaisarnkul
AIT Center Vietnam	Dr. Jari Leo Henrik Backman
Swiss-AIT-Vietnam Management Development Program	Dr. Hans Stoessel

STUDENT AFFAIRS

Dean of Student and Community Affairs	Dr. Anila Sadananda
Student Union President	Mr. Md. Sharif Uddin (Jan - May 1999)
	Mr. Khuat Viet Hung (Sept 1999-Jan 2000)

Prof. Charas Suwanwela completed his term as Interim President on 12 May 1999. Prof. Tabucanon was appointed Provost on 1 July 1999. The Vice Presidencies, formerly held by Prof. Karl E. Weber (Management), Prof. Pisidhi Karasudhi (Development and Promotion) and Prof. Mario Tabucanon (Academic), were discontinued.

ABBREVIATIONS

SCHOOLS

SAT	School of Advanced Technologies
SCE	School of Civil Engineering
SERD	School of Environment, Resources and Development
SOM	School of Management

CENTERS

AITCV	AIT Center Vietnam
CEC	Continuing Education Center
CLAIR	Center for Library and Information Resources
CLET	Center for Language and Educational Technology
RCC	Regional Computer Center
SAV	Swiss-AIT-Vietnam Management Development Program

PROGRAMS

SAT Programs

CSIM	Computer Science and Information Management
ISE	Industrial Systems Engineering
STAR	Space Technology Applications and Research
TC	Telecommunications

SCE Programs

GE	Geotechnical Engineering
SEC	Structural Engineering and Construction
TIE	Transportation and Infrastructure Engineering
WEM	Water Engineering and Management Program

SERD Programs (effective August 1999)

AASE	Agricultural & Aquatic Systems and Engineering
Energy	Energy Program
PT	Processing Technology
RDGR	Rural Development, Gender and Resources
UEEM	Urban Environmental Engineering and Management

SOM Programs

IB	International Business
EMBA	Executive Master of Business Administration
MT	Management of Technology

RESEARCH CONTRACTS SIGNED IN 1999

Project Title	School	Sponsor
Supervision of Don Chedi pagoda rehabilitation	SCE	Damrong Construction Co., Ltd., Bangkok, Thailand
Feasibility study for new drainage canal connecting Khlong Tawee Wattana and Khlong Khoon Ratpinidjai	SCE	Drainage and Sewerage Dept., BMA
Study of energy efficient and environmentally sound technology indicators in the Thai textile industry	SERD	University of Technology, Sydney, Australia
Improvement of on-site management	SCE	Construction Lines Co., Ltd.
Construction engineering and management training for Bhutanese engineers	SCE	Royal Government of Bhutan
Local forest management	SERD	CIFOR/IFAD
Danida support to the AIT Aqua Outreach in Indochina and Northeast Thailand, Phase II	SERD	DANIDA
Threats to environment, health and water quality in Southeast Asia from chlorine disinfection of shrimp farms and contamination of water spinach	SERD	Sida
Improved performance of rice flour and starch for food application	SERD	NTSDA
Development of databases for greenhouse gas emissions with reference to methane in Thailand	SERD	Thailand Research Fund
Agricultural disaster warning system for Thailand	SERD	Ministry of Agriculture and Cooperatives, Thailand
Efficiency improvement for infrastructure project management	SCE	Ministry of Interior, Thailand
Evaluation of milling yields for Thai rice	SERD	Dept. of Internal Trade, Ministry of Commerce, Thailand
Institutional cooperation on wood energy and gender	SERD	Regional Wood Energy Development Program, FAO, Bangkok
Women in aquaculture	SERD	Asia Pacific Economic Cooperation
Strengthening of gender initiatives in IFAD projects among indigenous people in Asia	SERD	IFAD

SCHOOL OF ADVANCED TECHNOLOGIES

■ Completed

NC-PC Machine, an Open Architecture CNC Machine

Investigators: E. Bohez, N. Afzulpurkar, M. Parnichkun
Sponsor: Belgian Govt.

Manufacturing on an Assembly Jig for Volvo Car with 5-Axis Machine

Investigator: E. Bohez
Sponsor: AAPICO Hitech Co., Ltd.

Organization of Asian Symposium on Industrial Automation and Robotics; *Investigator:* N. Afzulpurkar
Sponsor: Miller Freeman (Thailand)

Time and Motion Study in Textile Factory; *Investigator:* N. Afzulpurkar
Sponsor: Thai Filament Textiles Co., Ltd.

Design of a Remote Robot Server Using JAVA for Developing a Virtual Robotics Laboratory
Investigator: N. Afzulpurkar; *Sponsor:* Curriculum Innovation Award/AIT

Studies of Interference Potential between Non-Geostationary Mobile Satellite Services and Terrestrial Radio Relay Links
Investigator: K. M. Ahmed
Sponsor: AIT Research Initiation Grant

Satellite Data Promotion Project
Investigator: K. Honda; *Sponsor:* NASDA

Training Materials Development
Investigator: L. Samarakoon
Sponsor: RESTEC

Feasibility Study of Database Development for Asian Highway with Satellite Data; *Investigators:* K. Honda, L. Samarakoon
Sponsor: Japan Highway Agency

Remote Sensing and GIS Analysis for Base Data Generation and Change Detection: Study of Comprehensive Disaster Prevention around Mayon Volcano, Philippines; *Investigator:* K. Honda; *Sponsor:* JICA

Assessment of Debris Flow Risks along Sindhuli Highway, Nepal
Investigators: L. Samarakoon, K. Honda; *Sponsor:* Nippon Koei Co. Ltd.

■ In Progress

Development of Distance Education Learning Modules for IE/MSE Programs

Investigators: H. Naber, A. Pinnoi, V. Kachitvichyanukul, E. Bohez, M. Parnichkun
Sponsor: Curriculum Innovation Award/AIT

Development of Computer Simulation Library for Teaching Factory

Investigator: V. Kachitvichyanukul
Sponsor: AIT Research Initiation Grant

Development of a PLC Based Ball Catching Machine

Investigator: N. Afzulpurkar
Sponsor: Siemens (Thailand) Co., Ltd.

Postprocessor Development for 5-Axis Machine

Investigator: E. Bohez
Sponsor: Thai-German Institute

Medical Technology: Design and Manufacturing of Personalized Implants, Medical Models and Surgical Aids

Investigators: J. V. Sloten (KUL, Belgium), E. Bohez, P. Oris, K. Sittiseripratip, Le Chi Hieu, A. Pinnoi
Sponsors: Flemish Inter-University Council (VLIR-ABOS, Belgium), MTEC (Thailand)

Development of Automatic Quality Inspection System for IC Package in Semiconductor Industry by Using Image from CCD Camera

Investigators: M. Parnichkun, C. Ngaecharoenkul, C.M. Naravane
Sponsor: Circuit Electronics Industries Public Co., Ltd., NSTDA

Development of Autonomous Intelligent Robots

Investigator: M. Parnichkun
Sponsor: Minebea Thai Ltd.

World Fire Web Project

Investigators: K. Honda, S. Lertlum
Sponsor: Joint Research Center, Ispra, Italy

NOAA AVHRR Data Reception and Near Real Time Distribution

Investigator: K. Honda
Sponsor: ACRORS

Consulting and Training for NASDA Pilot Project in Thailand

Investigator: L. Samarakoon
Sponsor: NASDA

Consulting and Training for NASDA Pilot Project in Indonesia

Investigator: L. Samarakoon
Sponsor: NASDA

Tax Administration Project

Investigators: V. Esichaikul, S. Siengthai (SOM, AIT), F. W. Swierczek (SOM, AIT)
Sponsors: Revenue Dept., Ministry of Finance (Thailand), World Bank

SCHOOL OF CIVIL ENGINEERING

■ Completed

Full Scale Embankment Using Wire Mesh Reinforcement; *Investigator:* D. T. Bergado; *Sponsor:* B.B. Trading Sdn. Bhd., Malaysia

Investigation of Failure of Roof Structure at Surat Thani
Investigators: N. Anwar, W. Kanok-Nukulchai;
Sponsor: Suretex Ltd., Thailand

Development of Software for Design of Steel Structures; *Investigators:* W. Kanok-Nukulchai, N. Anwar;
Sponsor: Siam Yamato Steel Co. Ltd.

Load Tests of Five-storey Hospital Building in Nakorn Pathom
Investigator: P. Nimityongskul
Sponsor: Ministry of Public Health, Thailand

Collapse of Pumping Station in Wastewater Treatment Plant
Investigators: W. Kanok-Nukulchai, N. Phien-wej, N. Anwar; *Sponsor:* Cunningham Intl (Thailand) Ltd.

Integrity Study of Doi Suthep Chedi, Chiang Mai; *Investigators:* W. Kanok-Nukulchai, N. Phien-wej, P. Warnitchai; *Sponsor:* Dept. of Fine Arts, Thailand

Investigation and Design Study for Renovation of Don Chedi Monument, Supanburi; *Investigators:* W. Kanok-Nukulchai, N. Phien-wej
Sponsor: Dept. of Fine Arts, Thailand

Lost Management for Public Works Projects: A Comparison of Japan and the UK; *Investigator:* S. O. Ogunlana; *Sponsor:* Japan Science and Technology Agency

CM Bhutan III: Construction Management Training for Bhutanese Civil Engineers; *Investigators:* S. O. Ogunlana, C. Charoengam
Sponsor: Royal Govt. of Bhutan, Helvetas.

■ In Progress

Effects of Electro-Osmotic Consolidation on Soft Bangkok Clay Improved with Mebra PVD
Investigator: D. T. Bergado
Sponsor: Geotechnics (Holland) B.V.

Discharge Capacity of PVD and its Filter and Core Characteristics
Investigator: D. T. Bergado
Sponsor: Geotechnics (Holland) B.V.

Relationship between Traffic and Ambient Air Quality in Bangkok
Investigators: Y. Tanaboriboon, S. Muttamara
Sponsor: Honda Motor Co. Ltd.

Recharge of Soft Clay by Prefabricated Vertical Drain (PVD)
Investigator: K. Miura
Sponsor: AIT Research Initiation Grant

Efficiency Improvement for Infrastructure Development of Tambon (Sub-District) Administration Organization; *Investigator:* C. Charoengam
Sponsor: Prince Dhamrong Rajanuparb Institute, Ministry of Interior, Thailand

Construction Safety Improvement
Investigator: C. Charoengam
Sponsor: Construction Lines Co. Ltd.

Feasibility Study for Dredging New Canal Connecting Khlong Tawee Wattana and Khlong Khoon Ratpinidijai
Investigator: S. Vongvisessomjai
Sponsor: Drainage and Sewerage Dept., BMA

Periodic Project Assessment of Thai Lube Blending Plant near Pattaya; *Investigators:* N. Anwar, W. Kanok-Nukulchai
Sponsor: Thai Farmer's Bank Public Co. Ltd.

Development of Software for Planning and Design of Block Houses
Investigator: N. Anwar; *Sponsor:* Nichada Thani Group of Companies

Development of Software for 3D Analysis of Buildings (BATS)
Investigators: N. Anwar, W. Kanok-Nukulchai; *Sponsor:* ACECOMS, AIT

Development of Software for Advanced Analysis of 2D Frames (FRAME2DX); *Investigator:* N. Anwar; *Sponsor:* ACECOMS, AIT

Development of Software for Design of RC Structures (GEAR); *Investigator:* N. Anwar; *Sponsor:* ACECOMS, AIT

Vocational and Technical Education Project with Institut Teknologi Bandung (ITB), Indonesia
Investigators: A. Das Gupta, W. Kanok-Nukulchai; *Sponsor:* Ministry of Education and Culture, Indonesia

Study and Detailed Design of a Navigation Channel for Krabi Thermal Power Plant
Investigators: S. Vongvisessomjai, S. Weesakul; *Sponsor:* EGAT

Water Scarcity in Big Cities
Investigator: D. Luketina
Sponsor: Lyonnaise des Eaux

Hydraulic Model Study of Water Pumping from Pumduang River for Irrigation; *Investigator:* T. Tingsanchali; *Sponsor:* ASPAC Consultant Co., Ltd. and BEST Co., Ltd.

Khlong Prapa Canal Covering Project
Investigators: W. Kanok-Nukulchai, T. Tingsanchali, N. Phienwej, Y. Tanaboriboon; *Sponsor:* Dept. of Highways, Ministry of Communications, Thailand

SCHOOL OF ENVIRONMENT, RESOURCES AND DEVELOPMENT

■ Completed

Assessment of Current Status of Air Pollution Control and Management in Asia
Investigator: Nguyen Thi Kim Oanh
Sponsor: AIT Research Initiation Grant

Emission Factors of Persistent Organic Compounds from Selected Energy-Related Sources
Investigator: Nguyen Thi Kim Oanh
Sponsor: SAREC/Sida

Environmental Impact Assessment for the Bai Bang Integrated Pulp and Paper Mill in Vietnam; *Investigators:* Nguyen Thi Kim Oanh, B. E. Bengtsson, L. Reutergardh; *Sponsor:* Sida

Inventorisation of Hazardous Wastes
Investigator: C. Visvanathan; *Sponsor:* Ministry of Foreign Affairs, France

Development of Multimedia Based Website for Course Lecture Notes
Investigator: C. Visvanathan
Sponsor: AIT Research Initiation Grant

Computer Aided Teaching Utility for Solar Thermal Processes; *Investigators:* S. Kumar, R. A. Attalage; *Sponsor:* AIT Curriculum Innovation Award

Trend of Clean Coal Technologies in ASEAN (in collaboration with the Energy Research Inst., Chulalongkorn Univ.); *Investigators:* H. L. Pham, D. Wiwattanadate, P. Meechumna, S. Pumjan, S. Saisinchai (Chulalongkorn Univ.)
Sponsor: NEDO, Japan

Energy Efficient and Environmentally Sound Technology Indicators in the Thai Textile Industry; *Investigators:* C. Visvanathan, S. Kumar
Sponsor: Univ. Technology Sydney

Thailand Energy Strategy and Policy Study; *Investigators:* T. Lefevre, R. Pacudan, Wai Wai Thanh, M. J. Todoc; *Sponsor:* NEPO

Investigation of Incentives in Relation to Renewable Energy Strategy for Thailand
Investigator: T. Lefevre
Sponsor: DANCED/NEPO

Commercialization of Renewable Energy Technologies; *Investigator:* R. Pacudan; *Sponsor:* UN-ESCAP

Electricity Industry Reforms in Asia
Investigator: R. Pacudan
Sponsor: AIT Research Initiation Grant

Integrated Rural Energy-Environment Planning and Assessment Methodologies; *Investigator:* R. Pacudan; *Sponsor:* UN-ESCAP

Cross-Cultural Research on Women/Gender and Development in Asia; *Investigators:* G. Kelkar and research team headed by M. Osawa
Sponsor: National Women's Education Center, Japan

Gender and Health in Rural and Urban Nepal; *Investigators:* B. Earth, S. Jnawali
Sponsor: NORAD seed money

Gender Equal Societies in Asia: Economic Development and Gender Relations among Indigenous Communities in India, China, Malaysia and Nepal; *Investigator:* G. Kelkar
Sponsors: IFAD, CIFOR-AIT

ILO-AIT Joint Research on Gender Impact of the Economic Crisis in Five Countries of East and Southeast Asia (Malaysia, Thailand, Philippines, Republic of Korea and Indonesia)
Investigators: G. Kelkar, M. Osawa;
Sponsor: ILO, Bangkok

Impact and Sustainability of the Social Mobilization Program in Hambantota District, Sri Lanka
Investigator: R. Dale; *Sponsor:* NORAD

Livestock Carrying Capacity of Land Resource in the Hills of Nepal
Investigator: G.B. Thapa
Sponsor: AIT Research Initiation Grant

Solid Waste Management in Kathmandu; *Investigator:* G. B. Thapa
Sponsor: Netherlands Govt.

Sustainable Rural Industrial Development in China
Investigator: B.W.E. Wickramanayake
Sponsor: Netherlands Govt.

Design and Development of a Tractor Mounted Pineapple Dressing Machine
Investigators: V. M. Salokhe, C. Kaewprakaisaengkul
Sponsor: Siam Agro-Industry Pineapple and Others Public Co. Ltd., Thailand

Enhancing Research Methods and Research Networks for Development and Analysis of Asian Irrigation Institutions and Systems
Investigator: G. P. Shivakoti
Sponsor: AIT Research Initiation Grant

Cryopreservation of Fish Embryos
Investigator: A. Bart
Sponsor: AIT Research Initiation Grant

Support to Regional Aquaculture Development Project; *Investigators:* P. Edwards, H. Demaine, N. Innes-Taylor, D. Turongruang
Sponsor: DFID, UK

Rural Development through Aquatic Resources Management in Indochina
Investigators: H. Demaine, R. Gregory, E. Meusch, N. Innes-Taylor, P. Edwards, Le Thanh Luu (Research Inst. for Aquaculture No. 1, Hanoi), Nguyen Van Tu (Univ. of Agriculture and Forestry, HCMC); *Sponsor:* Sida

Development of Manual for Application of GMP and HACCP to Food Industries
Investigator: A. Noomhorn
Sponsor: Thai Industrial Standards Inst.

Improvement of Cationic Cassava Starch for Paper Industry Using Enzymatic Pretreatment
Investigators: W. F. Stevens, Su Su Win; *Sponsor:* Netherlands Govt.

Effect of Deacetylation Conditions on the Physico-chemical Properties of Cuttlefish Chitin and Chitosan
Investigators: W. F. Stevens, S. Chandkrachang, Ng Chuen How
Sponsor: Trang Seafood Co.

Medical Service Centers - Laos
Investigators: B. Lefebvre, G. Sthapit, M. Ushijima
Sponsors: Japanese Embassy Laos, Sanpo International Corp.

■ In Progress

Wastewater Nitrogen Removal

Investigator: A. P. Annachhatre

Sponsor: Danida

Asian Regional Workshop on Environmental Technology;

Investigator: A. P. Annachhatre; *Sponsor:* SAREC/Sida

Environmental Impact of Shrimp Farm Effluents;

Investigator: A. P. Annachhatre

Sponsor: Danida

Development of Synoptic Climatological Models to Predict Ambient SO₂ Concentration at Mae Moh Valley, Chiangmai, Thailand;

Investigator: Nguyen Thi Kim Oanh; *Sponsor:* EGAT

Analyses of Technical Options for Mitigating Environmental Emissions from Urban Transport System in Selected Asian Countries

Investigators: R.M. Shrestha, S.C. Bhattacharya, M.N. Islam, Nguyen Thi Kim Oanh; *Sponsor:* SAREC/Sida

Biomass Energy in Asia: a Study of Selected Technologies and Policy Options;

Investigators: S. C. Bhattacharya, R. M. Shrestha, Nguyen Thi Kim Oanh, H. L. Pham

Sponsor: SAREC/Sida

Threats to Environment, Health and Water Quality in Southeast Asia from Chlorine Disinfection of Shrimp Farms and Contamination of Water Spinach;

Investigators: Nguyen Thi Kim Oanh, B.E. Bengtsson, W. Lin, P. Parkpian; *Sponsor:* SAREC/Sida

Biological Ecological Water Environment Renovation Technologies Applicable to Thailand;

Investigators: P. Parkpian, K. Fukushi, H. Nakazato;

Sponsors: Top Ecology Co., Ltd. (Japan), National Inst. of Environmental Studies, AIT

Survival of Bio-indicators in Soil Applied with Bangkok Domestic Sludge;

Investigators: P. Parkpian, Siranee Sreesai, K. Fukushi; *Sponsor:* Regional Education Development Program, Govt. of Japan

Seasonal Emissions of Methane from Thailand's Wetland Ecosystems

Investigators: P. Parkpian, A. Eiumnoh, A. Juksujinda

Sponsor: Thailand Research Fund

Ground and Groundwater Contamination of Industrial Areas by Heavy Metals;

Investigator: P. Parkpian; *Sponsor:* STS Consulting Co., Ltd., (Thailand)

Small and Medium Scale Industries in Asia: Energy, Environment and Climate Inter-relationships;

Investigators: C. Visvanathan, S. Kumar, *Sponsor:* Sida

Asian Regional Research Program in Energy, Environment and Climate - Phase II;

Investigators: S. C. Bhattacharya, Ram M. Shrestha, S. Kumar, C. Visvanathan

Sponsor: Sida

Renewable Energy Technologies in Asia: A Regional Research and Dissemination Program - Phase II;

Investigators: S. C. Bhattacharya, S. Kumar; *Sponsor:* Sida

Chemical Heat Pumps;

Investigator: S. Kumar; *Sponsor:* MAE, France

Thematic Review: Electricity Supply and Demand Management Options

Investigators: T. Lefèvre, M. Cabrera, J. Todoc; *Sponsors:* DANCED/NEPO

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ABBREVIATIONS

ACECOMS	Asian Center for Engineering Computations and Software, AIT	MOSTE	Ministry of Science, Technology and Energy, Thailand
ACRoRS	Asian Center for Research on Remote Sensing, AIT	MTEC	National Metal and Materials Technology Center, Thailand
ADB	Asian Development Bank	NASDA	National Space Development Agency of Japan
AFME	French Agency for Energy Management	NEC	National Education Commission, Thailand
APEC	Asia-Pacific Economic Cooperation	NECTEC	National Electronics and Computer Technology, Thailand
ARRPEEC	Asian Regional Research Program in Energy, Environment and Climate	NEDO	New Energy and Industrial Technology Development Organization, Japan
ASEAN	Association of Southeast Asian Nations	NEPO	National Energy Policy Office, Thailand
BMA	Bangkok Metropolitan Administration	NEPC	National Energy Policy Council
CAT	Communications Authority of Thailand	NESDB	National Economic and Social Development Board, Thailand
CEC	Commission of the European Communities	NGDO	Non-Governmental Development Organization
CEERD	Center for Energy-Environment Research and Development, AIT	NFPA	National Fire Protection Association
CIDA	Canadian International Development Agency	NIDA	National Institute of Development Administration, Thailand
CIFOR	International Center for Forestry Research, Indonesia	NOAA	National Oceanic and Atmospheric Administration, USA
CIRAD	Center de Cooperation Internationale en Recherche Agronomique pour le Developpement	NORAD	Norwegian Agency for Development Cooperation
CUC	Canadian Universities Consortium	NSTDA	National Science and Technology Development Agency, Thailand
DAAD	German Academic Exchange Services	NTNU	Norwegian Technical University of Trondheim
DANCED	Danish Cooperation for Economic Development	NUS	National University of Singapore
DANIDA	Danish International Development Assistance	PCD	Pollution Control Department, Thailand
DEC	Distributed Education Center, AIT	PEA	Provincial Electricity Authority, Thailand
DFID	Department for International Development, UK	PTT	Petroleum Authority of Thailand
DOA	Department of Agriculture, Thailand	RESTEC	Remote Sensing Technology Center of Japan
DOM	Department of Meteorology, Thailand	SAREC	Swedish Agency for Research Cooperation with Developing Countries
DTEC	Department of Technical and Economic Cooperation, Thailand	SEAMEO	Southeast Asian Ministers of Education Organization
EAWAG	Swiss Federal Institute for Environmental Science and Technology	SEAMES	Southeast Asian Ministers of Education Secretariat
EC	European Community	SEATEC	Southeast Asia Tech Co., Ltd.
EGAT	Electricity Generating Authority of Thailand	SIDA	Swedish International Development Cooperation Agency
ETA	Expressway and Rapid Transit Authority of Thailand	TEI	Thailand Environment Institute
ESA	EuropeanSpace Agency	TISI	Thailand Industrial Standards Institute
ESCAP	Economic and Social Commission for Asia and the Pacific, UN	TISTR	Thailand Institute of Science and Technology Research
FAO	Food and Agriculture Organization, UN	TOT	Telephone Organization of Thailand
GTZ	German Agency for Technical Cooperation	UCLES	University of Cambridge Local Examinations Syndicate
HIVOS	Humanist Institute for Cooperation with Developing Countries	UNCDF	United Nations Capital Development Fund
IAEA	International Atomic Energy Agency	UNHCR	United Nations High Commission for Refugees
ICARDA	International Center for Agriculture Research in Dry Areas	UNDP	United Nations Development Program
ICIMOD	International Center for Integrated Mountain Development	UNEP	United Nations Environment Program
ICLARM	International Center for Living Aquatic Resources Management	UNEP EAP/AP	UNEP Environment Assessment Program for Asia and the Pacific
IEAT	Industrial Estate Authority of Thailand	UNESCO	United Nations Educational, Scientific and Cultural Organization
IFAD	International Fund for Agricultural Development	UNCHS	United Nations Commission for Human Settlements
ILO	International Labour Organisation, UN	UNICEF	United Nations Children's Fund
IUCN	International Union for the Conservation of Nature	UNOPS	United Nations Office for Project Services
JICA	Japan International Cooperation Agency	WB	World Bank
JIRCAS	Japan International Research Center for Agricultural Sciences	WHO	World Health Organization
KAAD	Katholischer Akademischer Auslanderdienst	WWF	Worldwide Fund for Nature
MAE-F	Ministere des Affaires Etrangeres (France)		
MOFA	Ministry of Foreign Affairs, France		



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