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. Poti Sarasin, then SEATO Secretary 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 postgraduate 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 Chaiyasen, Minister of University Affairs of Thailand, was read by Dr. Thamthong 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 Tingsamchali (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.
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.

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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.
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
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.
"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, Hua, Danang, and Hanoi.

### SUMMARY OF DONATIONS RECEIVED IN FY 1998-99
Total Donations: Baht 862,331,000,-

#### Donations received by sector in FY 1998-99 (%)
- Governments and Government agencies: 89.378%
- International organizations: 2.699%
- 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: 3.545%
- Corporations: 5.053%
- Foundations, private and others: 2.760%

#### 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%
Inter-disciplinarity

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

- The Banida-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.

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.

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.

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.

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.

<table>
<thead>
<tr>
<th>Term</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>1369</td>
</tr>
<tr>
<td>May</td>
<td>935</td>
</tr>
<tr>
<td>September</td>
<td>1271</td>
</tr>
<tr>
<td>Total</td>
<td>3575</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>1999 Enrolment by School</th>
<th>Jan</th>
<th>May</th>
<th>Sept</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT</td>
<td>207</td>
<td>338</td>
<td>358</td>
</tr>
<tr>
<td>SCE</td>
<td>298</td>
<td>184</td>
<td>291</td>
</tr>
<tr>
<td>SERD</td>
<td>569</td>
<td>568</td>
<td>343</td>
</tr>
<tr>
<td>SOM</td>
<td>309</td>
<td>231</td>
<td>307</td>
</tr>
<tr>
<td>Total</td>
<td>1383</td>
<td>1321</td>
<td>1299</td>
</tr>
</tbody>
</table>

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

1999 Student Enrolment

<table>
<thead>
<tr>
<th>Term</th>
<th>Jan</th>
<th>May</th>
<th>Sept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral</td>
<td>234</td>
<td>235</td>
<td>255</td>
</tr>
<tr>
<td>Master's</td>
<td>1083</td>
<td>1002</td>
<td>959</td>
</tr>
<tr>
<td>Diploma</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other Programs*</td>
<td>64</td>
<td>81</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>1319</td>
<td>1240</td>
<td>1216</td>
</tr>
</tbody>
</table>

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

Master's students accounted for some 61% 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).

<table>
<thead>
<tr>
<th>1999 Enrolment by Program</th>
<th>Jan</th>
<th>May</th>
<th>Sept</th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral</td>
<td>234</td>
<td>235</td>
<td>255</td>
<td>241</td>
<td>217</td>
</tr>
<tr>
<td>Master's</td>
<td>1083</td>
<td>1002</td>
<td>959</td>
<td>1014</td>
<td>1057</td>
</tr>
<tr>
<td>Diploma</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total Degree Enrolment</td>
<td>1319</td>
<td>1240</td>
<td>1216</td>
<td>1257</td>
<td>1276</td>
</tr>
<tr>
<td>Other Programs*</td>
<td>64</td>
<td>81</td>
<td>83</td>
<td>76</td>
<td>92</td>
</tr>
<tr>
<td>Total</td>
<td>1383</td>
<td>1321</td>
<td>1299</td>
<td>1334</td>
<td>1368</td>
</tr>
</tbody>
</table>

Doctoral enrolment as a percentage of total degree enrolment:

- 1999: 17.7%
- 1998: 18.9%

* 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.

<table>
<thead>
<tr>
<th>1999 Enrolment by Country</th>
<th>Jan</th>
<th>May</th>
<th>Sept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Austria</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>58</td>
<td>50</td>
<td>43</td>
</tr>
<tr>
<td>Belgium</td>
<td>1</td>
<td>2</td>
<td>6</td>
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<tr>
<td>Bhutan</td>
<td>3</td>
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<td>Cambodia</td>
<td>57</td>
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<td>Canada</td>
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<tr>
<td>Chinese Taipei</td>
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<td>Denmark</td>
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<td>Finland</td>
<td>4</td>
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<td>Tibetans living in India</td>
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<th>May</th>
<th>Sept</th>
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<td>14.4</td>
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<td>SOM</td>
<td>33.8</td>
<td>31.9</td>
<td>31.7</td>
<td></td>
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</table>

*As a percentage of total enrolment for each School.

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

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.
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 Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Apr</th>
<th>Aug</th>
<th>Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.Eng.</td>
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<td>7</td>
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</tr>
<tr>
<td>D.Tech. Sc.</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>10</td>
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<tr>
<td>Ph.D.</td>
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<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>M.Eng.</td>
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<tr>
<td>M.Sc.</td>
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<td>MBA</td>
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<td>10</td>
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<td>Dp. ALT</td>
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### 1999 Graduates by School

<table>
<thead>
<tr>
<th>School</th>
<th>Apr</th>
<th>Aug</th>
<th>Dec</th>
<th>Total</th>
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<tbody>
<tr>
<td>SAT</td>
<td>19</td>
<td>3</td>
<td>105</td>
<td>127</td>
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<tr>
<td>SCE</td>
<td>121</td>
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<tr>
<td>SERD</td>
<td>13</td>
<td>229</td>
<td>18</td>
<td>260</td>
</tr>
<tr>
<td>SOM</td>
<td>139</td>
<td>25</td>
<td>10</td>
<td>174</td>
</tr>
</tbody>
</table>

---

*Speaking at the 85th graduation ceremony on 22 April, Dr. Zu-Chieh Mah, President of Moe 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."*
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 36th 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 12 December, H.E. Dr. Arthit Ourarat, 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.'"
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 AITAA-NET, a consultancy network of alumni and their respective business firms and companies.
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

<table>
<thead>
<tr>
<th>Southeast Asia and the Pacific</th>
<th>South Asia and West Asia</th>
<th>East Asia and Central Asia</th>
<th>North America, Europe and Africa</th>
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</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Afghanistan</td>
<td>Azerbaijan</td>
<td>Argentina</td>
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<tr>
<td>Brunei</td>
<td>Bangladesh</td>
<td>Chihwee Taipei</td>
<td>Belgium</td>
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<td>Cambodia</td>
<td>Bhutan</td>
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<td>Bolivia</td>
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<td>Fiji</td>
<td>India</td>
<td>Japan</td>
<td>Canada</td>
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<td>Tibetans living in India</td>
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<td>9943</td>
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Total 9943
**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.

<table>
<thead>
<tr>
<th>1999 Faculty Headcount</th>
<th>Term</th>
<th>Annual Average</th>
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<td></td>
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<td>May</td>
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<tr>
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<td>17</td>
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<tr>
<td>Adjunct</td>
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<tr>
<td><strong>Total</strong></td>
<td>246.49</td>
<td>278.99</td>
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**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.


**1999 Report on Faculty Activities**

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<th>SERD</th>
<th>SOM</th>
<th>EC</th>
<th>CLAIR</th>
<th>CLET</th>
<th>RCC</th>
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<th>1998</th>
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<td>89</td>
<td>9</td>
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<td>Others*</td>
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<td>10</td>
<td></td>
<td>1</td>
<td>8</td>
<td>6</td>
<td>77</td>
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<td>63</td>
<td>176</td>
<td>44</td>
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<td>73</td>
<td>19</td>
<td>14</td>
<td>43</td>
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**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**

<table>
<thead>
<tr>
<th>School</th>
<th>Term</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>May</td>
</tr>
<tr>
<td>SAT</td>
<td>6.66</td>
<td>10.48</td>
</tr>
<tr>
<td>SCE</td>
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<td>5.11</td>
</tr>
<tr>
<td>SERD</td>
<td>7.02</td>
<td>6.06</td>
</tr>
<tr>
<td>SOM</td>
<td>17.05</td>
<td>12.43</td>
</tr>
<tr>
<td>1999 Average</td>
<td>20.94</td>
<td>7.53</td>
</tr>
<tr>
<td>1998 Average</td>
<td>11.26</td>
<td>8.77</td>
</tr>
</tbody>
</table>
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).

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. Ram Manohar Shrestha** is an expert in energy economics and policy, electricity 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 Noenlhom has made significant research contributions to post harvest technology and food process engineering. He obtained his B.S. (Agricultural Mechanization) from Kasetsart University, Thailand; M.Eng. from Lamar University, Texas, USA; and Ph.D. (Engineering Science) from Louisiana State University, 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.

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**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.
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. Esichakul, V. Wuwongse, T. Sanguanjaintakom; Overall Management component: S. Sangthai, 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 instruction material on how to use the library for various courses in the curriculum.

**Investigator:** V. Kaschivichyanukul

**Sponsor:** AIT Research Initiation Grant

#### 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. Bozh

**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 Katholike 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. Stoten (KUL, Belgium), E. Bozh, P. Ols, K. Sithiseripriap, Le Chi Hieu, A. Pinni

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

#### 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.
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. Paminchun, C. Ngaeschamidol, C.M. Narayana
**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. Altulpurkar
**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. Siengtai, S. J. Appord (NUS), J. Kooanda (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. Siengtai
**Sponsor:** AIT Initiation Research Grant
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. Eismoh, P. Poonpat, (AIT) A. Jugulinda (Louisiana State University, USA), S. Satawananont, P. Padooriet (DOA, Thailand), S. Baimour (DOM, Thailand)

**Sponsor:** Thailand Research Fund

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 changes 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. Keltz, G. Singh

**Sponsor:** IFAD, CIFOR-AIT

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. Sabir, K. Thirathanaritch, S. Wongsaket

**Sponsor:** Ministry of Science, Technology and Environment, Thailand
Biological/Ecological Water Environment Renovation Technologies Applicable to Thailand

The main objective is to study and renovate areas using hydropenic biofiltering methods. The construction of the biopark involves testing 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. Subsequently, 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-relationships

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. Vasanthan, 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.

Investigators: 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

Bioanalytic Production of Chitin and Chitosan from Shrimp Bicwaste

Processes based on bioanalytic 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. Chandrakachang, W. Stevens, A. Kumar Anil
Sponsor: MTEG/STDA
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 sausages, 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 of 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.

Sponsors: APEC Secretariat/APEC Expert Group on Clean Fossil Energy
Research

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. Tanaboonboon, S. Mutsumara
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. Karok-Nukulchai
Sponsor: Ministry of Education and Culture, Indonesia

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

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.

Investigators:
S. Vongsivesonjai
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. Borgade
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. Karok-Nukulchai, T. Tingzanchai, N. Phienwej, Y. Tanaboonboon
Sponsor: Dept. of Highways, Ministry of Communications, Thailand
### Resources Generation

#### Summary of Donations Received FY 1998-99

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#### Summary of Donations Received FY 1998-99 to FY 1998-99

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*EC - European Commission*
### Total Contributions Received
FY 1959-60 to FY 1998-99

#### In Cash and in kind (Baht '000)

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### 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 Northeast 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.

**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.

**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.

**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)**

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CORPORATIONS

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AM. GROUP, KANSAS
ASIA WORLD GROUP, CHINESE TAIPEI
ASME CONSULTANTS CO., LTD.
BANGKOK ENGG SERVICE & TECH. CO., LTD.
BANGKOK GLASS INDUSTRY CO., LTD.
BANGKOK RUBBER PLC. CO., LTD.
BANK OF AYEYARWADY PLC. CO., LTD.
BAYER AG. LEVERKUSEN
BLOCK AND VEATCH, USA
CAL-COMP ELECTRONICS (THAILAND) CO., LTD.
CARLSBERG BREWERY (THAILAND) CO., LTD.
CHAROEN POKPHAND FEEDMILL PLC. CO., LTD.
CODA-COLA (THAILAND), LTD.
CONSTRUCTION & ENG. SPECIALIST CO., LTD.
CONSTRUCTION LINES CO., LTD.
CORE CORPORATION, INC.
CPL GROUP PLC. CO., LTD.
CTD (THAILAND)
CVS DISTRIBUTOR CO., LTD.
DAIRYCONSTRUCTION CO., LTD.
DELTA ELECTRONICS (THAILAND) CO., LTD.
DOMTEK CO., LTD.
DRUK AIR CORPORATION LTD.
EBARA CORPORATION, JAPAN
EIC THAILAND CO., LTD.
ENERGY RESOURCES INTERNATIONAL INC.
FINANCIAL TIMES BUSINESS ASIA/PACIFIC
GECASIA CO., LTD.
G/E/C/CONSULT GmbH
GOLAY BUCHEL (THAILAND) LTD
HIGHWAY AND TRAFFIC CONSULTANTS LTD., NZ
HONISSA LIONTE (LAC) CO., LTD.
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<td>71</td>
<td>732</td>
<td>732</td>
<td>732</td>
<td>1,501</td>
<td>1,501</td>
<td>1.01</td>
</tr>
<tr>
<td>SERD</td>
<td>215</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>540</td>
<td>1,501</td>
<td>1,501</td>
<td>1.01</td>
</tr>
<tr>
<td>SAT</td>
<td>186</td>
<td>186</td>
<td>372</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>0.30</td>
</tr>
<tr>
<td>SOM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total</td>
<td>1,523</td>
<td>1,551</td>
<td>291</td>
<td>580</td>
<td>3,365</td>
<td>3,275</td>
<td>843</td>
<td>4,118</td>
<td>7,493</td>
<td>5.05</td>
</tr>
<tr>
<td>TOTAL</td>
<td>27,230</td>
<td>59,243</td>
<td>4,302</td>
<td>580</td>
<td>51,355</td>
<td>49,648</td>
<td>5,859</td>
<td>1,278</td>
<td>58,635</td>
<td>100.00</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>1,030,221</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Renewal of Support
(Continued from page 27)

Sweden
An external evaluation fielded in the latter part of 1999 recommended continued cooperation 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$156,007) and tax reimbursements (US$1,407,276).

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 1th 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


Switzerland: Aga Khan Foundation
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.

New Buildings and Offices

The Geomatics Center, an 830 sq.m. two-storey building, houses the Asian Center for Research in Remote Sensing, the GIS Applications Center and other related offices. It was inaugurated on 19 February.

The School of Management Building was inaugurated on 26 February. The building is located near the Chalerm Prakiat 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 out at time for the 40th Anniversary celebration, particularly in the Administration area, the east-west academic building, the Environmental Engineering Laboratory, and the Chalerm Prakiat 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.

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 1993 to June 1999 and as Chair of the former Division of Industrial Engineering and Management from 1986 to 1989. An AIT alumnus (IBM ’74, ’77), he became a Full Professor in 1990. Prof. Tabucanon has played a key role in introducing high technology programs at AIT.

Revenues and Expenditures

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

<table>
<thead>
<tr>
<th>Revenues</th>
<th>Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and fees</td>
<td>Schools/Programs</td>
</tr>
<tr>
<td>Center contributions</td>
<td>381.93</td>
</tr>
<tr>
<td>CEC</td>
<td>6.97</td>
</tr>
<tr>
<td>ADPC</td>
<td>1.69</td>
</tr>
<tr>
<td>RCC</td>
<td>3.90</td>
</tr>
<tr>
<td>AIT Center Vietnam</td>
<td>1.02</td>
</tr>
<tr>
<td>Auxiliary operations</td>
<td>19.27</td>
</tr>
<tr>
<td>Sub-total</td>
<td>33.75</td>
</tr>
<tr>
<td>Indirect cost contribution from contract research</td>
<td>23.65</td>
</tr>
<tr>
<td>Government grants</td>
<td>12.40</td>
</tr>
<tr>
<td>Other sources:</td>
<td></td>
</tr>
<tr>
<td>Investment revenue</td>
<td>23.13</td>
</tr>
<tr>
<td>Other revenues</td>
<td>1.74</td>
</tr>
<tr>
<td>Sub-total</td>
<td>24.87</td>
</tr>
<tr>
<td>Total</td>
<td>475.60</td>
</tr>
<tr>
<td>Total</td>
<td>478.67</td>
</tr>
</tbody>
</table>

The FY 1998-99 revenue of Baht 476 million increased by 12.8 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 misstatement. 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

KFMG 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-cut 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 at the commercial bank rates ruling on the balance sheet.

Exchange gains and losses are included in determining income.

**NOTE 4 - INVESTMENTS**

Investments as at June 30, consisted of:

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baht</td>
<td>Baht</td>
</tr>
<tr>
<td>Time deposits with banks</td>
<td>385,656,224</td>
<td>504,640,795</td>
</tr>
<tr>
<td>Deposits with finance companies</td>
<td>157,021,383</td>
<td>1,769,884</td>
</tr>
<tr>
<td>Debentures</td>
<td>7,805,765</td>
<td>8,117,136</td>
</tr>
<tr>
<td>Warrants</td>
<td>275,500</td>
<td>29,250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>550,758,872</td>
<td>514,758,865</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Fund</th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baht</td>
<td>Baht</td>
</tr>
<tr>
<td>Unrestricted current fund</td>
<td></td>
<td>23,755,575</td>
</tr>
<tr>
<td>Restricted fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>175,449,357</td>
<td>184,449,559</td>
</tr>
<tr>
<td>Endowment</td>
<td>114,018,970</td>
<td>94,787,458</td>
</tr>
<tr>
<td>General reserve</td>
<td>122,584,029</td>
<td>110,214,302</td>
</tr>
<tr>
<td></td>
<td>412,046,356</td>
<td>389,450,319</td>
</tr>
<tr>
<td>Sponsored program fund</td>
<td>46,955,480</td>
<td></td>
</tr>
<tr>
<td>Capital fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid assets</td>
<td></td>
<td>42,276,055</td>
</tr>
<tr>
<td>Repairs and Maintenance reserve</td>
<td>2,119,523</td>
<td>2,119,523</td>
</tr>
<tr>
<td></td>
<td>2,119,523</td>
<td>443,395,578</td>
</tr>
<tr>
<td>Agency fund</td>
<td>89,637,013</td>
<td>57,155,393</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>550,758,872</td>
<td>514,758,865</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees personal income tax</td>
<td>33,784,015</td>
<td>10,412,858</td>
</tr>
<tr>
<td>Import and tax duties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Automobiles</td>
<td>598,852</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34,382,867</td>
<td>10,412,858</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baht</td>
<td>Baht</td>
</tr>
<tr>
<td>Campus development</td>
<td>37,721,426</td>
<td>34,920,340</td>
</tr>
<tr>
<td>Buildings</td>
<td>955,980,273</td>
<td>846,204,437</td>
</tr>
<tr>
<td>Furniture and equipment</td>
<td>782,751,442</td>
<td>748,626,285</td>
</tr>
<tr>
<td>Library acquisitions</td>
<td>146,133,754</td>
<td>132,139,222</td>
</tr>
<tr>
<td>Construction in progress</td>
<td>5,609,984</td>
<td>54,170,467</td>
</tr>
<tr>
<td></td>
<td>1,923,136,379</td>
<td>1,816,060,751</td>
</tr>
</tbody>
</table>

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 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.
NOTE 8 - FUND BALANCES

Fund balances as at June 30 are as follows:

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>1999</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restricted fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>150,384,467</td>
<td>147,694,118</td>
</tr>
<tr>
<td>Endowment</td>
<td>114,136,670</td>
<td>95,238,513</td>
</tr>
<tr>
<td>General reserve</td>
<td>224,917,269</td>
<td>244,020,586</td>
</tr>
<tr>
<td></td>
<td>519,501,026</td>
<td>487,158,217</td>
</tr>
<tr>
<td>Capital fund</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed assets</td>
<td>1,923,136,879</td>
<td>1,816,069,751</td>
</tr>
<tr>
<td>Liquid assets - Unallocated</td>
<td>9,466,698</td>
<td>8,952,770</td>
</tr>
<tr>
<td>Liquid assets - Allocated</td>
<td>(21,381,807)</td>
<td>38,584,081</td>
</tr>
<tr>
<td>Repairs and maintenance reserve</td>
<td>2,119,523</td>
<td>2,119,523</td>
</tr>
<tr>
<td></td>
<td>1,918,341,291</td>
<td>1,865,717,125</td>
</tr>
</tbody>
</table>

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 statements received, whereas those corresponding documents were normally retained at the Asian Institute of Technology Center in Vietnam, in the amount of Baht 6.35 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 incomes 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 restricted current fund had been reclassified to record as expenditure for each responsibility center, as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Salaries and associated costs</th>
<th>Baht</th>
<th>Baht</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td></td>
<td>18,684,847</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td>18,684,847</td>
<td></td>
</tr>
</tbody>
</table>

In the period June 30, 1998, salaries and associated costs of restricted current fund - general included supplementary salaries in the amount of Baht 34,220 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:


- 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 date, 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 for 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.
<table>
<thead>
<tr>
<th></th>
<th>Unrestricted Current Fund</th>
<th>Restricted Fund</th>
<th>Sponsored Program Fund</th>
<th>Capital Fund</th>
<th>Agency Fund</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSETS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash at banks</td>
<td>(51,390)</td>
<td>7,289,950</td>
<td>84,887,588</td>
<td>96,419,802</td>
<td>32,249,818</td>
<td>72,358,849</td>
</tr>
<tr>
<td>Investments (Note 4)</td>
<td>-</td>
<td>23,755,757</td>
<td>412,046,856</td>
<td>389,450,319</td>
<td>46,555,480</td>
<td>-</td>
</tr>
<tr>
<td>Advance duties and taxes (Note 5)</td>
<td>34,282,857</td>
<td>10,412,858</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Accounts receivable and accrued income</td>
<td>18,252,188</td>
<td>1,685,131</td>
<td>27,519,215</td>
<td>9,888,065</td>
<td>11,812,263</td>
<td>13,889,059</td>
</tr>
<tr>
<td>Deposits</td>
<td>1,230,089</td>
<td>1,090,122</td>
<td>63,861</td>
<td>63,861</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Inventories</td>
<td>-</td>
<td>-</td>
<td>316,761</td>
<td>349,778</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Due from other funds</td>
<td>-</td>
<td>-</td>
<td>131,326,307</td>
<td>131,326,307</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fixed assets (Note 6)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Assets</td>
<td>51,815,794</td>
<td>44,208,046</td>
<td>606,160,286</td>
<td>627,495,332</td>
<td>91,008,261</td>
<td>86,247,908</td>
</tr>
</tbody>
</table>

LIABILITIES AND FUND BALANCES

LIABILITIES

Accounts payable and accrued expenses | 5,158,299 | 2,305,881 | 2,862,922 | 6,443,445 | 914,686 | 779,228 | 1,953,010 | 15,261,680 | 831,523 | 1,051,385 | 11,120,392 | 27,094,125 |
| Deposits                       | 2,305,090 | 2,116,059 | 2,470,253 | 2,567,263 | -    | -    | -    | -    | -    | -    | 4,840,163 | 4,723,413 |
| Due to other funds             | -    | -    | 131,326,307 | 131,326,307 | -    | -    | -    | -    | -    | -    | 131,326,307 | 131,326,307 |
| Total Liabilities              | 7,528,179 | 5,691,931 | 136,595,482 | 148,337,115 | 914,686 | 779,228 | 1,953,010 | 15,261,680 | 831,523 | 1,051,385 | 147,316,662 | 163,123,845 |

FUND BALANCES (Note 8)

FUND BALANCES (Note 8) | 46,285,577 | 38,524,715 | 919,201,020 | 487,158,277 | 90,091,893 | 83,046,680 | 1,918,341,291 | 1,465,711,125 | 192,474,373 | 107,049,298 | 2,766,696,138 | 2,583,908,135 |

Total Liabilities and Fund Balances | 53,813,754 | 44,206,046 | 606,160,286 | 627,495,332 | 91,008,261 | 86,247,908 | 1,919,724,301 | 1,880,791,811 | 193,305,896 | 108,032,283 | 2,942,013,020 | 2,747,031,980 |

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

<table>
<thead>
<tr>
<th></th>
<th>Unrestricted Current Fund</th>
<th>Restricted Fund – General</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999 BAHT</td>
<td>1998 BAHT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REVENUES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition fees:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic units</td>
<td>375,584,835</td>
<td>388,814,631</td>
<td></td>
</tr>
<tr>
<td>Computer centre</td>
<td>6,250,000</td>
<td>2,543,000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>381,834,835</td>
<td>391,357,631</td>
<td></td>
</tr>
<tr>
<td><strong>Tuition &amp; fee exchange rate differential (Note 10)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gifts and contributions:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>12,409,679</td>
<td>11,632,121</td>
<td></td>
</tr>
<tr>
<td>In-kind (Note 7)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>12,409,679</td>
<td>11,632,121</td>
<td></td>
</tr>
<tr>
<td>Grants and contracts</td>
<td>33,414,781</td>
<td>31,213,005</td>
<td></td>
</tr>
<tr>
<td>Sales and services:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>61,867</td>
<td>46,007</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61,867</td>
<td>46,007</td>
<td></td>
</tr>
<tr>
<td>Income from investments</td>
<td>21,126,341</td>
<td>20,370,427</td>
<td></td>
</tr>
<tr>
<td>Auxiliary services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery of indirect costs</td>
<td>23,651,159</td>
<td>31,371,247</td>
<td></td>
</tr>
<tr>
<td>AIT sponsored programs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical plant support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exchange stabilization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Revenues</td>
<td>476,297,263</td>
<td>504,501,038</td>
<td></td>
</tr>
<tr>
<td></td>
<td>969,797,278</td>
<td>1,165,694,712</td>
<td>1,321,063,756</td>
</tr>
<tr>
<td><strong>EXPENDITURES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1999 BAHT</td>
<td>1998 BAHT</td>
<td></td>
</tr>
<tr>
<td>Salaries and associated costs:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash (Note 11)</td>
<td>18,884,847</td>
<td>18,338,847</td>
<td>37,223,694</td>
</tr>
<tr>
<td>In-kind (Note 7)</td>
<td>145,852,397</td>
<td>145,192,053</td>
<td>291,044,450</td>
</tr>
<tr>
<td>Academic units operating costs</td>
<td>274,783,896</td>
<td>208,883,117</td>
<td>483,667,013</td>
</tr>
<tr>
<td>Student related costs</td>
<td>2,253,923</td>
<td>1,987,603</td>
<td>4,241,526</td>
</tr>
<tr>
<td>Administrative support costs</td>
<td>94,114,777</td>
<td>62,787,340</td>
<td>156,902,117</td>
</tr>
<tr>
<td>Capital purchases</td>
<td>13,671,842</td>
<td>13,217,336</td>
<td>26,889,178</td>
</tr>
<tr>
<td>Campus wide services</td>
<td>94,942,676</td>
<td>87,358,276</td>
<td>182,301,952</td>
</tr>
<tr>
<td>Physical plant support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIT sponsored programs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary services costs</td>
<td>88,774,055</td>
<td>91,082,282</td>
<td>180,856,337</td>
</tr>
<tr>
<td>Exchange stabilization</td>
<td>43,486,225</td>
<td>97,807,398</td>
<td>141,293,623</td>
</tr>
<tr>
<td>Other costs</td>
<td>88,383,081</td>
<td>76,232,912</td>
<td>164,615,993</td>
</tr>
<tr>
<td>Total Expenditures</td>
<td>476,671,216</td>
<td>392,018,546</td>
<td></td>
</tr>
<tr>
<td>Excess of revenues over expenditures (expenditures over revenues)</td>
<td>(2,073,054)</td>
<td>1,172,492</td>
<td>3,245,546</td>
</tr>
<tr>
<td></td>
<td>36,750,069</td>
<td>244,240,331</td>
<td>286,990,398</td>
</tr>
</tbody>
</table>

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)**

<table>
<thead>
<tr>
<th></th>
<th>Restricted Fund</th>
<th>Capital Fund</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td>General</td>
<td>Sponsored</td>
<td>Liquid Assets</td>
<td>Repair and</td>
</tr>
<tr>
<td></td>
<td>Current fund</td>
<td>Endowment</td>
<td>Program Fund</td>
<td>Unallocated</td>
<td>Maintenance</td>
</tr>
<tr>
<td></td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
</tr>
<tr>
<td></td>
<td>Current fund</td>
<td>General</td>
<td>Sponsored</td>
<td>Liquid Assets</td>
<td>Agency Fund</td>
</tr>
<tr>
<td></td>
<td>BAHT</td>
<td>Endowment</td>
<td>Program Fund</td>
<td>Unallocated</td>
<td>Fund</td>
</tr>
<tr>
<td></td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
<td>BAHT</td>
</tr>
<tr>
<td><strong>Balances July 1, 1998 (Note 8)</strong></td>
<td>38,514,715</td>
<td>147,694,118</td>
<td>95,258,513</td>
<td>24,405,596</td>
<td>5,468,660</td>
</tr>
<tr>
<td>Adjustments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>7,776,860</td>
<td>5,063,250</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Disposal of assets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Devolatilization of (\text{Debtilee &amp; Warrant})</td>
<td>-</td>
<td>(65,121)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R.O.F. in Vietnam</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Excess from ADPC account</td>
<td>-</td>
<td>14,445,274</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Total</strong></td>
<td>44,211,621</td>
<td>198,894,622</td>
<td>93,509,691</td>
<td>256,031,843</td>
<td>17,294,143</td>
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<td>Deductions:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inter-fund transfer (to)</td>
<td>2,073,954</td>
<td>2,073,954</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Unrestricted Current Fund</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Restricted Current Fund</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Snopea Fund</td>
<td>2,073,954</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Sponsor Program Fund</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
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<td>Liquid Assets Fund</td>
<td>(60,000)</td>
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<td>-</td>
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<tr>
<td>Agency Fund</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expenditure for plant facilities</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cash</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kind</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other cost</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>General</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Due to other fund</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,073,954</td>
<td>2,073,954</td>
<td>20,399,379</td>
<td>1,089,907</td>
<td>170,371,416</td>
</tr>
<tr>
<td><strong>Balances June 30, 1999 (Note 8)</strong></td>
<td>46,285,575</td>
<td>150,384,467</td>
<td>114,196,670</td>
<td>254,918,889</td>
<td>90,073,883</td>
</tr>
</tbody>
</table>

The accompanying notes are an integral part of the financial statements.
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H.E. Mr. Nobutoshi Aiso (2003)
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NC: FRC
SFC
SRC

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President
AIF Foundation, Inc.
USA

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Head of Delegation
European Commission to Thailand
Bangkok, Thailand

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(Chair) Professor
SRC: School of Urban and Regional Planning
EC: University of the Philippines
Quezon City, Philippines

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President and CEO
The Siam Commercial Bank Public Co., Ltd.
Bangkok, Thailand

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Chinese Taipei

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Former Advisor on Women, Children, Youth, Education and Social Development
Office of the Permanent Secretary
Office of the Prime Minister
Royal Thai Government

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PPC: of Parliament, Canton St. Gallen
FRC: St. Gallen, Switzerland

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and Plenipotentiary
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Plenipotentiary
The Embassy of the Federal Republic of Germany
Bangkok, Thailand

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(Chair) Ambassador Extraordinary and
Plenipotentiary
The Embassy of Switzerland
Bangkok, Thailand

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FPC: Rector
SRC: United Nations University
EC: Tokyo, Japan

SRC: Dr. Rainer Goerdeler (2002)
(Chair) Director for Asia, Middle and Eastern Europe
EC: Federal Ministry for Economic Cooperation and Development
Bonn, Germany

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(Chair) Ambassador Extraordinary and
Plenipotentiary
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Bangkok, Thailand

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Secretary General
The Office of the National Education Commission
Royal Thai Government
Bangkok, Thailand

FRC: H.E. Moin Luarg Birahongse
(Chair) Kasemsi, Chair, (2002)
EC: His Majesty’s Principal Private Secretary
PPC: The Grand Palace
FRC: Bangkok, Thailand
HDC: Bangkok, Thailand

EC: Dr. Malik Muhammad Saeed Khan
FPC: PPC
FRC: Member, Planning Commission
SRC: Government of Pakistan
Islamabad, Pakistan

FRC: Prof. S. K. Khanna (2002)
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All India Council for Technical Education
New Delhi, India

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Former Deputy Prime Minister
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FRC: Tokyo, Japan

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Global R&D Planning
Nokia Technology
Ottawa, Ontario, Canada

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NC: Chairman, Navatarae Group of Companies
Bangkok, Thailand

EC: Prof. Hitoji Nishimura
FPC: (2003)
BFC: Professor and Chairman
FRC: Institute of Engineering and Mechanics and Systems
University of Tsukuba
Tsukuba, Japan

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Bangkok, Thailand

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University of René Descartes
Cochin Faculty of Medicine
Paris, France

Ambassador Extraordinary and
Plenipotentiary
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40
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AATRA President
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**SG**
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Permanent Secretary
Ministry of University Affairs
Royal Thai government
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**PPC**
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**RC**
SFC

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**SFC**
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**PPC**
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SRC Asian Institute of Technology

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Rel-Ser Engineering Agency
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Working Group
Thailand Environment Institute
Bangkok, Thailand

**NC**
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Ambassador Extraordinary and Plenipotentiary
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Bangkok, Thailand

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Department of International Cooperation and Exchange
Ministry of Education
People's Republic of China

**BFC**
Dr. Ockert van Zyl (2003)
President and Chief Executive Officer
Siemens Limited
Bangkok, Thailand

**SFC**
Secretary: Ms. Kulvimol Wasuntiwongse
Asian Institute of Technology
Email: kulvimol@ait.ac.th

List updated on 20 February 2000

**BFC**
Board Finance Committee
**EC**
Executive Committee
**FRC**
Faculty Relations Committee
**HDC**
Honorary Degrees Committee
**NC**
Nominating Committee
**PPC**
Policy and Planning Committee
**SFC**
Staff Relations Committee
**SRC**
Student Relations Committee
( ) End of current term

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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 1950. 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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[Image of Dr. Puey]
FULL TIME FACULTY
(Full-time faculty members are listed alphabetically. The italicsized entries are abbreviations of their respective Schools or Academic Centers.)

Nitin V. Atzupurkar
B.Eng., Poona; Ph.D., Canterbury.
Associate Professor (SAT)

Kazi Mohiuddin Ahmed
M.Sc., Leningrad; Ph.D., Univ. of Newcastle.
Associate Professor (SAT)

A.T.M. Nurul Amin
B.A. (Hons.), M.A., Dhaka; M.A., Ph.D., Manitoba.
Professor (SERED)

Ajit P. Annachatre
B.Tech., IIT Kanpur; Ph.D., IIT Bombay.
Associate Professor (SERED)

Ray W. Archer
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B.S. Eng., Tunghai, Taiwan; M.Eng., AIT, Ph.D., North Carolina.

Klaus Rall
Ph.D., Hannover.

Joe Vander Stoten

SCHOOL OF ENVIRONMENT, RESOURCES AND DEVELOPMENT

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

John B. Hambrey

Y. Ishibashi
B.Eng., M.Eng., Ph.D., 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
Prof. Chongkrak Polprasert
Management
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
Dr. Hans Stoessel
Development Program

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. Pisichai Karasuchi (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

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

SCHOOL OF ADVANCED TECHNOLOGIES

Completed

NC-PC Machine, an Open Architecture CNC Machine
Investigators: E. Bohez, N. Afzulpurkar, M. Parrichkun
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 Flament 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: NASA

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 Sinduli 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. Pinnol, V. Kachitvichyanukul, E. Bohez, M. Parrichkun
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. Sithiseriraprtp, Le Chi Hieu, A. Pinnol
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. Parrichkun, C. Ngeacharoankul, C.M. Naravane
Sponsor: Circuit Electronics Industries Public Co., Ltd., NSTDA

Development of Autonomous Intelligent Robots
Investigator: M. Parrichkun
Sponsor: Minebea Thai Ltd.

World Fire Web Project
Investigators: K. Honda, S. Lerlum
Sponsor: Joint Research Center, Ispra, Italy

NOAA AVHRR Data Reception and Near Real Time Distribution
Investigator: K. Honda
Sponsor: ACRORS

Consulting and Training for NASA Pilot Project in Thailand
Investigator: L. Samarakoon
Sponsor: NASA

Consulting and Training for NASA Pilot Project in Indonesia
Investigator: L. Samarakoon
Sponsor: NASA

Tax Administration Project:
Investigators: V. Esichakul, S. Songthai (SOM, AIT), F. W. Swierczek (SOM, AIT)
Sponsors: Revenue Dept., Ministry of Finance (Thailand), World Bank
SCHOOL OF CIVIL ENGINEERING

Completed


Investigation of Failure of Roof Structure at Surat Thani
Investigations: N. Anvar, W. Kanok-Nukulchal; Sponsor: Suretex Ltd., Thailand

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

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

Collapse of Pumping Station in Wastewater Treatment Plant
Investigators: W. Kanok-Nukulchal, N. Phien-woj, N. Anvar; Sponsor: Cunningham Intl (Thailand) Ltd.

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

Investigation and Design Study for Renovation of Don Chedi Monument, Supanburi; Investigator: W. Kanok-Nukulchal, N. Phien-woj
Sponsor: Dept. of Fine Arts, Thailand

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

GM Bhutan III: Construction Management Training for Bhutanese Civil Engineers; Investigators: S. O. Ogundana, C. Charoenngam
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. Muttama
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. Charoenngam
Sponsor: Prince Chamrong Rajaunrab Institute, Ministry of Interior, Thailand

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

Feasibility Study for Dredging New Canal Connecting Khlong Taoee Wattana and Khlong Khoon
Investigator: S. Vongvissessornjai
Sponsor: Drainage and Sewerage Dept., EMA

Periodic Project Assessment of Thai Lube Blending Plant near Pattaya: Investigators: N. Anwar, W. Kanok-Nukulchal
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-Nukulchal; 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-Nukulchal; Sponsor: Ministry of Education and Culture, Thailand

Study and Detailed Design of a Navigation Channel for Krabi Thermal Power Plant
Investigators: S. Vongvissessornjai, 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-Nukulchal, 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

  Investigators: Nguyen Thi Kim Oanh, B. E. Bengtsson, L. Reutergrund
  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. Wiwattananate, P. Meechumna, S. Prunjan, S. Salinichai
  Sponsor: NEDO, Japan

  **Energy Efficient and Environmentally Sound Technology indicators in the Thai Textile Industry**
  Investigator: 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: O. 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
  Sponsor: ILO, CIFOR-AIT

  **ILC-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. Kaewprakaisangkul
  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. Shrivakoti
  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. Turonguang
  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 Lui (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. Noormhorn
  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 Decaytation Conditions on the Physico-chemical Properties of Cuttlefish Chitin and Chitosan**
  Investigators: W. F. Stevens, S. Chandrakunch, Ng Chuen How
  Sponsor: Trang Seafood Co.

  **Medical Service Centers - Laos**
  Investigators: B. Lefebvre, G. Sthapit, M. Usijima
  Sponsor: 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/Sida

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


Biological Ecological Water Environment Renovation Technologies Applicable to Thailand; Investigators: P. Parkpian, K. Fukuchi, H. Nakazato; Sponsor: Top Ecology Co., Ltd. (Japan), National Inst. of Environmental Studies, AIT

Survival of Bis-indicators in Soil Applied with Bangkok Domestic Sludge; Investigator: P. Parkpian, Siranee Sreesai, K. Fukuchi; 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; Investigators: P. Parkpian; Sponsor: STS Consulting Co., Ltd. (Thailand)

Small and Medium Scale Industries in Asia: Energy, Environment and Climate Inter-relations; 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 forth J. Todoc; Sponsors: DANCEDENPO

Biomass Resources for the Resource Chapter of World Energy Resources; Investigators: T. Lefèvre, M. Cabrera, J. Todoc; Sponsors: WEC/UNDP/IAEA

Natural Gas in India: Market Prospects and Investment Opportunities; Investigators: T. Lefèvre, S. Bhattacharya, J. Todoc; Sponsor: Financial Times


Survey of Trends in Environment and Energy Conservation Policies and Technologies in Asia; Investigators: T. Lefèvre, J. Todoc, Bui Duy Thanh; Sponsor: NEDO


Assessment of Potential for Developing Nuclear Power Projects under the Clean Development Mechanisms in Asia; Investigators: T. Lefèvre, Bui Duy Thanh; Sponsor: IAEA

Estimating Health and Environmental Externalities of Electricity Generation in Thailand; Investigators: T. Lefèvre, Bui Duy Thanh; Sponsor: CEERD-AIT/IMFOPA


Energy and Environmental Economics Research Study; Investigators: R. Pacadan, T. Lefèvre; Sponsor: French Gov't. (MAEF)


Electric Power Systems Management - Phase II; Investigators: S. Chiraratanaanon, C. Yu, D. Thukaram; Sponsor: Sida
Development of Methodology for Monitoring Energy Performance of a Building; AIT Library Case Study
Investigators: S. Chiraratthanon, N. Muangkroo, S. Shin; Sponsor: Energy Conservation Promotion Fund (Thai Govt.)

Daylighting: Sky Luminance, Application and Lighting Integration
Investigators: S. Chiraratthanon, Silpakorn Univ.; Sponsor: Energy Conservation Promotion Fund (Thai Govt.)

Development of Education Aids to Promote Effective Teaching of Energy Management for Buildings
Investigators: S. Chiraratthanon
Sponsor: NEPO

Agricultural Warning Systems;
Investigator: A. Eiumnoh
Sponsor: Ministry of Agriculture and Cooperatives, Thailand

Application of Space Shuttle Earth Observation Photos for Mangrove Classification and Monitoring in Thailand;
Investigator: E. L. Webb
Sponsor: AIT Research Initiation Grant

Developing Database for Greenhouse Gases Emission with Reference to Methane in Thailand
Investigators: A. Eiumnoh, P. Parkpian, A. Jagsujinda (Louisiana State Univ.), S. Satavathanon, P. Paicoonrat (DOA, Thailand), S. Baimoung
DON, Thailand
Sponsor: Thailand Research Fund

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

Land Suitability for Cassava Plantation in Northeast Thailand
Investigator: A. Eiumnoh; Sponsor: DOA

Professional Services between United Nations Capital Development Fund and AIT; Investigator: S. Pongquan; Sponsor: UNCDF

Soil and Forest Degradation in Marginalised Agriculture in Nepal
Investigators: G. B. Thapa, B.R. Singh (Agricultural Univ. of Norway), M. K. Balla (Inst. of Forestry, Nepal)
Sponsor: Norwegian Research Council

Creating Space for Local People and Forest Management
Investigators: G. Kelkar, G. Singh
Sponsors: IFAD, CIFOR-AIT

Gender and Telework
Investigators: G. Kelkar, D. Currie, N. Wongthawatchai; Sponsor: NORAD

Local Community Organization and Microfinance in Sri Lanka
Investigator: R. Dale; Sponsor: NORAD

Investigators: B. Earth, S. Boonkong with Khon Kaen Univ.
Sponsor: AIT Research Initiation Grant

Women and Aquaculture
Investigators: G. Kelkar, K. Kusakabe with Inst. of Aquaculture, Univ. of Stirling, UK; Sponsor: APEC, Singapore

Women Entrepreneurs and Technology in Three Cities of Lao PDR
Investigators: G. Kelkar, Y. Muramatsu
Sponsor: Govt. of Japan

Effect of Tillage Practices on Hydraulic Conductivity, Cone Index, Infiltration and Crop Yield in Bangkok Clay Soil;
Investigators: V. M. Salokhe, M. H. Rahmati
Sponsor: ICARDA

Design and Development of a Pineapple Transplanter;
Investigators: V. M. Salokhe, K. Trirattanasirichai, S. Wongpichit; Sponsor: Ministry of Science and Technology, Thailand

Decision Support System for Soil Conservation in Agricultural Soil
Investigators: V. M. Salokhe, E. Canillas; Sponsor: CEC, AIT

Devolution and Local Forest Management;
Investigators: G. Kelkar, G. Singh, D. Nathan, Yu Xiaogang
Sponsor: IFAD, CIFOR

Support to AIT Aquaculture Outreach Program in Indochina and Northeast Thailand - Phase II;

Women in Aquaculture in Asia
Investigators: G. Kelkar, K. Kusakabe, M. Fek:Fek, C. Brugere (Inst. of Aquaculture, Univ. of Stirling, UK), H. Demaine; Sponsor: APEC, DFID

Improvement and Regional Evaluation of the YY Male Technology;
Investigator: G. C. Mair
Sponsor: DFID

Collaborative Research on Molecular Genetics of Fish - Hybrid Catfish
Investigator: G. C. Mair; Sponsor: NSTDA Post-doctoral Fellowship

Pond Dynamics Collaborative Research Support Program - Phase II; Investigators: C. K. Lin, P. Edwards
Sponsor: USAID

Standardization of Quality Evaluation Methods for Selected Fruits and Vegetables;
Investigator: A. Noomhorm; Sponsor: Ministry of Industry, Thailand

Irrigation of Semi-dried Shrimp and Cooked Fish Sausage
Investigator: A. Noomhorm
Sponsor: IAEA, Vienna, Austria

Evaluation of Milling Yields for Thai Rice;
Investigator: A. Noomhorm
Sponsor: Dept. of Internal Trade, Ministry of Commerce, Thailand

Improvement Performance of Rice Flour and Starch for Food Application;
Investigator: A. Noomhorm
Sponsor: NSTDA

Bicatalytic Production of Chitin and Chitosan from Shrimp Biowaste
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;

Genetic Engineering, Plant GMO and Biosafety;
Investigator: W. F. Stevens
Sponsor: JF Foundation, Thailand

Automation of Headbox Consistency Former;
Investigator: M. M. Nazhad
Sponsor: AIT Research Initiation Grant
SCHOOL OF MANAGEMENT

- **Completed**

  **Entrepreneurship in High Technology Firms in Thailand**
  *Investigator: B. Igel*
  *Sponsor: Self-support*

  **Management Issues in Asia: An International Training Program**
  *Investigator: L. M. Johri*
  *Sponsor: Helsinki Univ. of Technology*

  **Transformation of MNCs in Thailand: Lessons in Managing Discontinuity**
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  **Industrial Relations and Recession in Thailand**
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  **HRM and Organizational Learning for Productivity Improvement**
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  **Distributed Education Programs: Market Opportunities and Social Development Considerations**
  *Investigator: S. Siengthai, C. Bechter, G. Tocquer*  
  *Sponsor: DEC/AIT*

  **Feasibility Study of High Tech Park in Vietnam**
  *Investigator: F. W. Swierczek*  
  *Sponsor: Industrial Estate Authority of Vietnam*

- **In Progress**

  **Forum for Enterprise Management**
  *Investigator: L. M. Johri, E. Herbolzheimer (Henley Inst. of Management)*  
  *Sponsor: EC*

  **Strategic Human Resource Management and Firm’s Innovation**
  *Investigator: S. Siengthai*
  *Sponsor: AIT Research Institution Grant*

  **MNCs and HRM in Thailand: The Challenge after the Financial Crisis**
  *Investigator: S. Siengthai*  
  *Sponsor: Self-support*

  **Career Management and Organizational Performance**
  *Investigator: S. Siengthai, S. J. Appold (NUS), J. Kasarda (UNC)*  
  *Sponsor: Self-support*

  **Compensation as a Source of Flexibility**
  *Investigator: S. Siengthai*  
  *Sponsor: Self-support*

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<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<td>ACECOMS</td>
<td>Asian Center for Engineering Computations and Software, AIT</td>
</tr>
<tr>
<td>ACRoRS</td>
<td>Asian Center for Research on Remote Sensing, AIT</td>
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<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AFME</td>
<td>French Agency for Energy Management</td>
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<tr>
<td>APEC</td>
<td>Asia-Pacific Economic Cooperation</td>
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<tr>
<td>ARRFEEC</td>
<td>Asian Regional Research Program in Energy, Environment and Climate</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<tr>
<td>BMA</td>
<td>Bangkok Metropolitan Administration</td>
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<tr>
<td>CAT</td>
<td>Communications Authority of Thailand</td>
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<tr>
<td>CEC</td>
<td>Commission of the European Communities</td>
</tr>
<tr>
<td>CEERD</td>
<td>Center for Energy-Environment Research and Development, AIT</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<tr>
<td>CIFOR</td>
<td>International Center for Forestry Research, Indonesia</td>
</tr>
<tr>
<td>CIRAD</td>
<td>Centre de Cooperation Internationale de Recherche Agronomique pour le Developpement</td>
</tr>
<tr>
<td>CUC</td>
<td>Canadian Universities Consortium</td>
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<td>DAAD</td>
<td>German Academic Exchange Services</td>
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<tr>
<td>DANCED</td>
<td>Danish Cooperation for Economic Development</td>
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<tr>
<td>DANIDA</td>
<td>Danish International Development Assistance</td>
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<td>DEC</td>
<td>Distributed Education Center, AIT</td>
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<td>DIFD</td>
<td>Department for International Development, UK</td>
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<td>DOA</td>
<td>Department of Agriculture, Thailand</td>
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<td>DOM</td>
<td>Department of Meteorology, Thailand</td>
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<tr>
<td>DTEC</td>
<td>Department of Technical and Economic Cooperation, Thailand</td>
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<tr>
<td>EAWAG</td>
<td>Swiss Federal Institute for Environmental Science and Technology</td>
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<td>EC</td>
<td>European Community</td>
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<td>EGAT</td>
<td>Electricity Generating Authority of Thailand</td>
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<tr>
<td>ETA</td>
<td>Expressway and Rapid Transit Authority of Thailand</td>
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<td>ESA</td>
<td>European Space Agency</td>
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<td>ESCAP</td>
<td>Economic and Social Commission for Asia and the Pacific, UN</td>
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<td>FAO</td>
<td>Food and Agriculture Organization, UN</td>
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<td>GTZ</td>
<td>German Agency for Technical Cooperation</td>
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<td>HIVOS</td>
<td>Humanist Institute for Cooperation with Developing Countries</td>
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<td>IAEA</td>
<td>International Atomic Energy Agency</td>
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<td>ICARDA</td>
<td>International Center for Agriculture Research in Dry Areas</td>
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<td>ICIOMOD</td>
<td>International Center for Integrated Mountain Development</td>
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<td>IEAT</td>
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<td>IFAD</td>
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<td>International Labour Organization, UN</td>
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<td>IUCN</td>
<td>International Union for the Conservation of Nature</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<td>JIRCAS</td>
<td>Japan International Research Center for Agricultural Sciences</td>
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<td>KAAD</td>
<td>Katholischer Akademischer Auslanddienst</td>
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<td>MAE-F</td>
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<td>MOFA</td>
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<td>MOSTE</td>
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<td>MTEC</td>
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<td>NASA</td>
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<td>NEC</td>
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<td>NECTEC</td>
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<td>NEDO</td>
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<td>NEPC</td>
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<td>NESDB</td>
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<td>NGDO</td>
<td>Non-Governmental Development Organization</td>
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<td>NPFA</td>
<td>National Fire Protection Association</td>
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<td>NIDA</td>
<td>National Institute of Development Administration, Thailand</td>
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<td>NOAA</td>
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<td>Thailand Industrial Standards Institute</td>
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<td>TISTR</td>
<td>Thailand Institute of Science and Technology Research</td>
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<td>Telephone Organization of Thailand</td>
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<td>UCLES</td>
<td>University of Cambridge Local Examinations Syndicate</td>
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<td>WB</td>
<td>World Bank</td>
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<td>WHO</td>
<td>World Health Organization</td>
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